An Evidence Review on Current Models of Registered Nursing and Midwifery Practice in the Community to Inform Policy Development.

Dr. Patricia Leahy-Warren (PI)[1], Dr. Helen Mulcahy (Co-PI)[1], Dr. Kathleen McLoughlin[1], Dr. Marcella Kelly[2], Dr. Amanda Phelan[3], Prof. Eileen Savage[1], Prof. Lazelle Benefield[4], Prof. Colin Bradley[5], Dr. Alice Coffey[1], Dr. Ann Donohoe[3], Dr. Serena Fitzgerald[1], Dr. Tim Frawley[1], Dr. Maria Healy[1], Bernard McCarthy[2], Catherine Meagher, Dr. Rhona O'Connell[1], Aoife O'Mahony[1], Dr. Gillian Paul[3], Diarmuid Stokes[6], Jessica Walsh[3], Ms Elizabeth Healy[7].

[1] School of Nursing and Midwifery, UCC.
[2] Catherine Meagher School of Nursing and Midwifery, NUI Galway.
[3] School of Nursing, Midwifery and Health Systems, UCD.
[4] College of Nursing, University of Oklahoma Health Sciences Center, USA.
[5] Department of General Practice, UCC.
[6] UCD Health Science Library.
[7] HSE. Cork South Lee Public Health Nursing.

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Abbreviations and Colour Coding

Abbreviation	Definition
AACODS	Authority, Accuracy, Coverage, Objectivity, Date, Significance
ADLs	Activities of Daily Living
AHM	Automated Home Monitoring
AMSTAR	Assessing the Methodological Quality of Systematic Reviews
ANP	Advanced Nurse Practitioner
APN	Advanced Practice Nurse
BMI	Body Mass Index
BNP	Beta Naturetic Peptide
BP	Blood Pressure
CCM	Chronic Care Model
CD4	Cluster Definition 4
CI	Confidence Interval
CFS	Chronic Fatigue Syndrome
CHD	Coronary Heart Disease
CHO	Community Healthcare Organisation
CHW	Community Health Worker
CNA	Canadian Nurses Association
CNM	Clinical Nurse Manager
CNS	Clinical Nurse Specialist
COPD	Chronic Obstructive Pulmonary Disease
CSP	Clinical Strategy and Programmes
CST	Coping Skills Training
CVD	Cardiovascular Disease
DHSSPSNI	Department of Health, Social Service and Public Safety Northern Ireland
DoH	Department of Health
DoHC	Department of Health and Children
DPHN	Director of Public Health Nursing
DM	Diabetes Mellitus
ED	Emergency Department
EHR	Electronic Health Record
EPDS	Edinburgh Postnatal Depression Score
ER	Emergency Room
FIT	Functioning Improvement Tool
FNP	Family Nurse Partnership
FSCN	Family Caregiver Support Nurse
GP	General Practitioner
HBI	Home Based Intervention
HCA	Health Care Assistant
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
HF	Heart Failure
HSE	Health Service Executive
HV	Health Visitor
ICP	Integrated Care Pilot
IPV	Intimate Partner Violence

KNOV	Royal Dutch Organisation of Midwives
ID	Intellectual Disability
LDL	Low Density Lipoprotein
MA	Meta Analysis
MD	Doctor of Medicine
MDT	Multi-Disciplinary Team
ME	Myalgic Encephalomyelitis
MMSE	Mini Mental State Examination
MTAA	Medical Technology Association of Australia
NMBI	Nursing and Midwifery Board of Ireland
NHS	National Health Service
NQAI	National Qualifications Authority of Ireland
NSW	New South Wales
NUIG	National University of Ireland, Galway
ONMSD	Office of the Nursing and Midwifery Services Director
OP	Outpatient
OR	Odds ratio
P	Probability
PA	Physical Activity
PCP	Primary Care Physicians
PE	Physical Education
PICOCS	Population, Intervention, Comparison, Outcome, Context, Studies
PHIT	Population Health Information Tool
PHN	Public Health Nurse
PHRIS	Primary Health Research and Information Services
PN	Practice Nurse
PND	Post Natal Depression
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analysis
QALY	Quality Adjusted Life Years
QIPP	Quality, Innovation, Productivity and Prevention
QoL	Quality of Life
RCPI	Royal College of the Physicians of Ireland
RCT	Randomised Controlled Trial
RGN	Registered General Nurse
RN	Registered Nurse
ROB	Risk of Bias
RR	Risk Ratio
SR	Systematic Review
SHARP	Staying Healthy–Asthma Responsible & Prepared
STI	Sexually Transmitted Infection
TANF	Temporary Assistance for Needy Families
TB	Tuberculosis
TV	Television
UCC	University College of Cork
UCD	University College Dublin
UNDP	United Nations Development Programme
UK	United Kingdom

USA	United States of America
US	United States
V	Versus
WTP	Welfare Transition Program
WHO	World Health Organisation

Key to colours

The figures in the report use the following colour coding for quality assessment

Red – No or High
Yellow – Don't know or Can't Answer
Green – Yes or Low
Blue – Not Applicable

Executive Summary

The aim of this evidence review was to identify a model to guide nursing and midwifery in the community in Ireland. The evidence will support the work of the Department of Health to inform future policy development.

Methods

A rigorous systematic search of databases was undertaken to retrieve both empirical and grey relevant and appropriate literature. This process was guided by systematic review methodologies (Higgins & Green 2011; Centre for Systematic Reviews and Dissemination 2008) and reported in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (Moher et al. 2009). Data were extracted and screened for content and quality appraisal by two reviewers. Decisions regarding inclusion and exclusion criteria for nursing and midwifery in the community contexts and services[1] were carried out systematically and transparently. The breadth of evidence from the final papers selected on community nursing was categorised into six broad areas and subsequently synthesized into four themes. These were not mutually exclusive: (1) Integrated and Collaborative Care; (2) Organisation and Delivery of Nursing & Midwifery Care in the Community; (3) Adjuncts to Nursing Care and (4) an Overarching Model.

Key Findings

Empirical Literature

- Community nursing services address diverse healthcare needs of individuals, families and communities across a wide range of healthcare settings inclusive of primary care or community health clinics, GP practices, people's homes, and the interface between primary and secondary healthcare. Community midwifery services where available address maternal and child health inclusive of perinatal care.
- The diversity of community nursing is further reflected in the various roles and categories of registered nurses inclusive of health visitors, public health nurses, school nurses, practice nurses, clinical specialist

[1] Most evidence related to nursing. Midwifery is noted where applicable.

nurses, advanced nurse practitioners and generalist nurses. The title 'community nurse' is also used implying a generalist although this is not always explicit. No variations of the title midwife are evident.

- Most interventions involving nurses either as leaders or participants in community based health service innovations are beneficial or, when compared to existing models of provision including medical provision, are at least non-inferior.
- The scope of community nursing is such that it encompasses individuals, families and communities across the lifespan but not through a lifespan approach for any one group of registered nurses i.e. the care of different individuals and populations involves specific nurses e.g. health visitors/public health nurses focusing on maternal health and child health welfare and protection, and primary, secondary and tertiary preventative care across the lifespan; clinical nurse specialists focusing on chronic illness management. Community midwifery servives, where they exist, provide antenatal and early postpartum care. The literature on home birth was not reviewed.
- Nurse-led care embedded in primary care/community settings is a consistent approach to services across the six original categories and four synthesized themes.
- The role of the nurse or midwife varies across individual and population groups with more or less emphasis on preventative care, health education, health promotion, case management, and self-management support.

Grey Literature

- Analysis of literature from 5 countries informed this review, namely, USA, UK, Australia, Canada and The Netherlands. Most literature relates to the UK.
- The diversity, scope and role of community nursing evident in the grey literature is similar to that seen in the empirical literature. Community midwifery services are more defined.

- Key messages from community nursing and midwifery services are that they are: interdependent on other services and part of an overall integrated health service; comprehensive, accessible, equitable and flexible; caseload and population focused with reference to subgroups (e.g. childbearing women and children, children with illnesses/disabilities, older adults, marginalized groups.); nurse-led or to a limited extent midwife-led, team oriented and collaborative in approach with intra-disciplinary and interdisciplinary working relationships.
- Competencies, including the skill set required of community nurses, with specific reference to PHNs are: analytic assessment; cultural competence; programme planning; communication; collaboration; financial planning and management; leadership and systems thinking; policy development; and skill in public health science. Competencies for midwives highlight the importance of cultural competence; communication and collaboration.
- The practice of community nurses and midwives needs to be based on discipline specific competencies, professional regulatory standards, values and principles, policy, and a theoretical foundation.
- From the review of grey literature it is evident that no relevant major or negative trials were missed.

Evidence Synthesis

- It is apparent that an integrated and collaborative care model is likely to be more effective than fragmented and segregated services.
- Integration involves seamless primary, secondary and tertiary services underpinned by a high degree of collaboration between healthcare professionals in these services, as well as organisational support for integration. The principal point of care needs to be in the primary care setting, close to the person's home and care should be person-centred.
- The organisation and delivery of nursing and midwifery care centres primarily around preventative or curative care with a strong emphasis on nurse-led interventions.

- The points of community nursing and midwifery care delivery are primarily home based but also include school/clinic and transitional between primary, secondary and tertiary services.
- Adjuncts to nursing and midwifery care, namely, the non-technical support of non-professionals, and technical support through telehealth enhances the delivery of community nursing and midwifery services.

Gaps in the evidence

- Although the evidence was categorised into broad areas for presentation of findings, no single overarching model of nursing and midwifery practice in the community that has been scientifically evaluated emerges from this evidence review.
- The principle health areas supported by community nursing identified in the evidence reviewed are: maternal health and wellbeing; child health welfare and protection; and chronic disease management of adults, inclusive of older adult populations. Little evidence is available on specific groups, for example, children with chronic conditions; people with intellectual disabilities or mental health problems; and ethnic minority groups.
- While the evidence overall points to a range of positive outcomes associated with different types of community nursing services, there remains uncertainty about which components offer the 'critical ingredients' for positive outcomes.
- Few studies are available comparing different community nursing services leaving unanswered questions regarding what is the best model of integration; which client groups and health problems require integration at the community level or at the community and hospital levels; and what models and/or service innovations are the most cost effective.
- The evidence overall is methodologically weak with few robust and well-designed RCTs determining the effectiveness of various interventions on community/ nursing or midwifery interventions.

In conclusion, although no single overarching model of nursing and midwifery practice in the community emerged from the literature, what does emerge are evidence-based dimensions that can inform an effective model for the future. The essential components of a proposed model of nursing and midwifery in the community for consideration are: (1) Right nurse or midwife providing the right care to the right people in the right setting - in essence there is space for both generalist and specialist depending on the care needs of the client, whether individual, family or community. (2) Use of generalist nursing wrapped around specialist nursing in providing care where clients at all levels require such service input for optimum outcomes. This approach will ensure that clinical outcomes are meaningful and lasting and more sustainable. Operationalising a model for nursing and midwifery in the community demands a need for strong leadership and effective clinical governance (See Figure 1).

Figure 1 refers to a conceptual framework drawn from the literature which captures the evidence visually. This can be used to inform a lifespan, person-centred approach to providing appropriate and effective nursing and midwifery care in a primary health care context and thus could represent a model to inform DoH deliberations. It is underpinned the principles of primary health care and person-centred care, supported by a philosophy of integration and collaboration. This home based client (individual, family or community) needs to be at the centre of any health service, exists on a trajectory from conception to death and another trajectory from wellness to illness. Their health needs on any point of either trajectory can be mainly preventative or curative or a mixture of both. Care needs may require a generalist nursing approach or may require a specialist nursing or midwifery approach. The dimensions relevant to nursing and midwifery which are critical to effective and efficient practice relate to: integration and collaboration; transitional where appropriate; appropriate education to include competencies and skills; targeted interventions and a care management approach. Effective and efficient care is supported by adjuncts including telehealth and non-professionals.

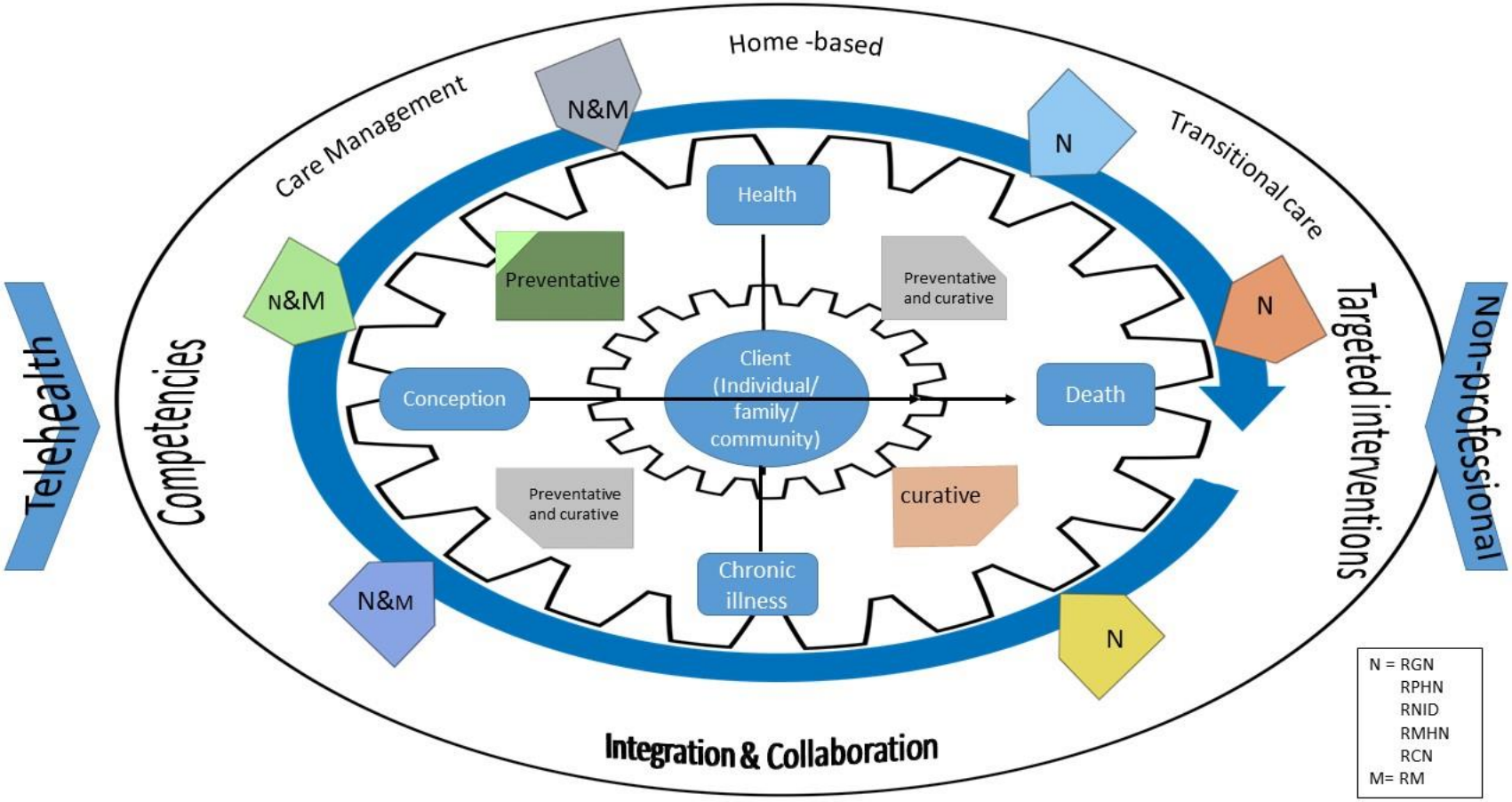

Figure 1: Conceptual Framework

Key Recommendations

- Develop an action strategy inclusive of all relevant stakeholders, underpinned by theoretical and empirical evidence to implement a model of nursing and midwifery in the community.
- Undertake a detailed examination of the full range of initiatives undertaken by nurses and midwives in the community using a predetermined criteria to facilitate comparison nationally and identify their alignment with evidence based interventions.
- Foster integration and collaboration from a health system to a personal level across all sectors to enhance responsive person-centred care.
- Adopting a new community nursing and midwifery model is recognised as a fundamental shift in health service reform and thus demands the input of robust change management principles and processes in order to be effective.
- Undertake a detailed examination of the full range of initiatives undertaken by nurses and midwives in the community using a predetermined criteria to facilitate comparison nationally and identify their alignment with evidence based interventions.
- Adopt realistic and relevant goals in terms of measuring cost effectiveness of nursing and midwifery interventions in the community, cognisant of the complexity of short, medium and long term health and well-being outcomes for primary care and public health interventions.
- Promote and support further research to identify how models and interventions of effective practice can be translated appropriately to the community context in Ireland.
- Develop a national strategic plan to support effective leadership and clinical governance for a community nursing and midwifery model.
- Ensure the application of the National Quality Framework to Nursing and Midwifery in the Community to enhance quality, effectiveness, efficiency and client/patient satisfaction.
- Optimise the full potential for the implementation of evidence-based nurse-led and midwifery-led care.

- Assess the effectiveness and impact of theoretically underpinned interventions on specific client health, well-being and satisfaction outcomes.
- Develop a national strategic plan in consultation with all relevant stakeholders, including the regulatory body Nursing and Midwifery Board of Ireland (NMBI), to support the development of a competency and continuing professional development framework for all community nursing and midwifery practitioners.
- Ensure the education and practice of nurses and midwives includes the full range of evidence-based interventions available, to augment community nursing and midwifery.
- Integration and collaboration requires resourcing of information technology systems both to enhance provider communication as well as enhance patients/clients' health outcomes.

Chapter 1: Introduction

1.1 Background

The organisation, delivery and funding of healthcare is a source of concern for all governments worldwide and is subject to perpetual change and revision. While the delivery of efficient, safe, equitable and cost effective healthcare is of paramount importance; the identification of a model that delivers across each of these dimensions presents a ubiquitous challenge to all governments and their associated healthcare agencies. Successive health strategies strive to place primary care at the centre of the health services, as this is the first point of access to healthcare for most people. As nurses and midwives constitute the largest group of frontline staff, it is critically important to examine how their services are organised and delivered. Central to this process is the identification and operationalisation of cogent and comprehensive models of community nursing and midwifery practice.

The purpose of this review is to identify current models of registered nursing and midwifery practice in the community with the aim of informing subsequent policy developments.

1.2 Nursing and Midwifery Models in a Community Context

There are variations in the community setting as to how care is delivered and coordinated, often as a result of the underpinning economic model of the healthcare system. Thus in some systems there is a significant separation between the provision of primary medical care and other aspects of primary healthcare (such as nursing and midwifery) whereas in other systems they are quite closely integrated. This may arise from historic arrangements but is usually sustained by different contractual agreements with the different healthcare professionals. Various models of care exist with a diversity of service provision and providers (O'Sullivan, Cullen et al. 2015, Pye 2015). Systems also vary in the proportion of primary care (including primary medical care) delivered by health professionals other than doctors e.g. by advanced nurse practitioners. There is some reasonably robust literature comparing systems at the broadest (country) level but there is a paucity of published literature describing and collating

primary care delivery models with much precision and even less, which compares models.

The health needs of Western populations have changed due to factors such as increases in life expectancy, increased ethnic and cultural diversity, advances in health, social and welfare contexts as well as greater care complexity. All health systems face similar problems of increasing aging and dependent populations with fewer younger carers and escalating costs of new forms of medical treatment and technology. Primary health care planning and service delivery is compromised by multiple complex challenges related to: increasing populations; a higher prevalence of chronic health conditions; concerns about mental health; obesity; and a rise in the number of individuals living into old age, with increasing levels of dependency. Internationally, concerns in relation to the provision of health care relate to a costly and potentially unsustainable future for the health services over the next 30 years, due largely to a growth of chronic conditions. A change in primary health care structures will be required to underpin service provision at affordable levels. This will require better use of people and resources, enhanced partnerships and systems of health care, improved governance and leadership, together with robust methods of evaluation. Countries with more highly developed systems of primary health care tend to have higher health care spend and better outcomes (Kringos et al. 2013, Starfield et al. 2005).

Several authors highlight the need to reinvent primary health care (Rawaf, et al. 2008, Chan 2009, Frenk 2009; Department of Health and Children 2001). The need for change includes the increased provision of both community involvement and community services. Change requires comprehensive approaches at different levels and includes doctors, team practice, hospital, the wider environment tailored to specific settings and target groups (Grol and Grimshaw 2003; Department of Health and Children 2001). Four key essential attributes are associated with primary care and primary health care service delivery, these being, first-contact care, person-focused care, as well as comprehensive and coordinated care, that is both family and community

orientated (Kringos et al. 2010, Starfield et al. 2005, WHO, 2003, 2008). The care delivery is at the primary level, reflecting the first line of contact with the health care system and the reorientation of these services in meeting health need, providing preventative intervention of care (WHO 2003, 2008). This process is facilitated through collaborative practices with the individual, family and community encouraging empowerment and participation (WHO 2003, 2008). The professional activities employed to achieve this goal reflect the aim of collaboration, participation and empowerment, working with the client (Poulton et al. 2000, WHO 2003, 2008). Thus, there is a shift in emphasis from that of 'professional health care provider' to that of 'enabler and facilitator of health' (Mason and Clarke 2001). This form of service delivery, demands of community practitioners, the need to provide a client/person centred mode of care delivery, with shared partnership and collaboration in decision making; recognising clients as being central to this process (WHO 2003, 2008).

Frenk (2009) recommends that primary care networks are reoriented in order to become seamlessly integrated into the rest of the health system and thus ensure that: *high-quality services are provided on the basis of a defined population, through proactive strategies, favouring continuity of care, guaranteeing an explicit set of entitlements, and assuring universal social protection in health (p.72).* While this approach is laudable, caution needs to be exercised in terms of believing that populations are homogenous and that it is possible to identify 'neat' population groupings. Therefore challenges will be inherent in attempting to fund broad based primary care interventions and separating out the nursing or midwifery input, not to mind the input of other primary care team members.

1.3 Reviewing the evidence on current models of community nursing and midwifery

This reorientation in health service delivery highlights the imperative to determine effective models of primary care. Given that nurses and midwives are the largest group in the frontline of healthcare delivery, it is therefore critically important to address how their services are organised and delivered and to determine models of all registered nursing and midwifery professions in community practice that are most effective. There is a paucity of literature

examining models from an international perspective and those reports that do exist are very selective in the countries studied and do not indicate the quality of the evidence from which they draw their conclusions.

Given the paucity of existing, collated evidence regarding the effectiveness of models of community nursing/midwifery to inform policy, The Department of Health (DoH), issued a call for tenders in August 2015, to complete a review of evidence on current models of registered nursing and midwifery practice in the community, to inform policy development. A consortium of Universities (UCC, NUIG, UCD) prepared a proposal bidding for the tender, led by the School of Nursing and Midwifery, UCC. The proposal was successful and the tender awarded in October 2015.

1.4 Aim of this review

As requested by the Department of Health, the purpose of this evidence review is to identify current models of registered nursing and midwifery practice in the community to inform policy development by:

- Systematically searching international empirical evidence to determine models of registered nursing and midwifery models of care in the community.
- Sourcing information regarding existing models of community nursing and midwifery in Ireland.
- Critically appraising models and approaches with particular reference to the associated outcomes and the quality of the evidence presented.
- Considering suitable models appropriate to the demographical and geographical context of Irish society.

The review therefore considers both the international landscape, as well as focusing specifically on existing Irish models.

1.5 Structure of this review

Following on from this introductory chapter, the review is divided into six sections. In Chapter 2, the methodology of the evidence review is presented with

detailed consideration of the specific research questions. In Chapter 3, a synthesis of data extracted from the international empirical literature is structured according to six categories. This is followed by consideration of models presented in the grey literature from Australia, America, Canada, Netherlands and the UK, together with an overview of Irish grey literature. Chapter 5 presents a narrative summary of outcome of a survey of national leaders in community nursing and midwifery. This is followed by an in-depth discussion, contextualisation and conceptualisation of findings and recommendations. Detailed data extraction tables are provided within the Appendices.

1.6 Summary

This review seeks to address a deficit regarding effective models of nursing and midwifery in the community by critically examining international literature and existing structures and initiatives in Ireland. The review, presenting a breadth of evidence with in-depth consideration of important areas such as outcomes and the quality of studies, together with a detailed knowledge synthesis and presentation of recommendations for policy, practice, research and education, will inform policy development relevant to community nursing and midwifery nationally and may be of interest to policy makers, researchers and practice leaders internationally.

Chapter 2: Review Methodology

2.1 Introduction

As specified by the Department of Health, the aim of this project was to deliver an evidence review to identify current models of registered nursing and midwifery practice in the community to inform policy development.

2.2 Review Questions

Specific review questions relating to this aim included:

1. What definitions exist for community nursing or midwifery?

2. What are the different models of care available for community nursing or midwifery?

3. What are the main components/features of community nursing or midwifery models of care?

4. What is the focus of the various community nursing or midwifery models of care in terms of (a) population groups; (b) health conditions or problems; and (c) healthcare contexts / settings?

5. What nursing / healthcare professionals / other personnel are involved in implementation of various community nursing or midwifery models of care?

6. What is the range of outcomes assessed in community nursing or midwifery models of care?

7. What components of each community nursing or midwifery model of care are associated with improved outcomes?

8. What are the resource implications identified in specific community nursing or midwifery models of care?

9. What are the enablers / barriers to implementation of the model as reported by authors?

10. What are the recommendations made for practice, education, research and/or policy?

11. What level of quality is the evidence obtained?

2.3 Review Methods

This desk-based secondary research evidence review was guided by systematic review methodology (Higgins & Green 2011a; Centre for Systematic Reviews and Dissemination 2008) and was conducted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (Moher et al. 2009).

In addition to the empirical review of international evidence relating to models of community nursing and midwifery, a review of grey literature, focusing on Ireland together with the United Kingdom, Netherlands, Australia, America and Canada was conducted. These countries were purposively selected because a preliminary search and screening for relevant literature found that most international empirical evidence was published from these countries.

Consideration was also given to the existence of models of care in Ireland but that may not be in the published literature. To this end, a survey was sent by email to the Chair of the National Directors of Public Health Nursing, and all community related Professional Development Co-ordinators requesting information on any models/interventions/initiatives involving community nursing/midwifery/ public health nursing in their areas (See Appendix 2).

2.3.1 Selection Criteria for Studies

Initial Search

The PICOCS framework (Box 1) was used to develop an *initial search strategy* and to support selection criteria (Davies 2011).

Box 1: PICOCS framework guiding selection criteria	
Population:	The whole population including (but not exclusively): new mothers, infants and children, adolescents, children with complex needs, including disabilities, older adults, adults with chronic illnesses, adults with mental health issues, people in need of palliative care, vulnerable populations including minority groups, migrants and travelling communities, victims of / those at risk of domestic violence or sexual abuse, school going children and adolescents.
Interventions:	Any intervention that manages nursing and midwifery care in the community in comparison to no intervention/usual care.
Comparator:	No intervention/usual or standard care or service delivery/another model or programme of care or integration.
Outcomes:	Any measures of patient centred, process, service or economic outcomes. Any measures/reporting of barriers and enablers relating to implementation of models of community nursing or midwifery. Any recommendations regarding education, research, service delivery, policy relating to community nursing or midwifery.
Contexts:	Community based nursing and midwifery services delivering care across a wide variety of settings including GP Practice, home, schools, community and health centres. **Added post-hoc:** Countries classified as high human development level (UNDP, 2014),
Studies:	Systematic reviews of reviews, meta-analysis, systematic reviews and randomised controlled studies, meta-synthesis, narrative reviews (Narrative reviews and meta-synthesis were later excluded). In addition, peer reviewed papers, evidence based policy documents or mixed method studies reporting on the implementation or evaluation of programmes/models in Ireland, United Kingdom, Netherlands, Australia, America and Canada. Published between November 1st 2005 and 31st October 2015 (later reduced to 1st November 2010 – 31st October 2015). Written in the English language.

Papers excluded were those that:

- Focused on models of nursing or midwifery delivered in hospital or healthcare settings other than the community;
- Reported on community based interventions that did not contain a signficant nursing or midwifery component;

- Were not meta-analysis, systematic reviews, meta synthesis, narrative reviews or randomised controlled trials, or evidence based policy documents;
- Were conference abstracts and/or presentations;
- Reported on randomised controlled trials found to be included as evidence in systematic reviews or meta-analysis eligible for this review;
- Reported on studies, randomised controlled trials or reviews at protocol, feasibility or pilot stage.

Post-hoc Limits

Due to the high volume of papers (n= 406) retrieved and considered eligible for data extraction based on initial set of inclusion criteria, and in view of the timeframe for completion of this study, further exclusion criteria were applied post-hoc as follows:

- Papers published outside the timeframe of November 1st 2010 – October 31st 2015.
- Systematic reviews of reviews, systematic reviews, or meta-analysis where less than 50% of the studies related to nurses / midwives, these studies;
- Narrative reviews, meta synthesis studies;
- Papers from countries classified as low-medium human development level (number 103 and lower on UNDP (2014) report).

2.3.2 Search Strategy

International empirical evidence

The following databases were searched: CINAHL, MEDLINE, PsycINFO and SocINDEX using the EBSCO platform. The Cochrane Library was searched to identify papers within the Cochrane Database of Systematic Reviews, and trials within the Cochrane Central Register of Controlled Trials (CENTRAL). The Cochrane Library also provided access to searching the Database of Abstracts of Reviews of Effects (DARE), and the Health Technology Assessment Database. For each database, in consultation with the librarian on the team, a specific

search strategy was developed combining key word terms and their variants in Title / Abstract / subject headings as appropriate. Two members of the team checked the search strings for accuracy. The full search terms and combinations are presented in Appendices 3 (CINAHL), 4 (MEDLINE), 5 (PsycInfo), 6 (SocIndex) and 7 (Cochrane Library).

Grey Literature from selected countries

Given the volume of international evidence in the grey literature emerging from the test searches, and recognising the need to adopt a systematic, precise approach to the identification of studies for inclusion, the team agreed that given the timeframe of the study, it would be reasonable to select five countries for in-depth analysis of models and policies of nursing/midwifery. This approach mirrors that of Hanafin and O'Reilly (2015a) in their review on maternity systems commissioned by DoH. The countries for inclusion were selected based on the volume of their empirical research outputs, identified through quantitative analysis of the country of origin of the studies identified in the empirical evidence review. As a result the following countries were included: USA, UK, Australia, Canada and The Netherlands. With the exception of USA, these countries were also included in the Hanafin and O'Reilly study (who included New Zealand as opposed to USA), which noted that these jurisdictions have both commonality and divergence with the Irish system.

Grey literature for each country was searched using the Google 'advanced' search interface conducted on a 'clean' computer where cookies and previous search histories and Google accounts were deleted to avoid contamination of the Google search. The search strategy is outlined in Appendix 8 (Grey Literature).

2.3.3 Study Selection and Review Process

International empirical evidence

All results yielded from the search process were exported to Endnote (Version 7) following which duplicates were identified and removed. The total volume of search outputs (n=1797) were then divided between six paired team members and uploaded to Covidence (an online software programme to enable screening of records for systematic reviews). Each pair individually screened each record by title and abstract, according to the inclusion criteria with consideration for which papers needed full text review. The potentially eligible full text papers (n=720) were then read by the paired teams which, through a process of consensus agreed on the papers to be included in or excluded from the review. It was not possible to obtain the full text of 3 papers. All team members were involved in this process with a relatively equal number of papers allocated to each pair. Disagreements were resolved by consensus within each paired team and if necessary involved a third reviewer. All decisions were recorded and records were maintained. A summary of the search outputs from the review process is provided in Figure 2. A total of 127 papers met the inclusion criteria representing 118 studies.

Grey Literature from selected countries

The search of the grey literature was conducted predominantly to source relevant data, trials, policy and reports not published commercially or indexed by major databases in each of the reference countries. Due to the volume of evidence from the Google searches, and the ability of Google to rank by relevance, two members of the research team reviewed the first 50 'hits' from each country for relevance. Documents were considered relevant if they discussed models or interventions relevant to community nursing and/or midwifery. They were then downloaded for full text review and data extraction. A summary of outputs from this search is provided in Table 1. A total of 23 documents from across the 6 countries were included.

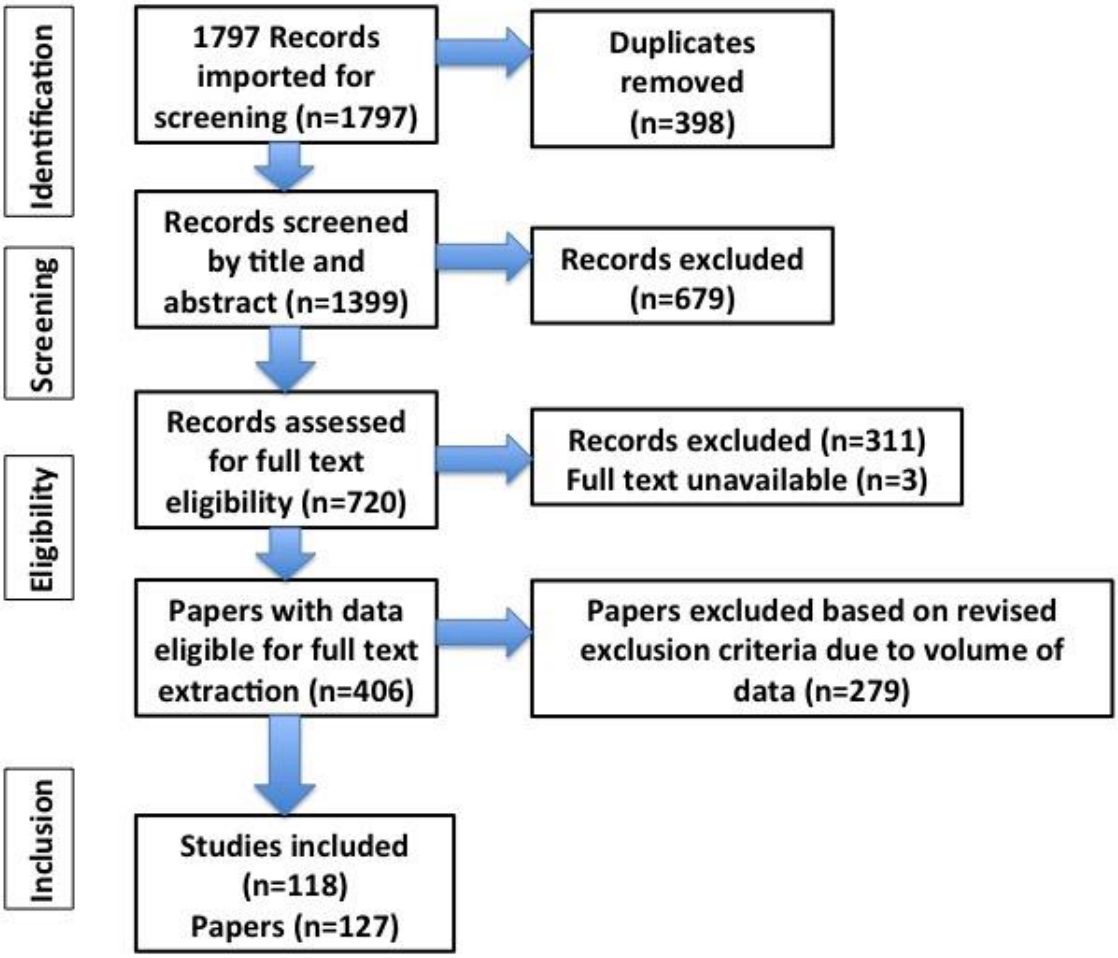

Figure 2: PRISMA Flow Chart

Table 1: Summary of outputs from international grey literature review

Country	USA	UK	Netherlands	Australia	Ireland	Canada
n after initial Google search	50	50	50	50	50	50
n remaining after title review	5	18	8	8	21	6
n remaining after full text review	2	8	8	8	8	5
Final n papers included for data extraction	**1**	**5**	**1**	**6**	**5**	**5**

2.3.4 Data Extraction

Data were extracted from all papers, meeting the inclusion criteria. The review questions formed the basis for structuring the data extraction tables. Data were extracted based on: authors, date and country of origin; type of evidence; aim of the study; definitions relating to models of community nursing or midwifery, population group and size; setting; health condition / problems; outcomes assessed and effects; components of the intervention associated with improved outcomes; resource implications; enablers and barriers relating to the implementation of the model of nursing or midwifery; conclusions and recommendations for education, research, policy and/or practice. The same table was used to extract information from both grey and empirical evidence.

2.3.5 Quality Appraisal

Studies were stratified and grouped according to study type i.e. RCTs and systematic reviews, meta-analyses or meta-reviews and a quality assessment of each were conducted as follows:

Randomised Controlled Trials

The Cochrane Risk of Bias Tool for Randomised Controlled Trials (Higgins et al. 2011[a,b]) as recommended by Zeng et al. (2015) was used to assess the quality of RCTs. This risk of bias tool covers the following six domains:

- Random sequence generation (selection bias)
- Allocation concealment (selection bias)
- Blinding of participants and researchers (performance bias)
- Blinding of outcome assessment (detection bias)
- Incomplete outcome data (attrition bias)
- Selective reporting (reporting bias)
- Other bias

Response options were ***low risk, high risk,*** or ***unclear risk***.

Systematic reviews, meta-analyses, meta-reviews

The quality of systematic reviews/meta-analyses and meta-reviews was assessed using the AMSTAR as proposed by Shea et al. (2007 2009). This tool consists of

11 items that assess the methodological quality of systematic reviews with four response options: *Yes, No, Can't answer*, or *Not applicable*. The option of '*Can't answer*' is selected when the item is not described by the authors although relevant. The option 'not applicable' is used when the item is not relevant. The AMSTAR tool has demonstrated good agreement, reliability, construct validity, and feasibility (Shea et al. 2009). The items are as follows:

1. Was an 'a priori' design provided?
2. Was there duplicate study selection and data extraction?
3. Was a comprehensive literature search performed?
4. Was the status of publication (i.e. grey literature) used as an inclusion criterion?
5. Was a list of studies (included and excluded) provided?
6. Were the characteristics of the included studies provided?
7. Was the scientific quality of the included studies assessed and documented?
8. Was the scientific quality of the included studies used appropriately in formulating conclusions?
9. Were the methods used to combine the findings of studies appropriate?
10. Was the likelihood of publication bias assessed? *(Only applicable to meta-analyses)*
11. Was the conflict of interest included?

Grey Literature

The quality of the grey literature was assessed using the AACODS (Authority, Accuracy, Coverage, Objectivity, Date, Significance) Checklist (Tyndall 2008). The AACODS Checklist facilitates the appraisal of most types of grey literature and reviewers must answer yes, no, or unclear to the following:

Authority: Identifying who is responsible for intellectual content

Individual Author

- Associated with a reputable organisation?
- Professional Qualifications or considerable experience?
- Produced/ published other work (grey / black) in the field?

- Recognised expert, identified in other sources?
- Cited by others?
- Higher degree student under "expert" supervision?

Organisation / Group

- Is the organisation reputable? (e.g. WHO)
- Is the organisation an authority in the field?

In all cases

- Does the item have a detailed reference list / bibliography?

Accuracy:

- Does the item have a clearly stated aim / brief?
- If so, is this met?
- Does it have a stated methodology?
- If so, is it adhered to?
- Has it been peer reviewed?
- Has it been edited by a reputable authority?
- Supported by authoritative, documented reference or credible sources?
- Is it representative of work in the field?
- If NO, is it a valid counterbalance?
- Is any data collected explicit and appropriate for the research?
- If item is secondary material (e.g. a policy brief of a technical report) refer to the original. Is it an accurate, unbiased interpretation or analysis?

Coverage: All items have parameters which define their content coverage. These limits might mean that a work refers to a particular population group, or that is excluded certain types of publication. A report could be designed to answer a particular question, or be based on statistics from a particular survey.

- Are any limits clearly stated?

Objectivity: It is important to identify bias, particularly if it unstated or unacknowledged.

- Opinion, expert or otherwise, is still opinion: is the author's standpoint clear?
- Does the work seem to be balanced in presentation?

Date: For the item to inform your research, it needs to have a date that confirms relevance

- Does the item have a clearly stated date related to content? No easily discernible sate is a strong concern
- If no date is given, but can be closely ascertained, is there a valid reason for its absence?
- Check the bibliography: have key contemporary material been included?

Significance: This is a value judgement of the item, in the context of the relevant research area

- Is the item meaningful? (this incorporates feasibility, utility and relevance)
- Does it add context?
- Does it enrich or add something unique to the research?
- Does is strengthen of refute a current position?
- Would the research area ne lesser without it?
- Is it integral, representative, typical?
- Does it have impact? (in the sense of influencing the work or behaviour of others)

2.3.6 Data synthesis

International empirical literature

The heterogeneity of the interventions reviewed and associated outcomes prevented the performance of a meta-analysis. The extracted data were categorised by a subgroup of the research team. Each study aim was reviewed in an effort to identify and agree core community nursing service, process or outcomes to facilitate organisation of the empirical data for the next phase of review. These six categories are presented in Chapter 3.

Grey Literature

The extracted data were synthesised into a narrative summary of findings by country. This synthesis is presented in Chapter 4.

Email Survey of National Leaders in Community Nursing or Midwifery

The data from the email survey of national leaders were reviewed, tabulated and are presented for synthesis in Chapter 5.

2.4 Summary

This chapter has presented the rigorous methodology for this review of effective models of community nursing and/or midwifery. It has highlighted the significant quantity of evidence reviewed in a relatively short timeframe. Quality assessment instruments selected are described in depth together with the inclusion and exclusion criteria applied and method of data extraction. The outcome of this process is presented in the Chapters that follow.

Chapter 3: Review of International Empirical Evidence

3.1 Introduction

In this chapter, the results of the review of international empirical evidence are presented. The first section presents an overview of the characteristics of all included studies and the degree to which they answer the research questions central to this review. This is followed by a summary of data presented to reflect the six categories identified.

3.2 Characteristics of all included studies

A total of 118 empirical studies were included in this evidence review. The papers reviewed represent four types of evidence as presented on Table 2 by category area. The evidence was drawn from meta-analyses (n=3), systematic reviews with meta analysis (n=3), systematic reviews (n=27), and randomised controlled trials (n=85). No meta-reviews were sourced.

Table 2: Types of Evidence by Thematic Area

	Meta Review	Meta Analysis	Systematic Review and Meta Analysis	Systematic Review	RCT
Integrated and collaborative care models (n=33)	0	1	1	9	22
Home based community nursing (n=32)	0	0	1	8	23
Telehealth (n=15)	0	0	0	1	14
Transitional Care (n=9)	0	1	1	3	4
Non professionals (n=10)	0	1	0	3	6
Preventative (n=19)	0	0	0	3	16
Total	**0**	**3**	**3**	**27**	**85**

The country of origin of the studies is outlined in Table 3. The majority of empirical evidence was generated in the US (n=44), followed by Australia (n=17). Interestingly, no empirical evidence, meeting the inclusion criteria for this part of the review, emerged from Ireland.

An analysis of coverage in terms of the number of studies that addressed each question in the empirical review is presented in Table 4. There was some diversity across the studies on the extent to which the 13 questions relevant to the review were addressed.

Table 3: Country of origin of studies (n=118 studies)

Country of origin	Integrated and collaborative care models (n=33)	Home based community nursing (n=32)	Telehealth (n=15)	Transitional Care (n=9)	Non professionals (n=10)	Preventative (n=19)
USA (n=44)	7	8	8	2	6	13
Australia (n=17)	4	5	2	2	4	0
UK (n=15)	4	6	1	1	0	3
Netherlands (n=13)	7	2	1	2	0	1
Canada (n=5)	3	2	0	0	0	0
New Zealand (n=4)	2	1	0	1	0	0
Spain (n=3)	1	2	0	0	0	0
Switzerland (n=3)	2	1	0	0	0	0
Iran (n=3)	0	1	1	0	0	1
China (n=2)	0	1	0	1	0	0
Sweden (n=1)	0	1	0	0	0	0
Japan (n=1)	0	1	0	0	0	0
Germany (n=1)	0	1	0	0	0	0
Norway (n=1)	0	0	0	0	0	1
Finland (n=1)	0	0	1	0	0	0
Malaysia (n=1)	1	0	0	0	0	0
Austria (n=1)	1	0	0	0	0	0
Portugal (n=1)	0	0	1	0	0	0
Italy (n=1)	1	0	0	0	0	0

Table 4: Number of studies providing data on each question addressed in this report by thematic area

	Integrated and collaborative care (n=33)	Home based community nursing (n=32)	Telehealth (n=15)	Transitional care (n=9)	Non Professionals (n=10)	Preventative (n=19)
Q1 Defintions	4	7	2	2	2	1
Q2 Overview of model	31	32	15	7	10	19
Q3 Main components	29	29	14	9	10	19
Q4 Population group and size	33	32	15	9	10	19
Q5 Health condition / problem	33	32	15	9	9	19
Q6 Healthcare context/setting	33	32	15	9	10	19
Q7 Nursing disciplines involved	33	31	15	8	10	19
Q8 Outcomes assessed and effects on outcomes	32	32	15	9	10	19
Q9 Components of intervention associated with improved outcomes	27	15	13	7	9	18
Q10 Resource Implications	21	18	2	4	3	11
Q11 Enablers	16	8	9	2	6	10
Q12 Barriers	10	8	11	2	5	8
Q13 Recommendations	29	24	13	9	9	19

3.3 Quality review of included studies

The Cochrane ROB tool was applied to 85 RCTs and the AMSTAR to 35 review studies. A summary of the risk of bias detected for the RCTs included is highlighted in Figure 3. As indicated, there was considerable variation in the quality of RCTs included. Blinding of participants was the most consistent criterion met in most studies, evident in approximately 30% of RCTs. The nature of many RCTs e.g. home based care, is likely to have contributed to challenges in meeting these criteria. Based on these limitations and unclear or high risk of bias evident for other criteria presented in Figure 2, it can be concluded overall that the methodological quality of RCTs included in this review is weak.

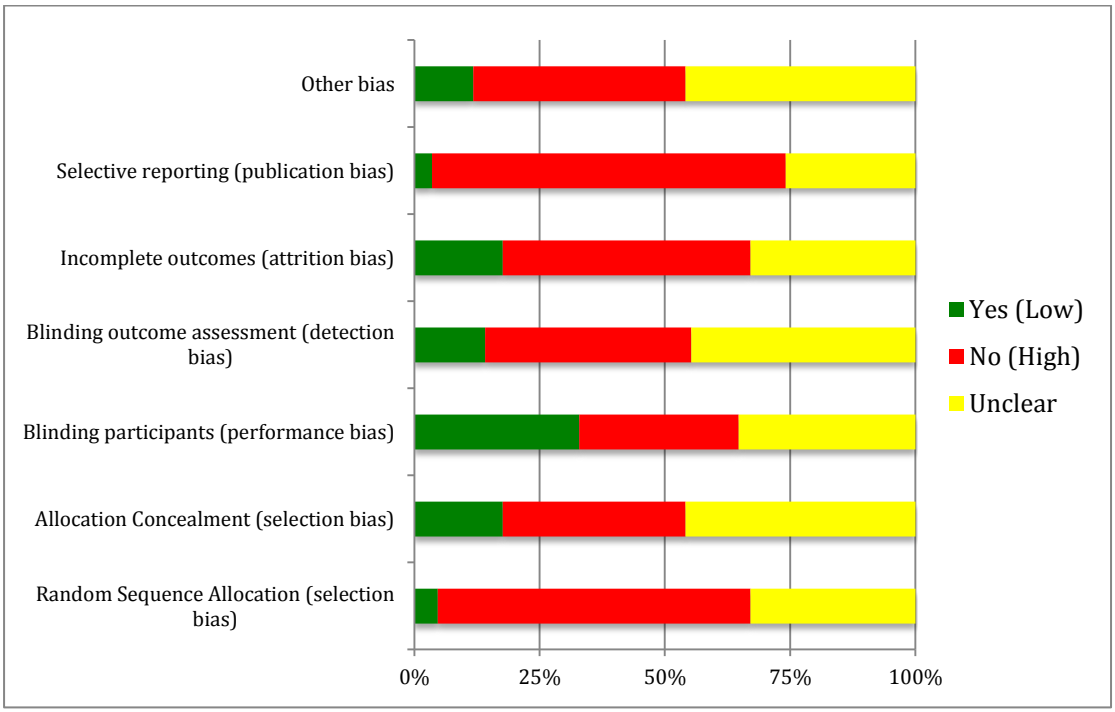

Figure 3: Summary Bar Chart of Risk of Bias for all RCTs Included in this study (n=85)

However, the pattern of quality was found to vary across the 6 categories of community nursing identified. Most RCTs in the the transitional care category met al.l criteria assessed as evident in over 60% of studies. Over 40% percent of the RCTs within the integrated/collaborative category met al.l criteria assessed. These two categories compared favourably over home based RCTs with only 25% of studies meeting all quality criteria. The methodological quality of RCTs

was found to be weakest for telehealth and preventative care with less than 10% of the latter and less than 15% of the former meeting all criteria.

Figure 4 indicates that the methodological quality of the review documents is substantially better, with most studies included conforming to quality recommendations, in the majority of areas. In fact, as the figure below demonstrates, the construct and design of the studies were likely to prevent bias. In examining the internal validity of the systematic reviews, certain facts emerge. The characteristics of included studies were specified in over 90% of studies. Quality assessment, details of the literature search, duplicate selection and data extraction procedures as well as appropriate use of quality to formulate the conclusion was evident in over 75% of the studies. This may be contrasted with weaker results in relation to the likelihood of publication bias being assessed and also the inclusion of a list of included / excluded studies. Unlike the RCTs, no particular differences in quality are apparent across the systematic reviews in the 6 categories of nursing. However, the lesser number of reviews identified comparative to the number of RCTs may have affected this.

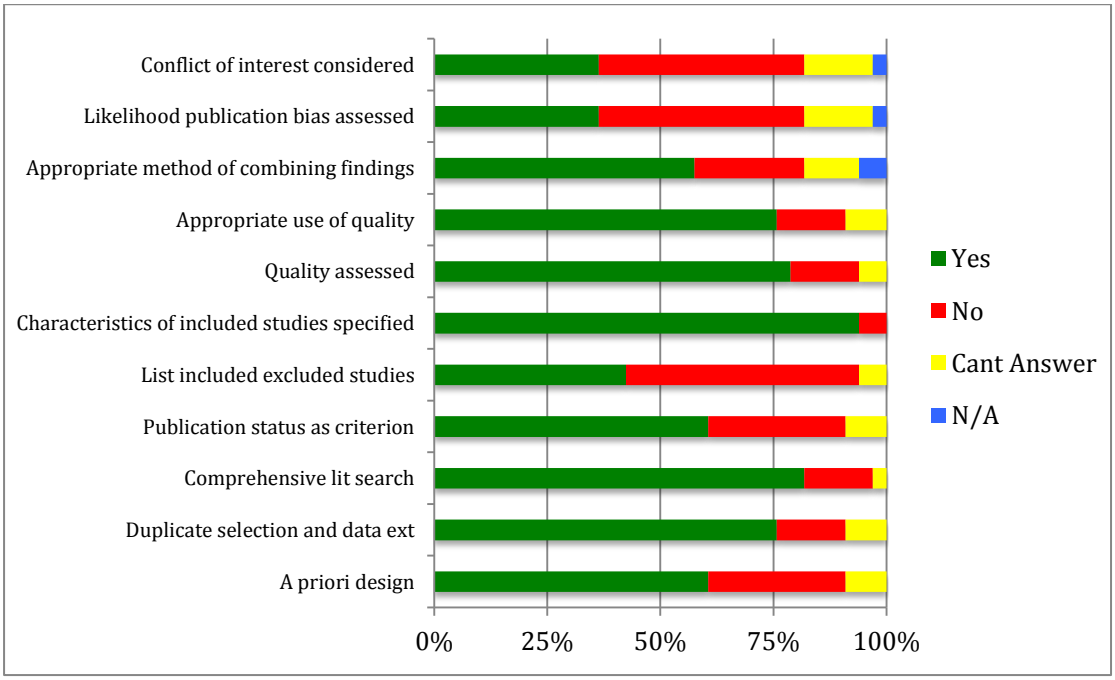

Figure 4: Summary Bar Chart of the AMSTAR quality review (n=33 studies)

3.4 Review and analysis of data

To facilitate review and analysis of this large number of studies (n=118) it is necessary to identify distinct (but not mutually exclusive) categories based on the primary aim of each research paper. This resulted in the emergence of six category areas i.e. Integrated and Collaborative Care (n=33); Home Based Community Nursing (n=33); Telehealth (n=15); Transitional Care (n=9); Non-Professional (n=10) and Preventative (n=18). Sub categories are presented on the visual overview (Figure 5).

There was considerable diversity across the studies reviewed on the extent to which the research questions relevant to this review were addressed. This in particular related to what type of models have been developed and whether they are led by, or involve nurses or midwives (see Table 4). In the Systematic reviews in relation to maternal and child health, these sometimes include midwives, however this is not always reflected in the text. Furthermore in some of the individual papers, midwives are included but are often not visible. Therefore, midwife is only documented where relevant papers have included them specifically.The following sections present a synthesis of the findings under the identified category addressing each of the questions as appropriate. In the first two categories, where the number of studies for synthesis is particularly large, tables have been used to process elements of the synthesis.

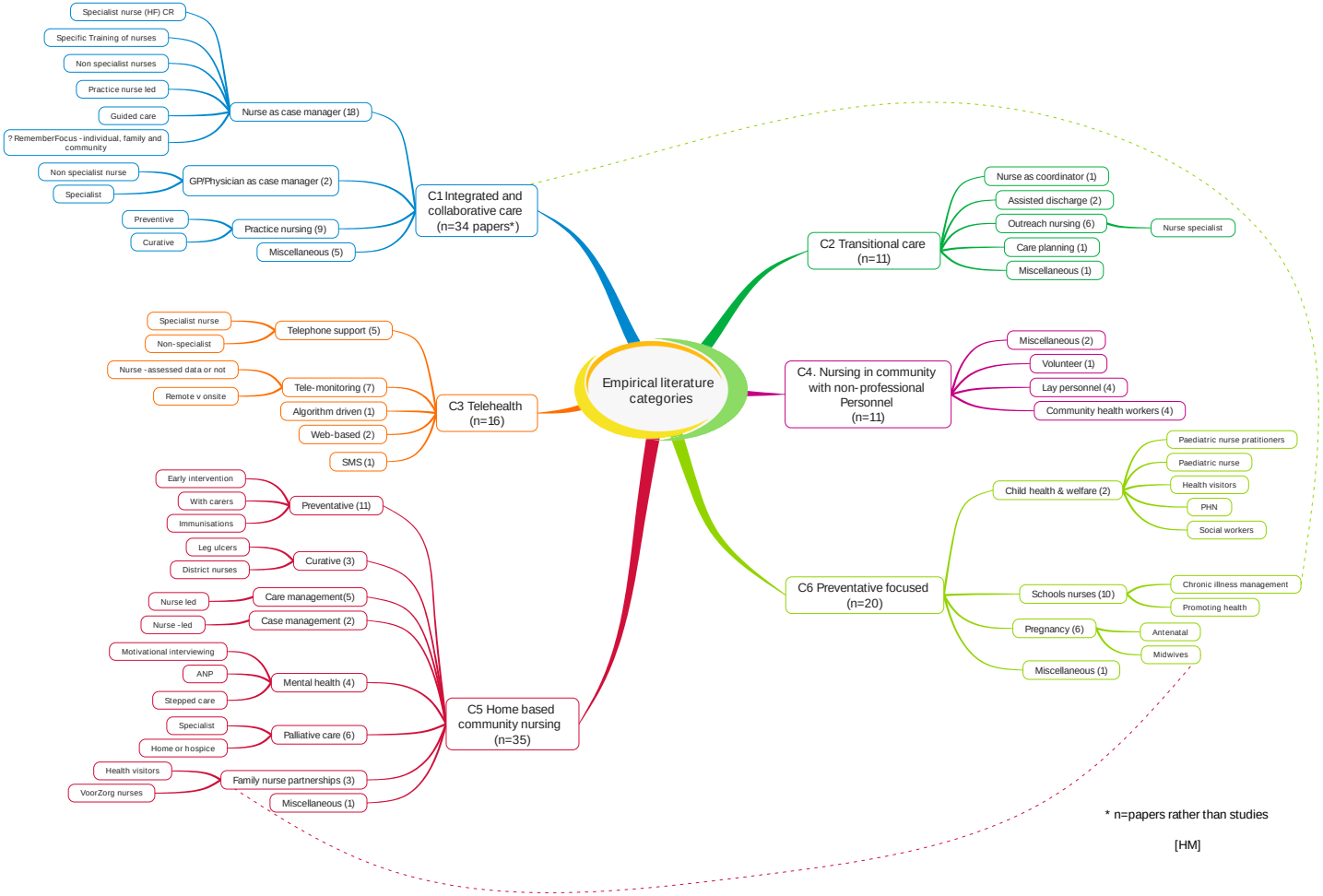

Figure 5: Visual overview of categories and sub categories of evidence

3.5 Integrated and Collaborative Care

Collaboration and integration are often interpreted in different ways by healthcare professional. Within the community setting integrated and collaborative care involve health care professionals working in tandem to improve patient outcomes.

3.5.1 Characteristics of Studies

A total of 33 studies reported on integrated and collaborative care. This evidence is drawn from meta-analysis (n=1) systematic reviews with meta-analysis (n=1), systematic reviews (n=9) and RCTs (n=22).

Studies were primarily from the USA (n=7), Netherlands (n=7), UK (n=4), Australia (n=4), Canada (n=3), Switzerland (n=2) and New Zealand (n=2). Studies also originated from Italy (n=1), Spain (n=1), Austria (n=1) and Malaysia (n=1).

Quality assessments were completed for all included studies as outlined in Chapter 2. The Risk of Bias Tool (ROB) assessed quality of RCTs (n=22) and most studies showed a largely unclear or mixed risk of bias as outlined on Figure 6. However, two studies demonstrated low risk of bias overall (Albers-Heitner et al. 2012, Houweling et al. 2011), with the remaining demonstrating high risk of bias across several domains (Coburn et al. 2012, Jonkers et al. 2012, Coventry et al. 2015).

Systematic reviews and meta-analysis studies were assessed using the AMSTAR. The systematic reviews were generally found to be of medium to high quality overall (Table 5).

	Random sequence allocation (selection bias)	Allocation concealment (selection bias)	Blinding of participants & personnel (performance bias)	Blinding of outcome (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Levine et al. 2012	🟡	🟡	🟡	🟡	🟡	🟡	🟡
Senior et al. 2014	🟡	🟡	🟡	🟡	🟡	🟡	🟡
Oosterban et al. 2013	🔴	🔴	🟢	🟢	🟢	🟢	🟢
Coventry et al. 2015	🟢	🔴	🔴	🟢	🟢	🟢	🔴
Stewart et al. 2014	🟢	🟢	🟡	🟢	🟢	🟢	🟢
Cicolini et al. 2014	🟢	🟢	🟡	🟡	🟢	🟢	🔴
Adlbrecht et al. 2014	🟡	🟡	🟡	🟡	🟡	🟡	🟢
Coburn et al. 2012	🟢	🔴	🔴	🔴	🟢	🟢	🟡
Jonkers et al. 2012	🟢	🟢	🔴	🔴	🔴	🟢	🟡
Ortego et al. 2014	🟢	🟢	🟡	🟢	🟢	🟢	🟡
Boult et al. 2011	🟢	🟢	🟡	🟡	🟢	🟢	🟢
Albers-Heitner et al. 2012	🟢	🟢	🟢	🟢	🟢	🟢	🔴
Kneipp et al. 2011/13	🔵	🟢	🔴	🔴	🔴	🟢	🟢
Selvarej et al. 2012	🟢	🟢	🟢	🟢	🟡	🟢	🟡
Katon et al. 2012	🟡	🟡	🟢	🟢	🟢	🟢	🟢
Richardson et al. 2013	🟢	🟢	🟢	🟡	🟢	🟡	🟡
Tiessen et al. 2013	🟡	🟡	🟡	🟡	🟡	🟢	🔴
Houweling et al. 2011	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Clark et al. 2012	🟢	🟢	🟢	🟢	🟡	🟢	🟡
Harris et al. 2015	🟢	🔴	🔴	🟢	🟡	🟡	🟡
Elley et al. 2011	🟡	🟡	🟢	🟡	🟢	🟢	🟢

Figure 6: Visual Summary of the Risk of Bias Assessed Using the Cochrane ROB Tool – Integrated and Collaborative Care

Table 5: Summary of the AMSTAR applied to studies in Integrated and Collaborative Care Category

	A Priori design	Duplicate selection and data extract	Lit. search	Publication status as inclusion criterion	List of incl/ excl studies	Characteristics of included studies specified	Quality assessed	Appro. use of quality to formulate conclusions	Appro. method of combining findings	Likelihood of publication bias assessed	Conflict of interest considered
Low et al. 2014	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	Yes
Stall et al. 2014	Yes	Yes	No	No	No	Yes	No	Yes	No	No	Yes
Clarke et al. 2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Swan et al. 2015	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No
Martinez-Gonzalez et al. 2014	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Martinez-Gonzalez et al. 2015	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Martin-Misener et al. 2015	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Heise et al. 2014	No	DK	Yes	Yes	No	Yes	Yes	No	DK	DK	DK
Gibson et al. 2013	Yes	Yes	Yes	DK	Yes	Yes	Yes	Yes	No	DK	Yes
Hoare et al. 2011	No	No	Yes	Yes	DK	Yes	DK	No	DK	No	No
Van Dillen et al. 2014	No	Yes	Yes	No	No	Yes	Yes	DK	No	No	No

3.5.2 Definitions

Only one study offered a definition of integrated care specifically:

> *"a discrete set of techniques and organizational models designed to create connectivity, alignment and collaboration within and between the cure and care sectors at the funding, administrative and/or provider levels"* (Low et al. 2011, p.2).

3.5.3 Types of interventions and Core Components

Integrated or collaborative care interventions discussed herein are many and varied in nature from nurse-led primary care interventions to the provision of complementary services, as outlined on Table 6. The majority of interventions cited in the studies included case management, home based care, collaborative care, utilisation of non-physician providers in primary care, and nurse-led primary care interventions.

Table 6: Types of Integrated or Collaborative Care Interventions

Type of Intervention	Study
Interdisciplinary home care team approaches	Levine et al. 2012
Case management	Heise & van Servellen 2014; Low et al. 2011; Senior et al. 2014
Home based care	Stall et al. 2014; Stewart et al. 2014A; Clarke et al. 2010; Adlbrecht et al. 2011
Collaborative care	Osterbaan et al. 2013; Gibson et al. 2013; Katon et al. 2012; Selvaraj et al. 2012
Psychological therapy	Coventry et al. 2015; Jonkers et al. 2012
Community based nurse care management	Cobum et al. 2012; Kneipp et al. 2011;2013
Utilising non-physician providers in primary care	Houweling et al. 2011; Ortego et al. 2014; Swan et al. 2015
Nurse-led primary care interventions	Albers-Heitner 2012; Boult et al. 2011; Elley et al. 2011; Harris et al. 2015; Jansink et al. 2013; Martinez-Gonzales et al. 2014; Tiessen et al. 2013
Task shifting from physician to nurse	Martinez-Gonzalez et al. 2015
Providing complementary or extend existing services	Martin-Misener et al. 2015
Non-directive counselling	Richardson et al. 2013
Lifestyle counselling	van Dillen and Hiddink 2014

The core components of the integrated or collaborative care interventions described were disparate and varied and ranged from health education to advance care planning to hospital out-patient follow-up as indicated in Table 7.

Table 7: Core Components of Integrated or Collaborative Care Interventions

Core Components	Authors
Early identification and treatment of exacerbation of the illness	Levine et al. 2012
Patient-specific health education	Adlbrecht et al. 2011; Katon et al. 2012; Levine et al. 2012; Selvaraj et al. 2012
Caregiver management of the disease / support	Levine et al. 2012; Boult et al. 2011
Advance care planning	Levine et al. 2012
Follow-up home visits	Adlbrecht et al. 2011; Levine et al. 2012
Promoting self-management	Boult et al. 2011; Adlbrecht et al. 2011; Levine et al. 2012; Jonkers et al. 2012; Selvaraj et al. 2012
Communication and coordination	Low et al. 2011; Selvaraj et al. 2012
Substituting usual physician led care with nurse led care	Houweling et al. 2011; Martin-Misener et al. 2015; Martinez-Gonzalez et al. 2015
Computer program / email / phone assisted case management	Adlbrecht et al. 2011; Elley et al. 2011; Low et al. 2011; Selvaraj et al. 2012; Low et al. 2011; Cicolini et al. 2014
Assessment/education followed by an integrated care plan and rehabilitation	Richardson et al. 2013; Senior et al. 2014
Home care	Stall et al. 2014
Regular interprofessional care meetings and after-hours support	Senior et al. 2014
Sessions on self-help based around psycho education, cognitive and behavioural exercise	Osterbaan et al. 2013
Face-to-face sessions	Coventry et al. 2015; Elley et al. 2011; Kneipp et al. 2011;2013
Routine primary care	Stewart et al. 2014A
Hospital outpatient follow-up	Stewart et al. 2014A
Self-assessment form	Cicolini et al. 2014
Community rehabilitation	Clarke et al. 2010
Individualised care plans	Coburn et al. 2012; Katon et al. 2012
Additional assessments	Coburn et al. 2012
Nurse led independent judgement	Martinez-Gonzales et al. 2014; Ortego et al. 2014

Supervisory nurse led care	Heise & van Servellen 2014
Diary keeping	Albers-Heitner 2012; Harris et al. 2015, Jonkers et al. 2012
Training sessions	Kneipp et al. 2011; 2013
Problem solving	Katon et al. 2012
Counselling on self-monitoring	Tiessen et al. 2013
Screening	Clark et al. 2012
Behaviour change techniques and feedback	Harris et al. 2015
Record keeping, reminders, and feedback and training	Jansink et al. 2013

A number of studies utilised health promotion strategies as core components of the intervention including patient specific health education (Adlbrecht et al. 2011, Katon et al. 2012, Levine et al. 2012, Selvaraj et al. 2012), self assessment forms (Cicolini et al. 2014), sessions on self-help based around psycho education, cognitive and behavioral exercise (Osterbaan et al. 2013) and promoting self-management (Boult et al. 2011, Adlbrecht et al. 2011, Levine et al. 2012, Jonkers et al. 2012, Selvaraj et al. 2012).

With regards to management, core components included early identification and treatment of exacerbation of the illness (Levine et al. 2012), and substituting usual physician led care with nurse led care (Houweling et al. 2011, Martin-Misener et al. 2015; Martinez-Gonzalez et al. 2015). Furthermore, caregiver management of the disease and support (Levine et al. 2012, Boult et al. 2011), advance care planning (Levine et al. 2012), regular interprofessional care meetings, after-hours support (Senior et al. 2014), communication, coordination (Low et al. 2011, Selvaraj et al. 2012), and assessment and education (Richardson et al. 2013, Senior et al. 2014) were successful core components in the implementation of interventions.

Core components also focused on the use of technology which involved computer programs, emails, and phone assisted case management. A further focus was on interventions based in the community/home. The core components of these interventions included follow up home visits (Adlbrecht et al. 2011, Levine et al. 2012), general home care (Stall et al. 2014), screening (Clark et al.

2012), routine primary care (Stewart et al. 2014a), hospital outpatient follow-up (Stewart et al. 2014a), and community rehabilitation (Clarke et al. 2010).

Many nurse-led primary care interventions used behaviour change techniques and feedback, diary keeping (Harris et al. 2015), face-to-face sessions (Elley et al. 2011), nurse-led independent judgement (Martinez-Gonzales et al. 2014), counselling on self-monitoring (Tiessen et al. 2013), supervisory nurse led care (Heise & van Servellen 2014), training sessions (Kneipp et al. 2011, 2013), individualised care plans, problem solving (Katon et al. 2012), additional assessments (Coburn et al. 2012), as well as record keeping, reminders, feedback and training (Jansink et al. 2013).

3.5.4 Role of the nurse

The majority of interventions were led by registered nurses from a range of specialities (as outlined on Table 8). Practice nurses (PN) delivered the intervention in 12/33 studies.

Table 8: Type of Nurse Delivering Intervention in Integrated and Collaborative Care

Nurse role	Study
Psychiatric nurses	Osterbaan et al. 2013
Practice nurses	Boult et al. 2011; Coventry et al. 2015; Elley et al. 2011; Gibson et al. 2013; Harris et al. 2015; Hoare et al. 2011; Houweling et al. 2011; Jansink et al. 2013; Katon et al. 2012, Ortego et al. 2014; Tiessen et al. 2013; van Dillen and Hiddink 2014
Cardiac nurse specialists	Adlbrecht et al. 2011; Clarke et al. 2010
Nurse practitioners and advanced nurse practitioner	Martinez-Gonzalez, et al. 2015; Martin-Misener et al. 2015; Swan et al. 2015
Urology nurse specialists	Albers-Heitner 2012
Public health nurses	Kneipp et al. 2011/2013
Nurse educators	Selvaraj et al. 2012
Research nurses	Clark et al. 2012 ; Jonkers et al. 2012
Multidisciplinary team interventions	Levine et al. 2012; Low et al. 2011; Senior et al. 2014; Stall et al. 2014.

3.5.5 Population and settings

Adult population groups of all ages participated in the majority of interventions. One UK study focused on individuals above 16 years (Coventry et al. 2015). Two systematic reviews and one RCT reviewed the efficiency of intervention on primary care staff (Hoare et al. 2011, Jansink et al. 2013, van Dillen and Hiddink 2014). Studies focused on a range of conditions with chronic and cardiac illnesses most prevalent (see Table 9).

Table 9: Conditions of People Supported by Integrated and Collaborative Interventions

Conditions	Study
Chronic illness (non specific)	Boult et al. 2011; Coburn et al. 2012; Kneipp et al. 2011/2013; Levine et al. 2012; Low et al. 2011; Martinez-Gonzales et al. 2014; Martin-Misener et al. 2015; Senior et al. 2014
Dementia	Low et al. 2011
Mental health disorders	Coventry et al. 2015; Osterbaan et al. 2013; Heise & van Servellen 2014; Jonkers et al. 2012; Katon et al. 2012
Cardiac conditions	Adlbrecht et al. 2011; Clarke et al. 2010; Cicolini et al. 2014; Ortego et al. 2014; Selvaraj et al. 2012; Stewart et al. 2014A; Tiessen et al. 2013
Chronic fatigue syndrome/myalgic encephalitis	Richardson et al. 2013
Osteoporosis	Clark et al. 2012
Diabetes	Gibson et al. 2013; Houweling et al. 2011; Jansink et al. 2013
Weight management	van Dillen and Hiddink 2014
Urinary incontinence	Albers-Heitner 2012

Most people were cared for in the home environment (Adlbrecht et al. 2011, Albers-Heitner 2012, Levine et al. 2012, Low et al. 2011, Senior et al. 2014, Stall et al. 2014), primary care (Boult et al. 2011, Cicolini et al. 2014, Coventry et al. 2015, Hoare et al. 2011, Jonkers et al. 2012, Katon et al. 2012, Kneipp et al. 2011,2013, Ortego et al. 2014, Richardson et al. 2013, Selvaraj et al. 2012, Stewart et al. 2014a, Swan et al. 2015, van Dillen and Hiddink 2014) or in general practice (Clark et al. 2012, Osterbaan et al. 2013, Elley et al. 2011, Gibson et al.

2013, Harris et al. 2015, Hoare et al. 2011, Houweling et al. 2011, Jansink et al. 2013, Martinez-Gonzales et al. 2014, Tiessen et al. 2013). Other studies were set in outpatient secondary mental health services (Osterbaan et al. 2013), specialised outpatients (Adlbrecht et al. 2011), and community or ambulatory settings (Martinez-Gonzales et al. 2014, Martin-Misener et al. 2015).

3.5.6 Range of outcomes assessed

The range of outcomes assessed was extremely varied from issues such as mortality (both diseases specific and all-cause mortality) to healthcare utilisation, and cost. See Table 10 for a full range of assessed outcomes. The effects of the interventions were similarly varied but were mostly positive, neutral or not determined (usually because of issues with the execution of the particular study e.g. small sample size).

Table 10: Outcomes Assessed by Integrated and Collaborative Care Interventions

Type of Outcome	Studies
All cause mortality	Low et al. 2011; Stewart et al. 2014a; Clarke et al. 2010; Adlbrecht et al. 2011; Coburn et al. 2012; Martinez-Gonzalez, et al. 2015
Disease specific mortality	Clarke et al. 2010; Adlbrecht et al. 2011; Coburn et al. 2012;Hoare et al. 2011
General clinical outcomes	Low et al. 2011; Stall et al. 2014; Osterbaan et al. 2013; Stewart et al. 2014a; Cicolini et al. 2014; Clarke et al. 2010; Jonkers et al. 2012; Kneipp et al. 2011/2013; Hoare et al. 2011
Disease specific outcomes	Low et al. 2011; Senior et al. 2014; Stall et al. 2014; Osterbaan et al. 2013; Stewart et al. 2014a; Clarke et al. 2010; Adlbrecht et al. 2011; Martinez-Gonzales et al. 2014; Martinez-Gonzalez et al. 2015; Martin-Misener et al. 2015; Ortego et al. 2014; Boult et al. 2011; Albers-Heitner 2012; Selvaraj et al. 2012; Katon et al. 2012; Houweling et al. 2011; Gibson et al. 2013; Clark et al. 2012; Hoare et al. 2011; van Dillen and Hiddink 2014; Jansink et al. 2013
Risk factor reduction	Cicolini et al. 2014; Clarke et al. 2010; Swan et al. 2015; Martinez-Gonzales et al. 2014; Martin-Misener et al. 2015; Ortego et al. 2014; Selvaraj et al. 2012; Katon et al. 2012; Tiessen et al. 2013; Harris et al. (2015); Elley et al. 2011; van Dillen and Hiddink, 2014; Jansink et al. 2013
Mental health	Low et al. 2011; Osterbaan et al. 2013; Coventry et al.

Type of Outcome	Studies
	2015, Jonkers et al. 2012, Kneipp et al. (2011/2013), Katon et al. 2012
Medicines use	Low et al. 2011; Coburn et al. 2012); Martin-Misener et al. 2015
Medication adherence	Heise & van Servellen, 2014
Functional status	Low et al. 2011; Senior et al. 2014; Stall et al. 2014; Coventry et al. 2015; Jonkers et al. 2012; Ortego et al. 2014
Quality of life	Low et al. 2011; Coventry et al. 2015; Clarke et al. 2010; Albers-Heitner, 2012; Katon et al. 2012; Richardson et al. 2013; Tiessen et al. 2013; Houweling et al. 2011; Jansink et al. 2013
Self care	Low et al. 2011; Coventry et al. 2015
Self efficacy	Swan et al. 2015; Jansink et al. 2013
Social interactions	Low et al. 2011; Jonkers et al. 2012
Carer burden	Low et al. 2011; Senior et al. 2014
Carer health	Senior et al. 2014
Patient satisfaction	Levine et al. 2012; Low et al. 2011; Senior et al. 2014; Stall et al. 2014; Swan et al. 2015; Martin-Misener et al. 2015; Houweling et al. 2011; van Dillen and Hiddink, 2014
Carer satisfaction	Low et al. 2011; Stall et al. 2014; Martin-Misener et al. 2015
Healthcare utilisation	Levine et al. 2012; Low et al. 2011; Senior et al. 2014; Stall et al. 2014; Stewart et al. 2014a; Adlbrecht et al. 2011); Martinez-Gonzalez et al. 2015; Martin-Misener et al. 2015; Albers-Heitner, 2012; Kneipp et al. 2011/2013; Gibson et al. 2013
Cost	Levine et al. 2012; Stall et al. 2014; Clarke et al. 2010; Adlbrecht et al. 2011; Coburn et al. 2012; Jonkers et al. 2012; Swan et al. 2015; Katon et al. 2012; Richardson et al. 2013; Clark et al. 2012; Elley et al. 2011

3.5.7 Impact on outcomes

Interdisciplinary homecare teams were associated with increased patient satisfaction (Levine et al. 2012).

Case management was associated with increased institution free survival in frail elderly (Senior et al. 2014); better anti-depressant medication adherence (Heise & van Servellen 2014); patient satisfaction, caregiver satisfaction; improved function, quality of life, social interactions, physical health, decreased depression, decreased caregiver burden, decreased pain and decreased mortality and

decreased service use including hospital admission, ER use, length of stay and use of community services (Low et al. 2011).

Home based care was associated with positive effects on individuals, carers and system outcomes (Stall et al. 2014). In disease specific studies, home based care was shown to have positive benefits in atrial fibrillation (Steward et al. 2014); cardiac rehabilitation (Clarke et al. 2010); and heart failure (Aldbrecht et al. 2011).

The effects of collaborative care varied with the condition where it was implemented. Thus, in mental health collaborative care tended to improve mental health outcomes including an increase in depression free days (Osterbaan et al. 2015, Katon et al. 2012) and in cardiovascular disease collaborative care lead to reduction in risk factors (Selvaraj et al. 2012). In the studies involving psychological therapy there was a decrease in self-reported and recorded depression (Coventry et al. 2015, Jonkers et al. 2012).

Community based nurse management was associated with a reduction in all-cause mortality in elderly patients (Coburn et al. 2012) and where nurses undertook mental health visits, with a reduction in depression scores and primary care visits although there was no effect on functional status (Kneipp et al. 2011, 2013). Utilising non-physician providers (in primary care) was said to have results comparable to physicians in relation to reduction in hospitalisation (Houweling et al. 2011); improvements in lung function after exercise training (Ortego et al. 2014) and both clinical outcomes and patient satisfaction in cardiovascular risk reduction (Swan et al. 2015).

The effects of nurse-led primary care interventions varied with the area of activity. Thus in a study of nurse led care for urinary incontinence there was an increase in QALYs (Albers-Heitner, 2012); in two studies of physical activity nurse-led interventions led to increased levels (Harris et al. 2015 & Elley et al. 2011); in another study nurse-led care was associated with improved blood pressure control (Martinez-Gonzalez et al. 2015); and cardiovascular risk

management by nurses was also associated with risk reductions (Tiessen et al. 2013). In another study nurse-led care was associated with a reduction in home healthcare utilisation (Boult et al. 2011) although in one study there was no apparent benefit in diabetes management (Jansink et al. 2013).

Outcomes from task shifting (from physician to nurse) was associated with no difference in outcomes across a very wide range of clinical (disease specific) parameters and service outcomes (Martinez-Gonazlez et al. 2015). Likewise, provision of complementary or extension of existing services, was associated with a range of improved clinical outcomes, process outcomes, patient satisfaction and sometimes at reduced cost (Martin-Misener et al. 2015). Patients with chronic fatigue provided with non-directive counselling by trained nurses reported improved health related quality of life (Richardson et al. 2013) and patients provided with lifestyle counselling reported higher patient satisfaction (thought to be related to longer consultation times with nurses) (van Dillen & Hiddink, 2014).

3.5.8 Components associated with improved outcomes

In the majority of papers (21/33) the components associated with improved outcomes were not separately identified. Where components were identified it was not always clear how the impact of the particular components were separated from the overall effect.

In a systematic review that included both case management and integrated care it was found that case management was associated with favourable outcomes, whereas integrated care was associated with increased utilisation but no improvement in clinical outcomes. Consumer directed care was associated with improved satisfaction but not improvement in clinical outcomes (Low et al. 2011). In a study of stepped treatment for common mental health disorders the rapid provision of low intensity treatment in primary care and improved collaboration between healthcare providers was deemed to be important (Osterbaan et al. 2013). In a study of the integrated collaborative care for patients with depression and long term physical conditions, integration with the

practice nurse was deemed important (Coventry et al. 2015). In a study of heart failure management, knowledge of the BNP (beta naturetic peptide) was associated with greater effectiveness of home based nurse care intervention (Adlbrecht et al. 2011).

Two systematic reviews of non-physician providers found a general tendency for care provided by Advance Nurse Practitioners (ANPs) to be associated with better outcomes than other types of nurses. (Swan et al. 2015, Martinez-Gonsalez 2015). A high quality systematic review of general and specialist nurses providing ambulatory care noted that when nurse practitioners informed the patient of the cause of their illness, how to relieve symptoms and what to do if symptoms persisted there was a higher level of patient satisfaction reported (Martin-Misener et al. 2015).

A systematic review Heise & van Servellen (2014) concluded that interventions to improve anti-depressant medication adherence involving nurses in various roles included: care management/ monitoring; education about medicines and depression; feedback to healthcare providers; referral to mental health and social care providers. A high quality study of nurse-led screening for osteoporosis it was found that radiographic confirmation improved success rates (Clark et al. 2012).

3.5.9 Resource implications

Many of the included studies did not report on resource implications (n=16), while several others did not provide comparisons of costs between interventions and control groups/usual care (n=5).

An RCT, of unclear quality, by Levine et al. (2012) revealed lower costs were associated with the implementation of a home based care programme from chronically ill older people, compared with usual care. However, overall costs were not significantly reduced when demographics and health condition were considered. A medium quality systematic review by Stall et al. (2014) reported

that two studies found substantial cost savings associated with home based primary care programmes for homebound older adults.

Coburn et al. (2012) report that there were no overall statistically significant differences between intervention and control groups in relation to costs, although this was not a very high quality study. However, hospitalisations and expenditure were reduced in the intervention group for those at highest risk. Medicare spending for this group were therefore reported to have reduced by 397 US dollars per patient per month (Coburn et al. 2012, Cicolini et al. 2014) reports that once established, a nurse-led email reminder system for patients with cardiovascular disease was inexpensive and required very little extra time per day to use.

Osterbaan et al. (2013) and Coventry et al. (2015) emphasise the need to consider the training costs involved in training staff to deliver such interventions. Similarly, van Dillen and Hiddnick (2014) reported that funding was a significant barrier to implementing lifestyle counselling by practice nurses, although this was not a very rigorous systematic review. Time constraints are also considered in a high quality study by Houweling et al. (2011) who found that GPs spent an average of 28 minutes with patients with diabetes compared with an average of 128 minutes by nurses. However, the extra time expended by nurses was considered to be linked to increased patient satisfaction.

3.5.10 Barriers and enablers

For 15 of the 33 papers there were no barriers or enablers reported. Enablers that were identified included having a team of medical and social providers in a study of an intervention to reduce hospitalisation (Levine et al. 2012). Furthermore, combining elements of case management, integrated care and consumer directed care was perceived as an enabler in a systematic review of nurse led care for elderly patients (Low et al. 2014). In another study, on-going house visits by primary care providers was identified as an enabler of better care for house bound elderly (Stall et al. 2014). The level of collaboration between psychological wellbeing providers and nurses was thought to be something that

might enable care of patients with depression and long term physical conditions (Coventry et al. 2015). Greater interdisciplinary collaboration was also an enabler in a study of lifestyle counselling (van Dillen and Hiddink 2014). In addition, the use of email 'read receipts' was considered an enabler in a study of nurse led reminder programme for cardiovascular risk reduction (Cicolini et al. 2014).

Removal of barriers to ANPs fully utilising their training was perceived in a systematic review, as an enabler of greater deployment of APNs to alleviate primary care shortages (Swan et al. 2015). According to a high quality systematic review, structured protocols and validated tools might enhance the impact of task shifting (Martinez-Gonzalez 2015). Supervision by nurses was an enabler in a high quality study of exercise programmes (Ortego 2014). Furthermore the environmental context within which a guided care model was implemented was also identified as an enabler (Boult et al. 2011).

Providing services on the site of local WTP (Welfare Transition Program) offices was seen as an enabler in a study of an intervention for deprived patients with chronic diseases (Kneipp et al. 2011, 2013), although this was not a very high quality study. Patient belief in the intervention model was thought to be an important enabler in a study of patients with chronic fatigue (Richardson 2013) while provider and patient enthusiasm were felt to be enablers of an intervention to improve physical activity levels in older patients (Harris et al. 2015). In another study promoting physical activity extra telephone support was found to be an enabler (Elley et al. 2010).

Relatively few barriers were identified and those that were, were quite varied and mostly specific to the area of study. Thus, in a study of home-based care the intensity of the intervention may have been excessive for some patients (Levine et al. 2014). The lesser competence of older people in using information technology was seen as a barrier to a nurse led reminder programme through e-mail to improve cardiovascular risks (Cicolini et al. 2014). Incomplete adherence to the major components of the intervention was a barrier in a study

of case management of chronic illnesses in a deprived population (Kneipp et al. 2011, 2013), although this was not a high quality study. Weather and existing health problems were recognised as barriers to a study designed to improve physical activity levels (Harris et al. 2015). In addition, lack of time was cited as a barrier to implementation of lifestyle counselling in a relatively poor quality systematic review (van Dillen and Hiddink 2014).

3.5.11 Recommendations: Research, Education, Policy and Practice

Research and Education

The most consistent suggestion was that more research should be undertaken (16 of 33 papers) with about half suggesting that studies need to include or improve economic analysis (Stall et al. 2014, Osterbaan et al. 2013, Martin-Misener et al. 2015, Albers-Heitner 2012, and Martinez-Gonzalez et al. 2015). Others recommended the roll out of the intervention(s) included in the study and/or embedding of the intervention(s) into routine clinical practice. More specific suggestions included improving the identification of high risk patients (Levine et al. 2014); more detailed analysis of the effect of different factors on outcomes (Kneipp et al. 2011, 2013, Harris et al. 2015); and improving the skills or knowledge of providers through education or training (Richardson et al. 2013, Gibson et al. 2013, Clarke et al. 2012, van Dillen and Hiddink 2014).

Practice

A number of recommendations were made with regard to enhancing practice. Care management organisations need to consider targeting when designing programs for high-risk groups (Levine et al. 2012). Furthermore, administrators and providers of services need to have a clear focus on their service and prioritisation of outcomes (Low et al. 2011), making interventions more targeted and specific with boundaries and tasks more clearly defined (Cicolini et al. 2014, Martinez-Gonzalez et al. 2014) with follow up for a longer period (Cicolini et al. 2014, Swan et al. 2015). Stewart et al. (2014a) states that specialist outpatient clincis should be be available to provide fast assessment and management of patient.

A high quality systematic review concluded that home based intervention (HBI) for coronary heart disease (CHD) should also be considered for stable patients as they are an effective and relatively low-cost supplement to hospital-based cardiac rehabilitation (Clarke et al. 2010). Additionally such interventions may address patient access problems (Clarke et al. 2010).

Selvaraj et al. (2012) in a high quality study recommends that personalised patient education does not have to be solely provided by PCPs but could also be delievered by trained nurses. Thus, a high quality systematic review of the effect of multidisciplinary teams concluded they may have a positive influence (Martinez-Gonzalez et al. 2015). Likewise in another high quality study Jansink et al. (2013) advise that adapting a health protection or a personalised lifestyle counselling method should be utilised rather motivational interviewing techniques when targeting lifestyle change (Jansink et al. 2013). Elley et al. (2011) recommends implementing an "exercise on prescription" intervention in areas other then general practice. Furthermore, implementation of exercise interventions could increase if routinely applied to daily practice and included in routine follow up (Elley et al. 2011). A high quality study of exercise programs could be seen as an inexpensive intervention that could be included in primary care by a nurse or other members of the multidisciplinary team (Ortego et al. 2014). The value of PNs providing weight loss counselling could be improved with support in addressing barriers; securing support; and setting collaborative goals, although this was the conclusion of a relatively low quality systematic review (van Dillen and Hiddink 2014).

Houweling et al. (2011), in a high quality study, advises that PNs in the Netherlands should be permitted to prescribe medication as this is common practice in many other countries (Houweling et al. 2011). More education of GPs may be required to improve prescribing rates (Gibson et al. 2013). Boult et al. (2011) also recommended the effect of guided care on medication use. Nurse-led interventions have important benefits in terms of cost effectiveness and increase in depression-free days for patients (Katon et al. 2012). Practice nurses need further training in case management of chronic diseases in primary care

settings prior to it becoming an essential component of the role of the PN (van Dillen and Hiddink 2014).

Policy

A minority of studies made recommendations for policy makers. These focused on task shifting; mediators and moderators of potential outcomes; and the need for a national quality framework and plan for the implemention of practice nurse development.

In relation to task shifting, Martinez-Gonzales et al. (2014) identify that the *"nurses role and level of experience required to qualify for substitution need a better definition of boundaries and task allocation in clinical practice"* (p.9). They also recommended the use of more evidence-based guidelines, protocols/checklists to assist in the transfer of tasks amongst clinicians (Martinez-Gonzalez et al. 2015). Kneipp et al. (2011, 2013) identified that future analyses from their study in relation of race, nurse dose, and other factors as mediators or moderators of outcomes may further inform policy and practice. These are considerations particularly in relation to grounded intervention among women receiving Temporary Assistance for Needy Families (TANF) with chronic health conditions.

3.5.12 Summary

The majority of RCTs reviewed were of mixed or unclear quality based on the assessment of bias (Adlbrecht et al. 2011, Cicolini et al. 2014, Boult et al. 2011, Harris et al. 2015, Levine et al. 2012, Senior et al. 2014). The quality of two RCTs (Albers Heitner et al. 2012, Houweling et al. 2011), can be considered high based on the ROB. The majority of systematic literature reviews were generally found to be of medium to high quality.

Positive outcome effects should be considered in future practice in relation to interdisciplinary home care teams (Levine et al. 2012), nurse led care (Harris et al. 2015, Elley et al. 2011, van Dillen & Hiddink, 2014), case management (Senior et al. 2014), complementary or extension of existing services (Martin-Misener et

al. 2015), home based care (Aldbrecht et al. 2011, Clarke et al. 2010, Stall et al. 2014, Steward et al. 2014), and utilising non- physician providers (Houweling et al. 2007). Interestingly, diverse effects of collaborative care was noted amongst specific conditions such as depression and cardiovascular disease (Osterbaan et al. 2015, Katon et al. 2012, Selvaraj et al. 2012).

In medium to high quality papers barriers to interventions included healthcare professionals lack of time and patients having pre-existing health problems (van Dillen and Hiddink 2014). Key enablers to interventions involved: on-going house visits by primary care providers (Stall et al. 2014), extra telephone support, utilising training, and structured protocols (Martinez-Gonzalez 2015). In addition, it should be noted that greater deployment of APNs is needed to alleviate primary care shortages (Swan et al. 2015), and greater interdisciplinary collaboration (van Dillen and Hiddink 2014). Intervention cost savings were associated with home based primary care programmes (Stall et al. 2014). A focus needs to remain on resource issues such as time (Houweling et al. 2011) and funding (Van Dillen et al. 2014).

High quality practice recommendations were identified such as the implementation of cost effective exercise programmes (Ortego et al. 2014) and permitting PNs to prescribe medications at community level (Houweling et al. 2011).

Future research should focus on the inclusion of economic analysis (Stall et al. 2014, Martin-Misener et al. 2015, Albers-Heitner 2012, Martinez-Gonzalez et al. 2015); and need to prioritise outcomes (Low et al. 2011). They should also include longer follow up periods (Swan et al. 2015). The skills and knowledge of providers need to be improved through education or training (van Dillen & Hiddink 2014).

In relation to policy, the role of the practice nurse needs to be clearly defined with regard to task allocation in clinical practice (Martinez-Gonzales et al. 2014).

In addition, more evidence-based guidelines, protocols and checklists will assist in transferring specific tasks amongst clinicians (Martinez-Gonzale et al. 2015).

3.6 Home-Based Community Nursing

Home-based community nursing interventions occur in the place the person receiving care or support considers to be their home.

3.6.1 Characteristics of studies

A total of 32 studies reported on home based care interventions. This evidence is drawn from systematic reviews with meta-analysis (n=1), systematic reviews (n=8) and RCTs (n=23).

Almost one in four studies focusing on home based care interventions (n=8) originated from the US (Bruce et al. 2015, Friedman et al. 2014, Marek et al. 2013, Alicea-Planas et al. 2013, Sharps et al. 2013, DeSocio et al. 2013, Paul et al. 2012, Butterfield et al. 2011). Six studies were from the UK (Robling et al. 2015, Gomez et al. 2013, Tappenden et al. 2012, Parker et al. 2012, Watson et al. 2011, Toot et al. 2011) and five originated from Australia (Weller et al. 2013, Hudson et al. 2013, Luckett et al. 2013, Wen et al. 2012, Wen et al. 2011). Others were conducted in Canada (n=2) (Aydede et al. 2014, Wagg et al. 2014), The Netherlands (Uitdehaag et al. 2014, Mejdoubi et al. 2014, 2013) and Spain (Leiva et al. 2014, Aragonés et al. 2012). Countries from which single studies were identified included New Zealand (King et al. 2012), Switzerland (Imhof et al. 2012), Iran (Poortaghi et al. 2013, 2011), China (Chien et al. 2015), Sweden (Behm et al. 2014), Japan (Ukawa et al. 2011) and Germany (Corrieri et al. 2011).

The quality of included studies was assessed as outlined in Chapter 2. The quality assessments using the Cochrane ROB tool (applied to 23 RCTs) and the AMSTAR tool (applied to 10 review studies) revealed considerable variation in the quality of studies included in this home based care category. Three RCTs demonstrated a low risk of bias across all seven domains of the ROB (Wen et al. 2012, Ukawa et al. 2011, Chien et al. 2015, Mejdoubi et al. 2014) with the remainder exhibiting unclear or mixed bias as outlined on Figure 7. The quality of review studies was generally higher with one review (Gomez et al. 2013) meeting all the criteria of the AMSTAR (Table 11).

	Random sequence allocation (selection bias)	Allocation concealment (selection bias)	Blinding of participants & personnel (performance bias)	Blinding of outcome (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Friedman et al. 2014	🟡	🔴	🔴	🔴	🔴	🟡	🟡
Imhof et al. 2012	🟢	🔴	🔴	🔴	🔴	🔴	🟡
Behm et al. 2014	🟢	🟢	🔴	🟢	🔴	🟢	🟡
De Socio et al. 2013	🟡	🟡	🟡	🟡	🟡	🟡	🟡
Butterfield et al. 2011	🟡	🟡	🟡	🟡	🟢	🟡	🟢
Wen et al. 2011	🟢	🟢	🟢	🟢	🟢	🟢	🟡
Wen et al. 2012	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Paul et al. 2012	🟢	🟡	🟢	🟢	🟢	🟢	🟢
Sharps et al. 2013	🟡	🟡	🟡	🟡	🟡	🟢	🟡
Watson et al. 2011	🟢	🟢	🔴	🟢	🟡	🟢	🟢
Leiva et al. 2014	🟡	🟡	🟡	🟡	🟡	🟡	🟡
Poortaghi et al. 2011/2013	🟢	🟢	🟢	🟢	🟢	🟡	🟢
King et al. 2012	🟢	🟡	🟡	🔴	🟡	🟢	🟡
Marek et al. 2013/4	🟢	🟢	🔴	🟢	🔴	🟢	🟡
Aragones et al. 2012	🔴	🔴	🟢	🟢	🟢	🟢	🟢
Bruce et al. 2015	🔴	🟡	🔴	🔴	🟢	🟢	🟡
Ukawa et al. 2011	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Chien et al. 2015	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Hudson et al. 2013	🟢	🟢	🟡	🟡	🟢	🟢	🔴
Uitdehaag et al. 2014	🔴	🔴	🟡	🟡	🟡	🟡	🔴
Alicea-Planas et al. 2013	🟡	🟡	🟡	🟡	🔴	🟢	🟡
Mejdoubi et al. 2014	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Robling et al. 2015	🟢	🟡	🔴	🟡	🔴	🟡	🟡

Figure 7: Visual Summary of the Risk of Bias Assessed Using the Cochrane ROB Tool – Home Based Care

Table 11: Summary of the AMSTAR applied to studies in Home Based Care Category

	A Priori design	Duplicate selection and data extract.	Lit. search	Publication status as inclusion criterion	List of incl/ excl studies	Characteristics of included studies specified	Quality assessed	Appro. use of quality to formulate conclusions	Appro. method of combin. findings	Likelihood of publication bias assessed	Conflict of interest consider.
Corrieri et al. 2011	No	No	No	No	No	Yes	Yes	Yes	N/A	No	Yes
Tappenden et al. 2012	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Weller et al. 2013	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Toot et al. 2011	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes
Aydede et al. 2014	No	Yes	Yes	No	No	Yes	Yes	Yes	Unsure	No	Yes
Gomez et al. 2013	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Luckett et al. 2013	Unsure	Yes	Yes	No	Unsure	Yes	Yes	Yes	Yes	Yes	Yes
Parker et al. 2012	Unsure	No	Yes	Yes	No	Yes	Yes	Yes	N/A	N/A	No
Wagg et al. 2014	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Unsure	No	No

3.6.2 Definitions

From the studies included, it is clear that home based care is provided within the person's home setting. It includes care reflecting a preventative (Friedman et al. 2014, Alicea-Planas et al. 2013, DeSocio et al. 2013, Sharps et al. 2013, Wen et al. 2012, Tappenden et al. 2012, Behm et al. 2014, Imhof et al. 2012, Paul et al. 2012, Butterfield et al. 2011, Corrieri et al. 2011, Wen et al. 2011), curative (Leiva et al. 2014, Weller et al. 2013, Watson et al. 2011) case and care management focus (Marek et al. 2013, Wagg et al. 2014, Poortaghi et al. 2013, 2011, King et al. 2012) with a family centred partnership approach (Robling et al. 2015, Mejdoubi et al. 2014, 2013).

Home based care provision includes care across the lifespan to include population groups such as children (Wen et al. 2012, Wen et al. 2011), older people (Friedman et al. 2014, Corrieri et al. 2011, Imhof et al. 2012, Behm et al. 2014, Leiva et al. 2014, Weller et al. 2013), those experiencing or at risk of mental illness (Bruce et al. 2015, Chien et al. 2015, Toot et al. 2011, Ukawa et al. 2011, people living with advanced life limiting illness and receiving palliative care (Aydede et al. 2014, Uitdehaag et al. 2014, Hudson et al. 2013, Gomez et al. 2013, Luckett et al. 2013, Parker et al. 2012) and families (Tappenden et al. 2012, Butterfield et al. 2011).

3.6.3 Types of Intervention and Core Components

Core components of home based care interventions included a patient-centred preventative health promotion focus, including health behaviour modification with regards to medication management (Friedman et al. 2014), falls prevention encompassing risk assessment of the older person (Corrieri et al. 2011), health education and promotion to enhance health status, quality of life and self efficacy (Tappenden et al. 2012, Alicea-Planas et al. 2013, Behm et al. 2014, Imhof et al. 2012, Butterfield et al. 2011).

A number of family based preventative interventions were identified focusing on postnatal care (DeSocio et al. 2013, Paul et al. 2012), early intervention linked with child health and wellbeing (Wen et al. 2012, Wen et al. 2011) and family

support linked with domestic violence (Sharps et al. 2013). With regards to family interventions one study focused on the effect of VoorZorg, a Dutch Nurse Family Partnership programme offering family support, health education advice and intervention where risk is identified such as preventing child abuse and domestic violence (Mejdoubi et al. 2014, 2013). A further focus was on an intervention linked with the Family Nurse Partnership addressing support for first time teenage mothers and their children until the age of 24 months (Robling et al. 2015). From a curative perspective core components included a focus on wound care and leg ulcer management (Weller et al. 2013, Watson et al. 2011).

Management interventions were identified with regards to both case and care management (Marek et al. 2013, Wagg et al. 2014, Poortaghi et al. 2013, 2011; Aragonés et al. 2012, King et al. 2012) and blood pressure management (Leiva et al. 2014). Care management interventions included home based cardiac rehabilitation and development of patient self-efficacy (Poortaghi et al. 2013, 2011), restorative home care provision for older people (King et al. 2012), medication management linked with self-management (Marek et al. 2013), and continence care service provision (Wagg et al. 2014).

Interventions focused on mental health included the provision of depression care paths for patients at home (Bruce et al. 2015), crisis resolution for older people with mental health problems (Toot et al. 2011), promoting functional improvement with regards to assessment of mental capacity for older people at home (Ukawa et al. 2011), motivational interviewing focused on behavioural training for young adults with schizophrenic spectrum disorder (Chien et al. 2015).

Interventions focused on palliative care included family and carer support linked with the provision of a family caregiver support nurse (Hudson et al. 2013) and home palliative care services (Gomez et al. 2013). Also included were: follow up home care support for patients with oesophageal pancreatic or hepabiliary cancer (Uitdehaag et al. 2014); chronic kidney disease (Aydede et al. 2014); reviews investigating the effect of palliative care services on rates of home death

(Luckett et al. 2013); and reducing hospitals admissions and lengths of stay for children with cancer (Parker et al. 2012).

3.6.4 Role of the nurse

The majority of home based care interventions were nurse-led (Bruce et al. 2015, Chien et al. 2015, Robling et al. 2015, Aydede et al. 2014, Friedman et al. 2014, Leiva et al. 2014, Alicea-Planas et al. 2013, Mejdoubi et al. 2014, 2013, DeSocio et al. 2013, Gomez et al. 2013, Hudson et al. 2013, Luckett et al. 2013, Poortaghi et al. 2013, 2011, Sharps et al. 2013, Weller et al. 2013, Wen et al. 2012, Tappenden et al. 2012, Imhof et al. 2012, Paul et al. 2012, Butterfield et al. 2011, Corrieri et al. 2011, Toot et al. 2011, Uitdehaag et al. 2014, Watson et al. 2011, Wen et al. 2011). Table 12 outlines the range of nursing roles and specialities involved in the delivery of these interventions.

Four studies acknowledge the nurse's role as that of case or care co-ordinator in leading the intervention (Marek et al. 2013, Wagg et al. 2014, Aragonés et al. 2012, King et al. 2012). One study presented the intervention could be either nurse-led or led by the multidisciplinary team (Parker et al. 2012). One study was led by the multidisciplinary team (Behm et al. 2014), another acknowledged the combined lead of the nurse and the dental hygienist.

3.6.5 Population and settings

Adult population groups ranging from 18-80 years participated in the majority of interventions. Three studies focused on children (Wen et al. 2012, Paul et al. 2012, Wen et al. 2011) and five studies focused on the family, the child and the provision of family support (Robling et al. 2015, Mejdoubi et al. 2014, 2013, Sharps et al. 2013, Butterfield et al. 2011). Studies focused on a range of conditions with palliative care and mental illness most prevalent (see Table 13).

Table 12: Type of Nurse Delivering Intervention in Home Based Care.

Nurse role	Study
Registered nurse (specialism not specified)	Aydede et al. 2014; Behm et al. 2014; Leiva et al. 2014; Wagg et al. 2014; Alicea-Planas et al. 2013; Marek et al. 2013; Weller et al. 2013; King et al. 2012;Paul et al. 2012; Watson et al. 2011
Community nurse	Bruce et al. 2015; DeSocio et al. 2013; Poortaghi et al. 2013, 2011; Wen et al.2012; Wen et al. 2011
Health Visitor	Tappenden et al.(2012)
General trained Primary Care Nurses	Aragonés et al. (2012)
Family Caregiver Support Nurse (FCSN)	Hudson et al. (2013)
Family Nurses (Family Nurse Partnership/FNP)	Robling et al. (2015)
Psychiatric nurses	(hien et al. 2015;Toot et al. 2011; Ukawa et al. 2011
Case or Care Co ordinator Nurses	Marek et al. 2014, 2013; Wagg et al. 2014; Aragonés et al. 2012; King et al. 2012
Palliative Home Care Nurses (Specialist)	Gomez et al. 2013; Luckett et al. 2013
Multidisciplinary team interventions including the nurse	Behm et al. 2014; Parker et al. 2012
Gerontology nurse specialists	Friedman et al. 2014; Corrieri et al. 2011
Nurse practitioners and advanced nurse practitioner	Marek et al. 2013; Mejdoubi et al. 2014, 2013; Uitdehaag et al. 2014; Imhof et al. 2012; Parker et al. 2012; Corrieri et al. 2011
Public health nurses	Butterfield et al. 2011
Home Visitors (not specified if registered nurses)	Sharps et al. 2013

Table 13: Types of Home Based Care Interventions

Condition	Study
Behavioural modification/ changes in older people	Friedman et al. 2014
Prevention of falls in elderly/older people	Corrieri et al. 2011
Health education and guidance for families, older people and overall population groups	Tappenden et al. 2012; Behm et al. 2014; Alicea-Planas et al. 2013; Imhof et al. 2012; Butterfield et al. 2011
Pregnancy and postnatal care	DeSocio et al. 2013; Paul et al. 2012
Child health and development	Wen et al. 2012; Paul et al. 2012; Wen et al. 2011
Wound care and leg ulcer management	Weller et al. 2013; Watson et al. 2011
Cardiac conditions	Poortaghi et al. 2013, 2011
Medication management for older people	Marek et al. 2014, 2013
Continence care for community dwelling clients with continence care issues	Wagg et al. 2014
Mental health illness	Bruce et al. 2015; Chien et al. 2015; Toot et al. 2011; Ukawa et al. 2011
Advanced illness / End of life	Aydede et al. 2014; Uitdehaag et al. 2014; Hudson et al. 2013; Gomez et al. 2013; Luckett et al. 2013; Parker et al. 2012

The setting of care was predominantly home based (Bruce et al. 2015, Chien et al. 2015, Robling et al. 2015, Aydede et al. 2014, Marek et al. 2013, Mejdoubi et al. 2014, 2013, Wagg et al. 2014, DeSocio et al. 2013, Gomez et al. 2013, Hudson et al. 2013, Luckett et al. 2013, Poortaghi et al. 2013, 2011, Sharps et al. 2013, Weller et al. 2013, Aragonés et al. 2012, King et al. 2012, Wen et al. 2012, Tappenden et al. 2012, Imhof et al. 2012, Parker et al. 2012, Paul et al. 2012, Butterfield et al. 2011, Corrieri et al. 2011, Uitdehaag et al. 2014, Watson et al. 2011, Wen et al. 2011. Two studies describe the setting of care as community dwelling (Friedman et al. 2014, Leiva et al. 2014). One study's setting was indicated as community and day care (Toot et al. 2011). One study indicated the setting as the community health centre (Alicea-Planas et al. 2013) and two studies were within the rehabilitation centre and community setting (Poortaghi et al. 2013, 2011).

3.6.6 Range of Outcomes Assessed

Due the varied nature of the study populations and the interventions implemented across the studies, a diverse range of outcomes were assessed (Table 14).

Table 14: Outcomes Assessed by Home Based Care Interventions

Type of Outcome	Studies
All cause mortality	Tappenden et al. 2012
All cause morbidity	Behm et al. 2014
Disease specific outcomes	Watson et al. 2011; Weller et al. 2013
Risk factor reduction	Mejdoubi et al. 2013/2014; Robling et al. 2015; Tappenden et al. 2012
Mental health	Bruce et al. 2015; Toot et al. 2011; DeSocio et al. 2013
Medication adherence	Marek et al. 2013; Weller et al. 2013
Functional status	Friedman et al. 2014; Bruce et al. 2015
Quality of life	Imhof et al. 2012; Poortaghi et al. 2011; King et al. 2012; Wagg et al. 2014; Uitdehaag et al. 2014
Self efficacy	Butterfield et al. 2011; Alicea-Planas et al. 2013, Poortaghi et al. 2013; Paul et al. 2012
Self agency change	DeSocio et al. 2013; Butterfield et al. 2011; Chien et al. 2015
Carer wellbeing and support	Hudson et al. 2013
Healthcare utilisation	Corrieri et al. 2011; Imhof et al. 2012; Tappenden et al. 2012; Paul et al. 2012; Toot et al. 2011; Chien et al. 2015; Parker et al. 2012; Robling et al. 2015
Cost	Corrieri et al. 2011; Marek et al. 2013; Toot et al. 2011; Uitdehaag et al. 2014; Parker et al. 2012
Maternal / child health	Wen et al. 2011/2012; Paul et al. 2012; Mejdoubi et al. 2013/2014; Robling et al. 2015.
Quality of health[2]	Behm et al. 2014; Tappenden et al. 2012; Poortaghi et al.

[2] Different health care indexes scales or health care subscales taken independently out of QOL scales

Type of Outcome	Studies
	2011; King et al. 2012; Wagg et al. 2014; Bruce et al. 2015; Uitdehaag et al. 2014
Place of care / Death	Toot et al. 2011; Parker et al. 2012; Gomez et al. 2013
Retention rates	Sharps et al. 2013

3.6.7 Impact on outcomes

Multidisciplinary prevention visits and group sessions (Nurse, Physical and Occupational Therapies) significantly reduced the odds of increased morbidity amongst those over 80 at one and two year follow-up (Behm et al. 2014). Surprisingly there was no difference in relation to symptom progression. Both group sessions and visits by MDT were shown to significantly maintain satisfaction with physical health with the group sessions also preventing deterioration in reported self-rated health.

Tappenden et al. (2012) also found a significantly reduced risk of death as a consequence of nurse led health promotion programme for over 60's. Furthermore it showed statistically significant effects in relation to leg ulcer recurrence, Nottingham Health Profile, Caregiver Strain Index and Global health questions. The review by Aydede et al. (2014) highlighted that a home care intervention for chronic kidney disease had similar outcomes to other comparators; however there was a higher risk of mortality for the homecare interventions. They concluded that palliative care management in home settings for kidney disease needs a lot more focus and research. Parker et al. (2012) systematic review of paediatric home palliative care services showed similar conclusions that home care had equivalent clinical outcomes compared to in-patient hospital treatments. The outcomes assessed as equivalent included weight gain in premature infants; HBA1C for diabetes care; and adaptation to school work.

Similar to the previous studies Imhof et al. (2012) found that home visits by an ANP had no serious impact with the exception of lowering pharmacist consultations. It did however significantly reduce the need for hospitalisations

in the intervention group. The adherence therapy programme for schizophrenia patients delivered by Chien et al. (2015) not only showed an improved functioning of those involved but also had a reduction in symptom severity and re-hospitalisation.

The implementation of a home-based nurse coordinated program was shown to be a cost saving intervention for elderly medication self-management (Marek et al. 2014). In addition, the intervention had a significant impact on cognitive functioning, depressive symptoms, functional status and quality of life in both mental and physical functioning (Marek et al. 2013). Some of these latter findings are in contrast to the findings of both Imhof et al. (2012) and Friedman et al. (2014). Imhof et al. (2012) highlighted that the impact of an advanced nurse practitioner doing home visits showed no significant difference on quality of life for those over 80 years in comparison to standard home care. Despite no impact on quality of life home visits did show a significant reduction in acute events in the intervention group along with a significant reduction in falls in a three month period. Whereas Friedman et al. (2014) found bathing to be the only ADL that showed significant improvement following monthly home visits.

In the palliative care arena, dying at home is often a key component impacting on quality of life. Gomez et al. (2013) found in their meta-analysis the increased odds of dying at home with the support of a home palliative care service across seven trials with 1222 participants. In addition the review highlighted significant beneficial effects home palliative care had in reducing the burden of symptom with no difference in effect on caregiver grief. Luckett et al. (2013) produced a similar review exploring community specialist palliative care services providing home nursing and had identical significant findings. However, sensitivity analysis for the high-quality studies found no effect. Uitdehaag et al. (2014) found that cancer patients receiving a nurse-led follow-up at home intervention compared with conventional follow-up in the outpatient clinic were significantly more satisfied with the visits. Despite this satisfaction, QoL and health care consumption, within the first four months were comparable between the two groups.

In a Spanish study Aragonés et al. (2012) showed that a multi-component programme based on the chronic care model adapted to primary care Public Health System had a significant impact on severity of depression. The intervention also increased treatment response rates which were 15.4% higher in the intervention group than in the controls, and the remission rate were 13.4% higher. A similar intervention which combined a depression care path for patients at home supported by home health care nurses (Bruce et al. 2015) found a similar significant improvement in depression severity. Toot et al. (2011) in a systematic review looked at the impact crisis resolution/home treatment teams would have on older people with mental health problems; they used admission to hospital and use of services as the key outcome measures. They reported that significantly less individuals were admitted (69% V 100%), and significantly more remained at home (49% V 42%) within the group that received support from the crises treatment teams in a two year follow up. Ukawa et al. (2011) give further credibility to the value of community based interventions in the area of mental health. They demonstrated that home visits utilising a Functioning Improvement Tool (FIT) showed a significant improvement in MMSE scores amongst older participants with mild cognitive decline.

Mejdoubi et al. (2013) evaluated the effects of the VoorZorp programme to address risk factors and prevent child abuse. This intervention showed a significant reduction in smoking and prolonged breast feeding compared to regular management. This home visit program was effective in reducing victimization. This effect continued up to the 24 months after birth. Robling et al. (2015) assess the effectiveness of a Family Nurse Partnership (FNP) intervention to first-time teenage mothers up to 24 months after birth. Unlike Mejdoubi et al. (2013) this study found no difference in smoking habit. However on several of the other secondary outcomes there was a small positive effect on breastfeeding, maternally reported cognitive and language development, levels of social support, quality of relationship with partner, and self-efficacy. There was also a higher number of hospital visits for child (81% in FNP, 77% in controls).

For adolescent mothers, home visitation up to 2 years post birth of their child in conjunction with screening and developmental checks have been shown to significantly increase self-agency (DeSocio et al. 2013). Similarly, a public health nurse delivered multi-risk social/cognitive intervention resulted in increased self-efficacy and also a change in behaviour in relation to adaptation of precautions for most risks (Butterfield et al. 2011). For first time mothers a home based early intervention programme delivered by specially trained community nurses up to 24 months post birth resulted in significantly lower levels of infant obesity based on mean BMI (Wen et al. 2012). It also significantly increased the breast feeding rates at 6 and 12 months.

Paul et al. (2012) demonstrated the value of home nursing visits to mothers with newborns in which there was a significant increase in the mothers parenting sense of competence and their satisfaction with maternal and newborn care. Furthermore both Robling et al. (2015) and Mejdoubi et al. (2013) demonstrated that home care specialist interventions significantly increased self-efficacy for groups of vulnerable teenage mothers. Sharps et al. (2013) found when a home visiting nurse component was added to a structured Intimate Partner Violence (IPV) intervention, it resulted in an increased retention of women on the programme at 3 and 6 months, compared to those who received usual care. All retention benefits appear to be lost by 12 months where both groups had retention of 70%. A one-to-one psycho-educational intervention delivered by a family caregiver support nurse and designed to prepare caregivers supporting a patient with advanced cancer was evaluated by Hudson et al. (2013). The intervention demonstrated significant improvements in participants' levels of preparedness and competence when the intervention consisted of two visits over that of one visit. From a mental health perspective Chien et al. (2015) evaluated the value of an adherence therapy programme based on a motivational interviewing for outpatients with schizophrenia spectrum disorders. The results of this study demonstrated a significant improvement in medications adherence, functioning, insight and treatment over a 6 month period. Alicea-Planas et al. (2013) using the chronic care model (CCM) as a theoretical framework, focused on empowerment and support of adult patients to self manage their health. This

study demonstrated mixed outcomes with an increase in self-efficacy reported in the intervention group, however these findings were reported as not being statistically significant.

Watson et al. (2011) found that low dose, high frequency therapeutic ultrasound in conjunction with standard care for hard to heal venous leg ulcers demonstrated no significant difference in relation to time to healing nor proportion healed to those patients that received standard care only. Neither was there a significant difference between the two groups on any of the health or quality of life indexes. The ultrasound group did have a significantly higher number of minor adverse events associated with the treatment. Weller et al's. (2013) systematic review reported that Edwards (2009) found greater healing of leg ulcer in patients who participated in leg clubs than those on home care but the findings were not significant. The leg club had a significant impact in the reduction of pain. Once again there was no significant difference in relation to quality of life. The review reported similar findings from Heinen (2012). Heinen (2012) added that there was no difference in adherence achieved as an outcome of attending 'lively legs group'.

Poortaghi et al. (2011) demonstrated that home based cardiac rehabilitation programmes had significant positive effects on psychological and general health of the participants (physical symptoms, anxiety and insomnia, social function depression). This study also identified that home-based rehabilitation program has a positive effect on patients' self-efficacy (Poortaghi et al. 2013). Paid caregivers providing restorative home care co-ordinated by an experienced registered nurse to older people residing in the community, showed a significantly higher quality of life after 7 months (King et al. 2012). There was also a significantly higher number of those in the intervention group who had a reduction in carer hours compared with those in the control group. Despite these improvements this intervention showed no difference in relation to physical, mental and social wellbeing.

Wagg et al. (2014) in summarising their reviews of continence management services in the community visualised the ideal service as a modular service with eight core components. These included case detection, initial assessment and treatment, care coordination, caregiver support, community based support, specialist assessment and treatment, use of containment products and use of technology. They believed this service needs to transcend both primary and secondary health care settings.

3.6.8 Resource Implications

A systematic review (Corrieri et al. 2011) showed inconclusive results in relation to the cost effectiveness of home visiting in falls prevention. One study demonstrated it to be cost effective and another paper showed cost effectiveness for only one subgroup. As the different studies reported different formats it was not possible to combine the costings. Introducing home visits by ANPs according to Imhof et al. (2012) would result in an overall saving due to reduced healthcare utilisation and falls reduction. Wen et al. (2012) question the economic viability of their home based intervention claiming that despite the positive outcome, costs could be an argument against implementation. Marek et al. (2014) found that a home based nurse care coordination service in conjunction with a pill organiser was a cost-effective intervention for the elderly in relation to medication self management. The addition of an electronic dispensing machine was not seen to have added value for money. Gomez et al. (2013) concluded that the evidence on cost-effectiveness of home palliative care services (six studies) was inconclusive. Uitdehaag et al. (2014) found that a home nurse-led follow-up for cancer patients was less expensive than conventional medical follow-up. However, the total costs for the first four months of follow-up in this study were higher in the nurse-led follow-up group because of a higher frequency of visits.

3.6.9 Enablers and Barriers

It is notable that not all studies discussed enablers and barriers. Some explored both enablers and barriers (Sharps et al. 2013, Marek et al. 2014, Bruce et al. 2015, Luckett et al. 2013) while others address either barriers (Leiva et al. 2014, Alicea-Planas et al. 2013, Aydede et al. 2014) or enablers (Poortaghi et al. 2011,

Ukawa et al. 2011, Chien et al. 2015, Mejdoubi et al. 2013, 2014) only. More specifically home based nursing is viewed by Marek et al. (2014) as being quite advantageous in the sense that it facilitates increased opportunities to observe challenges to self-management. It also creates more viable interventions for clients own self-management practices, and specific strategies have been suggested by Sharps et al. (2013) to promote engagement and retention of high risk service users. Poortaghi et al. (2011) suggest that the educational, supportive and preventative intervention of community nurses can be an enabling feature specific to community based nursing practice. However effective training regimens to support nursing and home visiting in the community must be in situ (Sharps et al. 2013).

3.6.10 Recommendations Research, Education, Policy and Practice

A minority of studies made recommendations relevant to research, education, policy and practice as outlined below.

The importance of timely early intervention was highlighted by both Wen at al. (2011) and Paul et al. (2012) with regard to early intervention child health programmes and post-discharge follow up of people post hopsitalisation.

Marek et al. (2014) argue that given the cost of care for chronically ill individuals and the consequences of care mismanagement, investment in systems to support cost effective self-management is essential. Ukawa et al. (2011) concluded that long-term health costs need to be factored into any home based intervention. Tappenden et al. (2012) recommend appropriate training of nurses and potentially other members of the interdisciplinary team, but acknowledge that this may have considerable implications in terms of cost and capacity.

A number of authors made recommendations for research to expand outcome measures (Friedman et al. 2014), consider all stakeholder perspectives (Tappenden et al. 2012, Toot et al. 2011), investigate the strength of study methodology (Corrieri et al. 2011), further investigate the dose and timing effects of home based interventions (Imhof et al. 2012, Uitdehaag et al. 2014),

increase the evidence base for nurse-led interventions (Weller et al. 2013), examine the cost effectiveness of interventions (Gomez et al. 2013, Luckett et al. 2013), develop validated tools for assessment (Luckett et al. 2013) and consider the development of models of communication between specialists and generalists (Luckett et al. 2013).

3.6.11 Summary

In summary, the evidence with regards to Home Based Community Nursing reveals a predominantly positive influence, while also exposing mixed and neutral evidence linked with home care provision. Positive influences expose interventions that encompass a biopsychosocial focus addressing physical, psychological and social wellbeing with population groupings extending across the lifespan from birth to old age.

From a psychological perspective, positive outcomes are exposed with regards to depressive symptomology, self-perceived quality of health, mental health scores and cognitive function (Bruce et al. 2015, Chien et al. 2015, Behm et al. 2014, Friedman et al. 2014, Marek et al. 2014,13, Aragonés et al. 2012, King et al. 2012, Poortaghi et al. 2013, 2011, Ukawa et al. 2011). Positive physical outcomes reveal ability to maintain functionality linked with ADLs, self-care and management, improved self-efficacy and agency (Robling et al. 2015, DeSocio et al. 2013, Hudson et al. 2013, Mejdoubi et al. 2013, Poortaghi et al. 2013, 2011, Wen et al. 2012, Paul et al. 2012, Butterfield et al. 2011). Positive outcomes associated with social wellbeing reveal decreased hospitalisation and readmission rates, increased opportunity to receive care and remain at home, improved personalised person centred care and patient satisfaction rates with home care delivery (Behm et al. 2014, Friedman et al. 2014, Gomez et al. 2013, Imhof et al. 2012, Parker et al. 2012, Toot et al. 2011).

Two particular population groupings reveal overall positive influences with regards to home based community nursing interventions, these being mental health and maternal and child health population groups. For mental health intervention components the overarching positive outcomes were linked with

significant impact on depression severity and cognitive function (Bruce et al. 2015, Chien et al. 2015, Aragonés et al. 2012, Ukawa et al. 2011). Interventions addressing maternal and child health revealed a preventative, supportive focus. In particular the VoorZorp programme and the Family Nurse Partnership exposed significant impacts on self-efficacy, agency and client self-perceived sense of empowerment (Robling et al. 2015, Mejdoubi et al. 2013, Paul et al. 2012).

Mixed and neutral evidence revealed home visitation services having limited impact, but also contributed towards reduction in hospitalisation (Imhof et al. 2012). While positive effects with regards to home visitation interventions influenced psychological and physical wellbeing and rates of re hospitalisation (Chien et al. 2015, Friedman et al. 2014). From a curative and preventative perspective outcomes associated with leg ulcer interventions reveal neutral evidence with regards to healing rates or proportion of ulcers healed in the home setting (Watson et al. 2011, Heinen 2012). Furthermore, there appears to be mixed evidence with regards to the cost effectiveness of nursing home care provision. The key influences affecting costing were the number of visitations conducted (Gomez et al. 2013, Corrieri et al. 2011); whether they were nurse or physician led (Uitdehaag et al. 2014). These mixed findings with regards to cost effectiveness are accentuated by the lack of standardized approaches within studies. However, a number do report valid and not inconsequential mean cost savings which may be regarded as a reliable indicator at this juncture (Marek et al. 2014; Uitdehaag et al. 2014; Imhof et al. 2012). Further review and enquiry may yield more definitive positions in this regard.

It would be myopic to confine a summarisation of the interventions and their outcomes to any particular area of community nursing . The diversity apparent is evident within the preceding sections. The diversity, while a strength, further emphasises the need for the development of a conceptual framework or model to 'hold' and position these eclectic clinical engagements.

3.7 Telehealth

Based on the scope of the reported studies, telehealth is defined as healthcare that may include monitoring, evaluation, and/or case management by nurses with patients across some distance, enabled by the use of technologies that range from phone use only to internet messaging to in-home "systems" of monitoring devices or sensors with central reporting.

3.7.1 Characteristics of Studies

A total of 15 studies reported on telehealth interventions. This evidence is drawn from systematic reviews (n=1), and RCTs (n=14) including one randomized comparative effective trial.

Countries represented include studies from Australia (n=2), Finland (n=1), Iran (n=1), Netherlands (n=1), Portugal (n=1), United Kingdom (n=1), and the United States of America (n=8)

From the information reported by authors, the overall quality of the RCTs included in this telehealth category is difficult to ascertain (Figure 8). Random selection did occur in over 50% of the studies, however selective report bias was high in approximately 70% of studies. In the majority of instances the overall assessment of bias was unclear. None of the studies reviewed are assured to have a low risk of bias based on their assessment using the ROB as outlined in Chapter 2.

The quality of the one systematic review in the telehealth category was assessed using the AMSTAR. The review meets all, except one of the tool's criteria (Table 15)

	Random sequence allocation (selection bias)	Allocation concealment (selection bias)	Blinding of participants & personnel (performance bias)	Blinding of outcome (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Krum et al. 2013	🟢	🟢	🔴	🟢	🟢	🟢	🟢
Fischer et al. 2015	🟡	🔴	🔴	🔴	🔴	🟢	🔴
Mohammadi et al. 2013	🟢	🟡	🟡	🟡	🟡	🟡	🟡
Walters et al. 2013	🟢	🟢	🟡	🟡	🟡	🟡	🟡
Fortney et al. 2013	🟢	🟡	🔴	🔴	🔴	🟢	🟡
Konstam et al. 2011	🟡	🟡	🔴	🟡	🟡	🟢	🟢
Gellis et al. 2012/4	🟢	🟡	🔴	🟢	🟢	🟢	🟢
Vuorinen et al. 2014	🟡	🟡	🔴	🟡	🟢	🟢	🟡
Wakefield et al. 2013	🟡	🟡	🔴	🟡	🟡	🔴	🟢
Stenenton et al. 2013	🟢	🟡	🔴	🟡	🟢	🟢	🟢
Finkelstein et al. 2013	🟡	🟢	🟡	🟢	🔴	🟡	🔴
Stasiak et al. 2014	🟢	🟢	🔴	🟡	🔴	🟢	🟡
Blank et al. 2011	🟡	🟡	🟡	🟡	🟡	🟡	🟢
Finklestein et al. 2011	🟢	🟡	🔴	🟡	🟡	🟡	🟡

Figure 8 (above) : Visual Summary of the Risk of Bias Assessed Using the Cochrane ROB Tool – Telehealth

Table 15: Summary of the AMSTAR applied to studies in Telehealth Category

	A Priori design	Duplicate selection and data extract.	Lit. search	Publication status as inclusion criterion	List of incl/ excl studies	Characteristics of included studies specified	Quality assessed	Appro. use of quality to formulate conclusions	Appro. method of combin. findings	Likelihood of publication bias assessed	Conflict of interest consider.
Cruz et al. 2014	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**DK**

3.7.2 Defintions

The studies included in this review did not define telehealth specifically within the documents although reference was made to intervention including use of or integration of technology into care and monitoring.

3.7.3 Types of Interventions andCore Components

Six specific types of telehealth interventions were identified as outlined on Table 16.

Table 16: Types of Telehealth Interventions

Type of Intervention	Authors
Nurse action(s) with patient using the telephone as method of communicating key information or mentoring with or without other interventions	Fischer et al. 2015; Mohammadi et al. 2013; Walters et al. 2013, Fortney et al. 2013
Automated home monitoring (AHM) as a technological addition to an established nurse-directed disease management program or Interactive *telecommunication software product to do telephone support in addition to established interventions*	Konstamet al. 2011 Krum et al. 2013
Monitoring "system" including technology in patient's home, pt submission of clinical data (at some interval - daily, weekly) , receipt of pt data and tracking at a central/distal location and nurse follow-up	Gellis et al. 2012/14; Vuorinen et al. 2014; Wakefield et al. 2013; Cruz et al. 2014
Patient home use of one or more individual functional monitoring devices continuously monitored at central center	Steventon et al. 2013
Algorithm driven triage system to trigger MD referral	Finkelstein et al. 2013
Nurse-led remote monitoring and health intervention with branching disease management algorithm via web portal videoconferencing and e-messaging with patients	Finkelstein et al. 2011
Web-based assessment and social messaging	Staskiak et al. 2014; Blank et al. 2011

The core components of telehealth interventions include: telephoned nurse reminders to patient for pick up of medicines (Fischer et al. 2015); follow up disease-management telephone support (by trained nurses) in addition to usual

care (Krum et al. 2013); or as part of a special home-based program of face to face training educational materials (Mohammadi et al. 2013); telephone mentoring in mental health education and self management by trained community health nurses (Walters et al. 2013); telephone support as part of video and EHR use for delivering collaborative care for depression, automated home monitoring (Konstam et al. 2011, Gellis et al. 2012/2014, Vuorinen et al. 2014, Wakefield et al. 2013, Cruz et al. 2014); home placement of individual stand-alone and multiple devices for functional monitoring with or without a monitoring center (Steventon et al. 2013); use of computer-based algorithm to interpret patient-reported clinical parameters (Finkelstein et al. 2013); nurse-led videoconferencing and e-messaging via web portal (Finkelstein et al. 2011); and social media using web-based health messaging (Stasiak et al. 2014); or social networks, beepers, and phone in a cascading approach to encourage treatment regimes (Blank et al. 2011).

3.7.4 Role of the Nurse

The majority of telehealth interventions were nurse-led as outlined on Table 17 below:

Table 17: Types of Telehealth Interventions

Type of Nurse	Study
Cardiac specialist or heart failure nurses	Krum et al. 2014; Vuorinen et al. 2014
Nurses with primary providers	Fischer et al. 2015
Research nurses	Mohammadi et al. 2013; Finkelstein et al. 2013
Community nurses trained in health mentoring	Walters et al. 2013
Homecare nurses	Gellis et al. 2012/14
Specialised nurse managers	Konstam et al. 2011
Tele care manager nurses	Wakefield et al. 2013
General practice nurses	Steventon et al. 2013
School nurses	Stasiak et al. 2014
Community based advance nurse practitioners	Blank et al. 2011
Registered nurses with an indisciplinary team	Fortney et al. 2013
Nurse or nurse/clinician team	Cruz et al. 2014; Finkelstein et al. 2011

3.7.5 Population and settings

Population groups involved were comprised of adults, with the exception of one study's population group of 3rd and 4th year students (Stasiak et al. 2014).

Health conditions targeted by telehealth interventions were diverse (Table 18), with a focus on chronic illness and wellbeing.

Table 18: Conditions of People Supported by Telehealth Interventions

Condition	Author
Primary medication nonadherence	Fischer et al. 2013
Cardiac conditions	Krum et al. 2013; Konstam et al. 2011; Vuorinen et al. 2014
COPD	Mohammadi et al. 2013; Walters et al. 2013; Cruz et al. 2014
Lung transplant	Finkelstein et al. 2013
Cardiac condition and COPD	Gellis et al. 2012/14
Depression	Fortney et al. 2013
Diabetes and hypertension	Wakefield et al. 2013
Social care needs (mobility or fall difficulty, cognitive impairment, carer facing difficulties)	Steventon et al. 2013
HIV and co-occurring serious mental illness	Blank et al. 2011
Youth health well-being	Stasiak et al. 2014
Fraility	Finkelstein et al. 2011

In most cases the setting for telehealth and monitoring was at home, with telehealth interventions launched from a general practice (Krum et al. 2013, Steventon et al. 2013); community based clinics (Fischer et al. 2015) or remote primary care clinics (Fortney et al. 2013); in-hospital programs (Mohammadi et al. 2013); or outpatient clinic (Vuorinen et al. 2014, Wakefield et al. 2013); or healthcare center (Cruz et al. 2014); community health (nursing or nurse case manager); setting (Walters et al. 2013, Konstam et al. 2011); or a home health care/agency program (Gellis et al. 2012/14). Web-based mentoring was conducted in schools (Stasiak et al. 2014) and activated cascading messaging through social networks was community based and not restricted to the home setting (Blank et al. 2011).

3.7.6 Range of Outcomes Assessed

The range of outcomes assessed varied widely as outlined on Table 19.

Table 19: Outcomes Assessed by Telehealth Interventions

Type of Outcome	Studies
Mortality rates	Krum et al. 2011; Steventon et al. 2013
Disease specific mortality	Krum et al. 2011
General clinical outcomes	Mohammadi et al. 2013; Finkelstein et al. 2013; Wakefield et al. 2013
Disease specific outcomes	Blank et al. 2011
Mental health	Walters et al. 2013; Fortney et al. 2013; Gellis et al. 2012/14
Medication adherence	Fischer et al. 2015
Functional status	Mohammadi et al. 2013
Quality of life	Gellis et al. 2012/14; Finkelstein et al. 2013; Forney et al. 2013; Mohammadi et al. 2013; Fortney et al. 2013; Stasiak et al. 2014; Konstam et al. 2011
Self care	Vuorinen et al. 2014
Social interactions	Fortney et al. 2013
Patient satisfaction	Gellis et al. 2014; Vuorinen et al. 2014; Cruz et al. 2014; Finkelstein et al. 2011
Healthcare utilisation	Finkelstein et al. 2011; Vuorinen et al. 2014 Fortney et al. 2013
Cost	Steventon et al. 2013; Finkelstein et al. 2011
Fidelity to protocol	Fortney et al. 2013; Cruz et al. 2014
Compliance with telemonitoring	Cruz et al. 2014; Finkelstein et al. 2011
Overall wellbeing	Krum et al. 2011
Health related behaviour	Stasiak et al. 2014
Self management	Walters et al. 2013
Hospitalisation	Konstram et al. 2011; Steventon et al. 2013; Krum et al. 2011; Vuorinen et al. 2014

3.7.7 Impact on outcomes

Telehealth interventions appear to have significant positive effects in reducing the number of patients with heart failure hospitalisations in rural and remote areas (Krum et al. 2013); and reduction in patients' with COPD fatigue and improving ADL and QOL readmissions (Mohammadi et al. 2013). Walters et al. (2013) reports telephone health mentoring by community health nurses

increased self-management capacity of persons with COPD, but did not change QOL.

Wakefield et al. (2013) reports, for persons with diabetes and hypertension in the high-intensity intervention group, decreased haemoglobin A1c at 6 months, and sustained improvements in systolic blood pressure were observed together with patients being more open to lifestyle counselling and information from nurses.

Use of an off-site depression care team yielded better depression outcomes in persons with depression than implementing the collaborative care for patients with staff available on-site (Fortney et al. 2013). Use of a 'system' of technology in the home with daily monitoring of patients and nurse follow up appears to have significant positive effect. Use of such a system of monitoring and follow up with patients with heart failure or COPD resulted in improved depression symptoms, general health and social functioning (Gellis et al 2012, 2014). Patients with heart failure found making and reporting measurements via mobile phone App very useful (Vuorinen et al. 2014) and self management and general satisfaction improved for persons with COPD participating in home management for COPD (Cruz et al. 2014).

Results of a clustered RCT of web-based tailored messages as part of a school nurse-led larger wellness program, targeted for adolescents at risk of mental health problems, included positive results in mental health status and QOL (Stasiak et al. 2014). Applying a cascading approach building intensity through activation of social networks, use of beepers with alphanumeric displays then prepaid phones to encourage participants with HIV and serious mental illness to follow regimen and directly observed therapy, resulted in significantly greater reduction in viral load (Blank et al. 2011).

That said, other studies show no significant differences between the telehealth intervention and usual care in primary or secondary outcome measures: no significant difference in mortality, hospital admissions for heart failure, or

wellness in patients with chronic health failure (Krum et al. 2013); reminder telephone calls for medication pickup yielded no difference between participants and controls (Fischer et al 2015); QOL did not differ in a cluster RCT of home monitoring patients with COPD (Walter et al. 2013), and the added benefit of technological intervention (component designed to convey weight and vital signs information and text message component) over a non-technical intervention in specialised home management of patients with heart failure (Konstam et al. 2011). Use of at home stand-alone devices or combined functional monitoring devices (some linked to a monitoring centre) for persons with social care needs did not lead to significant reductions in service use (hospital, residential placement) (Steventon et al. 2013). Use of Web and a cascading approach messaging (Blank et al. 2011) for persons with HIV did not show difference in CD4 at 12 months, though the reduction in viral load was reduced in the intervention group.

3.7.8 Resource Implications

Resource implications were specifically discussed in four studies. In patients with lung transplant, monitoring by use of an algorithm-based interpretation of patient recorded pulmonary function in the home was reported to be equivalent to nurse assessment (Finkelstein et al. 2013) and authors suggest their use in managing resources in support of nurse time. Health resource use was addressed in the Vuorinen et al. (2014) study on a 'system' of telemonitoring for heart failure patients, reporting no significant difference in primary outcomes (heart failure related hospital days) with telemonitoring significantly increasing nurses' workload. Patients in usual care group increased the frequency of visits to general practitioners compared to those with telephone support (Krum et al. 2013). There was no difference in the use of physician resources and the number of visits and the time used at reception were similar between the study groups. Some patients in the Finkelstein et al. (2011) study reported personal financial cost savings.

3.7.9 Barriers and enablers

Barriers and enablers were not frequently reported within the literature. However, reported enablers to effectively implementing telehealth care included

patients willingness to engage in telephone assessment and management (Walters et al. 2013), whether the system was simple and the provision of basic instructions for patients on how to use the system (Finkelstein et al. 2011). Others included whether nurses were sufficiently trained in the theory behind home management and the intervention (Walters et al. 2013, Finkelstein et al. 2013); and sufficient work time to dedicate to the monitoring or mentoring intervention (Fortney et al. 2013). For older women managing their daily living activities while coping with functional limitations was discussed. Gellis et al. (2012, 2014) suggests that an enabler to the telehealth coaching intervention was framing the coaching within an empowering-centred approach (patient finding own strengths and self-directed to problem solve and manage the chronic disease with a 'tele nurse' as a coach).

Barriers to implementing interventions included: lack of internet availability in some areas (Finkelstein et al. 2011); assuring a competent level of patient training in the monitoring system (Mohammadi et al. 2013, Cruz et al. 2014); lack of pre-planning the telehealth intervention to suit the patient (Cruz et al. 2014); and reported high withdrawal rates for those assigned to the telehealth intervention (Walters et al. 2013).

3.7.10 Recommendations for policy, practice, research, and education

Recommendation for education, practice and policy was limited. Decisions on the generalisable usefulness and effectiveness of small single technology (phone reminders) as well as whole "system" centralised monitoring (Gellis et al. 2012, 2014, Wakefield et al. 2013) is difficult due to variability in study interventions, populations, outcome measures and training and level of engagement by nurses. It was suggested that automated telephone, web portal support should be considered for other chronic disease requiring ongoing management and multidisciplinary approaches for patients living in rural and remote regions (Krum et al. 2013).

Further research is necessary to fully refine the treatment interventions and levels of intensity needed for improvements in outcomes (Mohammadi et al.

2013). Additional research is required to identify optimal training and skillsets for the personnel (in most cases nurses) implementing the telehealth (Walters et al. 2013), and patient motivations (Gellis et al. 2012, 2014).

3.7.11 Summary

In summary, the evidence regarding telehealth interventions, although limited, appears to be generally positive in relation to reduced hospitalisations, especially for those in rural or remote areas, and useful for patients' self-management and QOL if patients and nurses are able, assuming effectiveness of the healthcare intervention, to accept and engage with the technology. Patient satisfaction and health-related outcomes are reported positively, particularly noted in studies with patients with cardiac disease and/or COPD (Krum et al, 2013, Fischer et al. 2015, Walters et al. 2013), however some mixed and neutral evidence also exists in this group and across other populations (Konstam et al 2011).

Telehealth may be an efficient and effective method of systematically delivering integrated or specialist home based care . The use of telehealth technology may benefit homebound adults who have difficulty accessing care due to disability, transportation or isolation. These studies identify clearly that technology is being deployed to expand healthcare delivery beyond traditional hospital and clinic settings into the home and community (Fortney et al. 2013).

The use and usefulness of health care protocols in assessment and evaluation of physical and social symptoms and disease and health management has, by deploying technology, expanded beyond face to face only institutional or clinic context to the home and community. The combined use of protocols and nurse as coach, mentor, care manager, or member of collaborative team, delivered as an intervention via phone, in home devices, internet and social media, is being considered for homebound or rural adults and adolescents in community with health or illness conditions as a means to improve health status, QOL, and patient centred decision making and self management (Fisher et al. 2013, Krum et al. 2013, Konstam et al. 2011, Vuorinen et al. 2014, Mohammadi et al. 2013,

Walters et al. 2013, Cruz et al. 2014, Gellis et al. 2012, 2014, Fortney et al. 2013, Wakefield et al. 2013, Stevenson et al. 2013, Blank et al. 2011, Stasiak et al. 2014, Finkelstein et al. 2011).

Overall, however, studies of telehealth programs do not provide sufficient detail on individual program components to inform the identification of the appropriate number, type, and frequency of interventions needed to improve outcomes or translate findings to practice. Decisions on the generalisable, usefulness and effectiveness of small single technology (phone reminders) as well as whole "system" centralised monitoring (Gellis et al. 2012, 2014, Wakefield et al. 2013) is difficult. This is due to variability in study interventions, populations, outcome measures and training and level of engagement by nurses. Finally, nursing care with use of technology has been shown to be effective, yet there still exists a need to design programs moderated and based on patient needs.

3.8 Transitional Care

Transitional care is initiated during a patient's hospital stay and continues after discharge. It is designed to promote continuity of care by bridging the gap between hospital and home or another non-hospital location such as community or residential care (Verhaegh et al. 2014, Feltner et al. 2014).

3.8.1 Characteristics of Studies

This evidence is drawn from nine studies consisting of systematic reviews with meta-analysis (n=1), systematic reviews (n=3), meta-analysis of RCTs (n=1), and RCTs (n=4). Studies originated from the USA (n=2), Netherlands (n=2), Australia (n=2), New Zealand (n=1), Scotland (n=1) and China (n=1).

Quality assessments were completed for all included papers. The Cochrane Risk of Bias assessment tool was used for RCTs (n=4) as outlined in Chapter 2. The RCTs (Figure 9) showed largely low risk of bias (Stewart et al. 2012, 2014b, Fischer et al. 2012), although one demonstrated both high and unclear risks of various specific forms of bias (Utens et al. 2012, 2013).

The AMSTAR tool was used to assess the systematic reviews (n=5). The systematic reviews were generally found to be of medium to high quality overall (Table 20).

3.8.2 Definitions

Transitional care is initiated during a patient's hospital stay and continues after discharge, in order to reduce hospital readmissions, particularly for patients with chronic illness (Verhaegh et al. 2014, Feltner et al. 2014). The majority of papers reporting on transitional care interventions did not provide definitions for transitional care.

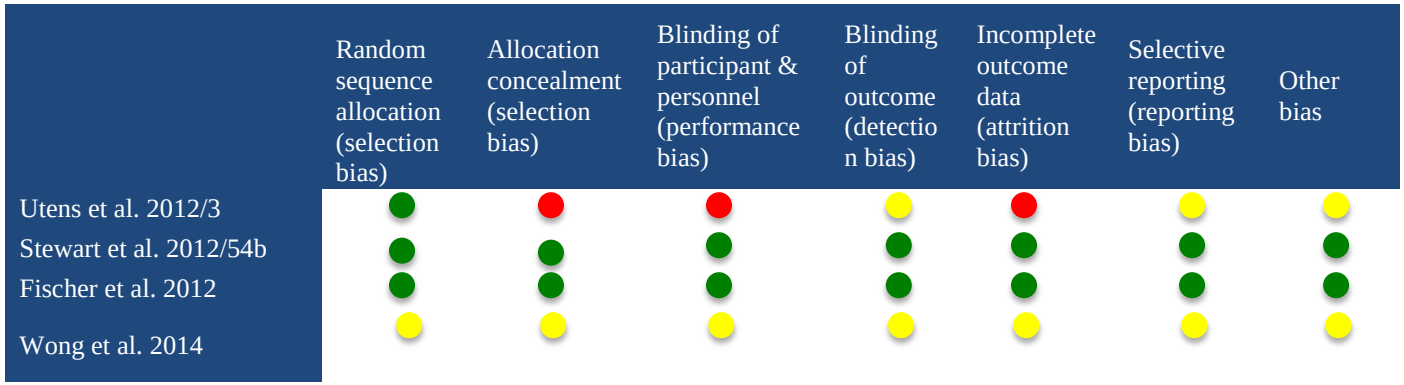

Figure 9: Visual Summary of the Risk of Bias Assessed Using the Cochrane ROB Tool – Transitional Care

Table 20: Summary of the AMSTAR applied to studies in Transitional Care

	A Priori design	Duplicate selection and data extract.	Lit. search	Publicati on status as inclusion criterion	List of incl/ excl studies	Characteristi cs of included studies specified	Quality assessed	Appro. use of quality to formulate conclusions	Appro. method of combin. findings	Likelihood of publication bias assessed	Conflict of interest consider.
Parsons et al. 2012	YES	NO	DK	NO	NO	YES	NO	NO	YES	NO	YES
Feltner et al. 2014	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES
Blair et al. 2011	YES	YES	YES	YES	YES	YES	DK	DK	NO	DK	DK
Verhaegh et al. 2014	DK	YES	YES	YES	YES	YES	YES	YES	YES	DK	DK
Wong et al. 2011	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

3.8.3 Interventions and Core Components

A total of 9 studies reported on transitional care interventions, the most common of which was outreach nursing (Table 21).

Table 21: Type of Transitional Care Interventions

Type of Intervention	Author
Intermediate care	Parsons et al. 2012
Nurse coordinated interventions	Feltner et al. 2014
Assisted discharge	Utens et al. 2013; Utens et al. 2012
Outreach nursing	Blair et al. 2011; Stewart et al. 2014b; Stewart et al. 2012; Fischer et al. 2012; Verhaegh et al. 2014; Wong et al. 2011
Care planning	Wong et al. 2014

Core components of transitional care interventions included home visits (Parsons et al. 2012, Feltner et al. 2014, Blair et al. 2011, Stewart et al. 2012, Stewart et al. 2014B, Verhaegh et al. 2014, Wong et al. 2011, Wong et al. 2014), rehabilitation (Parsons et al. 2012, Blair et al. 2011), advanced care management (Parsons et al. 2012), telephone support (Feltner et al. 2014, Utens et al. 2013, Utens et al. 2012, Blair et al. 2011, Fischer et al. 2012, Verhaegh et al. 2014), tele-monitoring (Feltner et al. 2014), clinic-based heart failure care (Feltner et al. 2014, Stewart et al. 2012, 2014b), patient education (Feltner et al. 2014, Blair et al. 2011, Wong et al. 2011, Verhaegh et al. 2014), hospital at home support (Utens et al. 2013, 2012), support (Blair et al. 2011; Wong et al. 2011), coordination (Blair et al. 2011, Verhaegh et al. 2014), discharge planning (Verhaegh et al. 2014), post discharge follow-up (Verhaegh et al. 2014), health monitoring (Wong et al. 2011) and nurse-led liaison with physicians (Wong et al. 2011). A transitional care model reported on by Wong et al. (2014) included pre- and post-discharge care planning using the Omaha system, in addition to follow up home visits and/or telephone calls.

3.8.4 Role of the Nurse

Many transitional care interventions were nurse-led (Utens et al. 2013, 2012, Blair et al. 2011, Fischer et al. 2012, Wong et al. 2011, Wong et al. 2014, Verhaegh et al. 2014), although one was led by the multidisciplinary team

(Parsons et al. 2012), and others included both nurse-led and multidisciplinary team components (Feltner et al. 2014, Stewart et al. 2012, 2014b).

3.8.5 Population and Settings

Population groups involved were all comprised of adults, with two studies focusing specifically on older adults (Parsons et al. 2012, Stewart et al. 2012, 2014b).

Health conditions targeted by these interventions included cardiac conditions, often with a specific focus on heart failure (Blair et al. 2011, Verhaegh et al. 2014, Feltner et al. 2014, Stewart et al. 2012, 2014b), COPD (Utens et al. 2013, 2012, Wong et al. 2011, Verhaegh et al. 2014), diabetes (Fischer et al. 2012), various unspecified conditions (Wong et al. 2014), and older adults at risk of institutionalisation (Parsons et al. 2012).

Settings of care varied, with most taking place at home (Utens et al. 2013, 2012, Blair et al. 2011, Verhaegh et al. 2014, Wong et al. 2011), and one at a community-based family health centre (Fischer et al. 2012). A small number of interventions were implemented across several settings such as home, community and residential care (Parsons et al. 2012), or home and clinic settings (Feltner et al. 2014, Stewart et al. 2012, 2014b), or hospital and home (Wong et al. 2014).

3.8.6 Range of Outcomes Assessed

Studies assessed a range of outcomes as outlined on Table 22

Table 22: Outcomes Assessed by Transitional Care Interventions

Outcomes	Studies
Mortality rates	Parsons et al. 2012; Feltner et al. 2014; Stewart et al. 2012, 2014B; Wong et al. 2011; Blair et al. 2011
Hospitalisations	Stewart et al. 2014B, 2012, Fischer et al. 2012, Wong et al. 2011,
Rehospitalisations	Feltner et al. 2014, Blair et al. 2011
Short, intermediate and long-term readmissions	Verhaegh et al. 2014,
Disease-specific re-hospitalisations	Feltner et al. 2014

Cholesterol levels	Blair et al. 2011, Fischer et al. 2012
Costs	Stewart et al. 2012, Wong et al. 2011
Depression	Parsons et al. 2012, Blair et al. 2011
Admissions to residential care	Parsons et al. 2012
Activities of daily living (ADLS)	Parsons et al. 2012
Cognitive function	Parsons et al. 2012
Patient satisfaction	Utens et al. 2013, 2012; Wong et al. 2014
Frequency of angina exacerbations	Blair et al. 2011
Difference in physical activity	Blair et al. 2011
Anxiety	Blair et al. 2011
Event-free survival	Stewart et al. 2014B, 2012
Days in hospital	Stewart et al. 2012; 2014B
Hospital charges per patient	Fischer et al. 2012
Service outcomes	Wong et al. 2014
Self-efficacy	Wong et al. 2014
Disease-specific health-related quality of life	Wong et al. 2011

3.8.7 Impact on Outcomes

Transitional care interventions appear to have significant positive effects in reducing all-cause readmissions (Feltner et al. 2014), mortality rates (Feltner et al. 2014), and heart failure-related re-hospitalisations (Feltner et al. 2014). Furthermore, follow up home visits and telephone calls implemented as part of a transitional care model were found to reduce readmissions by 17% compared to the control group (Wong et al. 2014). However, no difference was seen between the control group and those who received only telephone follow up. Furthermore, although Stewart et al. (2014b, 2012) report no significant difference between groups in event-free survival at 12 to 18 month follow up, they reported greater long term survival rates, 35-37% fewer days of hospital stay (for both all-cause, and cardiovascular-related hospitalisations), and greater engagement of patients within the home care group. They therefore propose home based post-discharge management of heart failure patients as a potentially cost effective approach, stating that costs were almost one-third less within the home care group (Stewart et al. 2012). However, one study included in a systematic review by Wong et al. (2011) indicated that home care was expensive, incurring higher costs than usual care. Furthermore, no consistent significant differences were found by Blair et al. (2011) between home and hospital based

intervention groups in relation to any of the specified outcomes, and no significant cost differences were found over the 9 month intervention period.

A systematic review and meta-analysis conducted by Verhaegh et al. (2014) reports that transitional care interventions were found to be effective at reducing all cause readmissions in the intermediate and long term. However, only high-intensity interventions were effective at reducing readmissions in the short term. Furthermore, outreach nursing interventions from a systematic review by Wong et al. (2011) revealed only a non-significant reduction in mortality, and no significant difference in the number of hospitalisations. Parsons et al. (2012) also report greater levels of institution-free survival following intermediate care interventions.

A nurse-led telephone outreach intervention was associated with significantly improved LDL cholesterol levels compared with usual care and a decrease in overall utilisation of healthcare, particularly inpatient and emergency department use (Fischer et al. 2012). Transitional care interventions also showed some positive effects in terms of patient satisfaction, as a systematic review of outreach nursing interventions by Wong et al. (2011) demonstrated a significant improvement in health-related quality of life across four studies. Similarly, Wong et al. (2014) demonstrated that a combined home visit and telephone call intervention involving discharge planning resulted in significantly higher patient satisfaction and self-efficacy than the control group.

Furthermore, an RCT by Utens et al. (2013) reported that patients' expressed a preference for home based treatment despite the home intervention group demonstrating slightly lower ability to resume activities , and slightly greater rates of feeling unsafe at night . Furthermore, generic health-related quality of life was higher in the hospital care group at 7 days (Utens et al. 2012). However, despite these mixed findings, Utens et al. (2012) recommend early assisted discharge and home visits as a viable alternative to usual hospital based care for COPD patients. A number of intervention components were commonly reported,

and associated with positive outcomes, including home visiting and home based care, nursing case management, and telephone support.

Home visiting was associated with reduced HF related readmissions (Feltner et al. 2014) and reduced mortality (Feltner et al. 2014, Stewart et al. 2014b), and a nurse-led hospital at home programme was found to be preferred by patients to usual hospital based care (Utens et al. 2013). A home visit within three days of hospital discharge was a central component of outreach interventions associated with positive long, intermediate and short term outcomes (Verhaegh et al. 2014). Furthermore, the combination of Omaha discharge planning, home visits and telephone call follow-up was associated with significantly better outcomes compared with discharge planning and telephone follow up only, or with the control group (Wong et al. 2014). Home visiting by heart failure specialist nurses was also found to be associated with reduced costs (Stewart et al. 2012). Stewart et al. (2014b) link favourable outcomes of the home visits to the potential of home visiting to promote a better therapeutic relationship and empower patients to manage their condition proactively. However, home based cardiac rehabilitation showed no significant difference to hospital based cardiac rehabilitation (Blair et al. 2011).

Case management was a component of two successful interventions, one examining three models of intermediate care (Parsons et al. 2012), and one which examined the effects of a nurse-led telephone outreach programme (Fischer et al. 2012). These interventions were associated with increased institutional-free survival (Parsons et al. 2012), improved LDL cholesterol levels, and reduced healthcare utilisation (Fischer et al. 2012). Structured telephone support was also associated with reduced HF related readmissions although not with reduced all-cause readmissions (Feltner et al. 2014). Similarly, care coordination by nurses was linked to positive outcomes of outreach nursing interventions in a systematic review by Verhaegh et al. (2014). Verhaegh et al. (2014) further recommends that communication between primary care providers and the hospital is required for effective hospital to home transitional care.

Tele-monitoring and educational interventions were observed to have no overall significant effect on readmission rates or mortality by Feltner et al. (2014). However some positive effects were reported in association with telephone support, including reduced heart failure related readmissions (Feltner et al. 2014). Furthermore, a telephone outreach intervention by Fischer et al. (2012) was associated with reduced healthcare utilisation and improved cholesterol. However, these components have also been described as components of other types of interventions, which are discussed in the other categories of this report.

3.8.8 Resource Implications

Resource implications were not reported by most studies focusing on transitional care (n=4). No significant cost differences were found between groups in relation to cardiac rehabilitation at home versus in hospital (Blair et al. 2011). Furthermore transitional home care was reported in one study from a review conducted by Wong et al. (2011), to be expensive compared to usual care. However, home-based transitional care was associated with reduced costs by Stewart et al. (2012). Fischer et al. (2012) suggest a possible reduction in resource utilisation associated with a telephone based outreach intervention, particularly in relation decreased inpatient and emergency department usage.

3.8.9 Barriers and Enablers

Barriers and enablers were not frequently reported within the literature. However, enablers to effectively implementing care included coordination of services (Parsons et al. 2012), arranging home visits prior to hospital discharge, and clarifying expectations about home visiting (Utens et al. 2013). Barriers to implementing interventions included lack of specialist training of community nurses to cater to patients on newly prescribed home oxygen or nebulisers (Utens et al. 2012). Accessibility and distance were barriers identified for patients living in remote or rural areas (Blair et al. 2011).

3.8.10 Recommendations for policy, practice, education and research

A number of recommendations arose in relation to transitional care interventions. Well-developed intermediate care services are needed to minimise risks to the older people living at home (Parsons et al. 2012). Utens et

al. (2012) stress that patient preference for care should be an important factor in delivery of care and greater emphasis is needed on establishing the safety and effectiveness of difference types of home care services, including cardiac rehabilitation. Modern approaches such as tele-rehabilitation should be considered (Blair et al. 2011). Furthermore, telephone care was recommended by Fischer et al. (2012) as an effective method of managing lipid control in patients with diabetes, but a more targeted approach was recommended. Wong et al. (2014) suggest that a skill mix of support workers and qualified health professionals is beneficial in health systems experiencing resource constraints.

Feltner et al. (2014) states that future research should evaluate whether interventions reducing longer-term readmission rates also reduce readmissions in the short term, and should directly compare different types of interventions. Further research into the cost-effectiveness of transitional care interventions is also necessary (Verhaegh et al. 2014, Wong et al. 2011), and more focus in needed in evaluating system aspects of the implementation of such interventions (Verhaegh et al. 2014). It has also been suggested by Verhaegh et al. (2014) that telehealth may be an important method of care delivery, and that strengthening primary care systems may facilitate care delivery.

3.8.11 Summary

In summary, the overall evidence regarding transitional care interventions appears to be largely positive in relation to reducing readmission rates (Feltner et al. 2014, Wong et al. 2014, Verhaegh et al. 2014), reducing mortality (Feltner et al. 2014), increasing patient satisfaction (Wong et al. 2011, Wong et al. 2014) and improving health-related outcomes(Feltner et al. 2014, Fischer et al. 2012). However, some mixed and neutral evidence also exists (Utens et al. 2012). Components of interventions associated with positive outcomes appear to be home visiting (Feltner et al. 2014, Stewart et al. 2012, 2014b, Verhaegh et al. 2014, Wong et al. 2011), nurse case management or care coordination (Parsons et al. 2012, Fischer et al. 2012, Verhaegh et al. 2014), and telephone support (Feltner et al. 2014, Fischer et al. 2012). The studies included in relation to home visiting, in particular, were of high quality (Feltner et al. 2014, Stewart et

al. 2012, 2014B, Wong et al. 2011), with a number of studies in relation to other components also of relatively high quality (Fischer et al. 2012).

3.9 Nursing and Midwifery in the Community with Non-Professionals

These interventions included teams of community nurses working with non-professionals such home visitors, liaison workers and para professional advocates.

3.9.1 Characteristics of Studies

A total of 10 studies reported on nursing in the community with non-professional community workers. This evidence is drawn from systematic reviews with meta-analysis (n=1), systematic reviews (n=3), and RCTs (n=6). The majority of studies originated from the USA (n=6) with the remainder from Australia (n=4).

The quality of the RCTs assessed using the Cochrane ROB tool varied and the risk of bias across domains of the tool was often unclear (Figure 10). One study (Hamid et al. (2014) demonstrated a low risk of bias.

The AMSTAR was used to assess the quality of reviews included in this category. The quality of the reviews was generally medium to high, however none of them fulfilled all the criteria to be considered low risk of bias (see Table 23).

3.9.2 Definitions

Studies relating to nursing in the community with non-professionals were varied and most studies did not include a formal definition. However most interventions involved home visiting defined in Radcliff et al. (2013), as a programme designed *"to improve the physical and mental health of mothers, such as increasing time to subsequent pregnancies and improving parenting skills"* (p.S154) and included a combination of lay workers or peers and professionals.

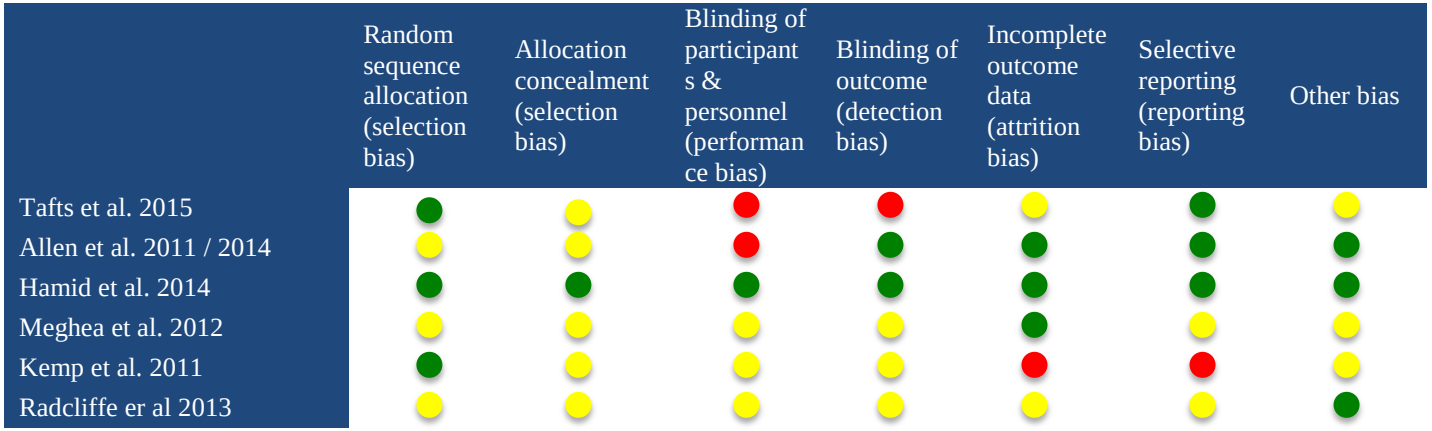

Figure 10: Visual Summary of the Risk of Bias Assessed Using the Cochrane ROB Tool – Non Professionals

Table 23: Summary of the AMSTAR applied to studies in Non Professional Category

	A Priori design	Duplicate selection and data extract.	Lit. search	Publication status as inclusion criterion	List of incl/ excl studies	Characteristics of included studies specified	Quality assessed	Appro. use of quality to formulate conclusions	Appro. method of combin. findings	Likelihood of publication bias assessed	Conflict of interest consider.
Filene et al. 2013	DK	DK	YES	YES	NO	NO	NO	NO	YES	NO	YES
Segal et al. 2012	NO	YES	YES	YES	YES	YES	YES	YES	YES	DK	YES
Dennis et al. 2013	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES
Turnbull et al. 2012	YES	YES	YES	DK	YES	YES	YES	YES	YES	YES	YES

3.9.3 Interventions and Core Components

Specific types of nursing or midwifery in the community with non-professional interventions varied based on population and focus of intervention (Table 24).

Table 24: Types of nursing and midwifey rin the community with non-professional interventions

Type of Intervention	Authors
Nurse designed good practice model	Tafts et al. 2015
Nurse /midwifery home visiting	Filene et al. 2013; Radcliff et al. 2013; Segal et al. 2012; Tumbull et al. 2012; Kemp et al. 2011
Community outreach	Allen et al. 2014; Allen et al. 2011
Enhanced pre and post natal services	Meghea et al. 2012
Behavioural intervention to improve diabetes control	Hamid et al. 2011
Psychosocial and psychological interventions for post- partum depression	Dennis & Dowswell 2013

Core components of nursing or midwifery in community with non-professionals included: nurse mentors, maternal health and domestic violence screening (Tafts et al. 2015); information on child development and child care routines, home care environment safety and cleanliness, support and social networks, attendance to children's emotional and cognitive need, adult literacy, parenting practice, problem solving and goal setting (Filene et al. 2013); Behavioural interventions for therapeutic lifestyle changes, medication adherence, home visits and telephone interventions (Allen et al. 2011 and Allen et al. 2014); behavioural interventions on health care utilisation including ED visits and hospitalisation (Hamid et al. 2011); Risk screening, counselling, nutritional guidance, education on pregnancy and parenting, self–esteem, positive health behaviours (Meghea et al. 2012); Structured home visits with education on child development, early childhood health services and family support (Kemp et al. 2011); education and training, role modelling, provision of child care (Segal et al. 2012); home visits by teams of professionals, weekly supervision to monitor progress of children, regular reminder calls (Radcliff et al. 2013); post-partum psychosocial and psychological interventions to those at risk of post natal

depression (Dennis & Dowswell, 2013); and home visits by teams during pregnancy, on or after birth (Turnbull, 2012).

3.9.4 Role of the Nurse or Midwife

All nursing and midwifery in the community with non-professionals involved nurses or midwives, either as individual nurse practitioners (Allen et al. 2011 and Allen et al. 2014), as nurse community health workers (Segal et al. 2012) or community nurses, paediatric nurses and midwives working in teams with other professionals such as psychologists and social workers, physicians, mental health specialists, therapists and trained counsellors (Filene et al. 2013, Dennis & Dowswell, 2013). A number of studies included nurses with non-professional home visitors, liaison workers and para professional advocates (Taftes et al. 2015, Filene et al. 2013, Radcliff et al. 2013, Turnbull, 2012).

3.9.5 Population Groups and Health Conditions

Population groups comprised of new mothers and children (Tafts et al. 2015, Dennis & Dowswell, 2013); pregnant women at risk (Filene et al. 2013, Meghea et al. 2012, Kemp et al. 2011); teenage parents (Segal et al. 2012); mothers with high poverty rates (Radcliff et al. 2013); pregnant women with drug and alcohol problems (Turnbull, 2012). Two papers focused specifically on adults, with cardiovascular disease (Allen et al. 2011, Allen et al. 2014) and adults with type two diabetes (Hamid et al. 2011). The care setting for most interventions was in the home with a number also provided in community health clinics (Allen et al. 2011, Radcliff et al. 2013, Filene et al. 2013, Allen et al. 2014).

3.9.6 Outcomes Assessed

The range of outcomes assessed varied widely (Table 25). The most common outcomes measured included pregnant women, mothers and children (Tafts et al. 2015, Filene et al. 2013, Turnbull et al. 2012); the quality of home environment (Kemp et al. 2011); child development outcomes and immunisation (Kemp et al. 2011); infant perinatal outcomes such as infant health, birth weight, feeding problems, infections (Filene et al. 2013, Kemp et al. 2011); child abuse prevention (Segal et al. 2012); time with family (Radcliff et al. 2013); rates of health visits (Radcliff et al. 2013); and drug and alcohol outcomes (Turnbull et al. 2012). In studies conducted with adults, the outcomes reported were clinical e.g.

total cholesterol, blood pressure (Allen et al. 2011., Allen et al. 2014) and frequency of ED Visits (Hamid et al. 2013).

Table 25: Types of outcomes measured - nursing in the community with non-professional interventions

Type of Outcome	Studies
Maternal and Child Health	
Post-partum clinical health outcomes	Tafts et al. 2015; Filene et al. 2013; Turnbull et al. 2012
Quality of home environment	Kemp et al. 2011
Child development and immunisation	Kemp et al. 2011
Infant health i.e. birth weight, feeding problems, infections	Kemp et al. 2011
Child abuse prevention	Segal et al. 2012
Time with family	Radcliff et al. 2013
Rate of health visits	Radcliff et al. 2013
Maternal drug and alcohol outcomes	Turnbull et al. 2012
Adult Clinical Outcomes	
Total cholesterol, blood pressure	Allen et al. 2011; 2014
ED Visits	Hamid et al. 2013

3.9.7 Impact on Outcomes

Nursing and midwifery in the community with non-professionals appears to have significant positive effects for pregnant women at-risk, particularly in increased screening for maternal health and increased safety planning rates (Tafts et al. 2015) together with improved birth outcomes, child physical health and parenting skills (Filene et al. 2013). A home visitation programme involving nurses resulted in fewer incidences of mother-reported asthma or croup in babies (Meghea et al. 2012), but a structured nurse home visiting and parenting education programme resulted in no outcome differences for mothers (Kemp et al. 2011). On the other hand, Radcliff et al. (2013) found that home-visited mothers were 10.7 times as likely to keep paediatric appointments, compared with those not visited. Combined home visits with psychosocial and psychological interventions by nurses, midwives and lay peer-based support demonstrated beneficial effects on the prevention of depressive symptomatology (Dennis and Dowswell, 2013). Home visits after birth to mothers with alcohol and drug problems were reported in individual studies to have a significant

reduction in involvement with child protective services. However no significant difference resulted in alcohol and drug use. In studies with adults with cardiovascular disease, nursing in community with non-professionals resulted in an improvement in clinical outcomes such as cholesterol level and blood pressure improvement (Allen at al, 2011, Allen et al. 2014) and in studies with adults with type 2 diabetes a reduction in the relative risk of ED visits (Hamid et al. 2014).

Few individual intervention components were reported to be associated with positive outcomes. However, home visiting using a combination of psychosocial interventions, telephone support, pre and postpartum screening, and education was associated with positive outcomes for mothers and children at risk.

3.9.8 Resource Implications

Resource implications were largely unreported. However in one RCT, financial analysis of the nurse-led community outreach intervention reported the intervention to be a cost-effective model of care (Allen et al. 2011 and 2014) but further analysis was recommended. In contrast, Hamid et al. (2014) reported that a Nurse-Community Health Worker diabetes intervention increased primary care utilisation by 71% in the CHW group compared to the usual care group. In a systematic review of home visiting programmes, Segal et al. (2012), stressed the need for adequate resources, appropriately skilled team members, access to training and quality assurance processes to ensure success.

3.9.9 Barriers and Enablers

Barriers and enablers were not frequently reported within the literature. Enablers of positive outcomes for nursing in community with non-professionals were longer screening time and a focus on mother and child (Tafts et al. 2015); appropriately skilled teams and well trained nurses with an understanding of the population needs (Segal et al. 2012, Turnbull et al. 2012). Trust and trusting relationships were also reported as enablers in two studies (Turnbull, 2012, Segal et al. 2012). Barriers to implementing interventions included lack of nurse reflective practice (Tafts et al. 2015) and increased patient participation in clinics resulting in increased costs (Allen et al. 2011 & 2014). Limited funding

was also reported as a barrier to a long term nurse home visiting programme (Kemp et al. 2011).

3.9.10 Recommendations for policy, practice, research and education

Recommendations from studies were mainly focused on practice and further research.

In relation to a nurse-designed good practice model for maternal and child health, recommendations include a need for greater attention as to how screening is implemented in primary care and further research on intermediate outcomes such as safety planning and its benefits (Tafts et al. 2015).

Allen et al. (2011, 2014) recommended that evidence-based treatment algorithms should be adopted, as they are a successful, cost-effective, strategy to manage hypertension, hyperlipidaemia and diabetes in high-risk vulnerable populations. However, these researchers recommend further study to determine whether a community outreach intervention translates into improved morbidity and mortality from CVD. The use of longer follow up periods was recommended for evaluation of long-term impacts of Community Health Worker interventions on utilisation (Hamid et al. 2014).

The replication of an RCT study of structured nurse home visiting programme including parenting education and support using larger diverse samples of mothers was recommended (Kemp et al. 2011).

Further large, high-quality trials are recommended incorporating antenatal home visits with encouraging pregnant women with a drug or alcohol problem to access early and frequent antenatal care, stabilise drug use, reduce or eliminate alcohol use in pregnancy and remain engaged with services during their child's first years of life. Trials also need to include dynamic models incorporating case management (Turnbull et al. 2012).

Recommendations for practice suggest that to maximize success of home visiting programmes they need to be true to the programme's prinicples and associated

theory. Adopting 'off-the-shelf' programme models is no guarantee of success, particularly if they are not designed for the target population and their specific circumstances (Segal et al. 2012). According to Dennis & Dowswell (2013), interventions that are individually based, initiated postnatally and targeting 'at-risk' mothers may be more beneficial and feasible than those including a general maternal population.

3.9.11 Summary

This section included RCTS (n=6), SRs (n=3) and one Meta-analysis. S tudies were mainly from USA but also from Australia, New Zealand and the UK. The quality of RCTs was mainly unclear and quality assessments of SRs were medium to high. The types of the interventions reviewed included: home visiting, psychosocial and psychological and behavioural interventions, information on child development and child care routines, lifestyle changes and medication adherence, risk screening, counselling, nutritional guidance, education on pregnancy and parenting. Most community nursing with non-professionals was based in the home while three were based in community health clinics (Allen et al. 2011 & 2014, Radcliff et al. 2013, Filene et al. 2013). All interventions were nurse or midwife-led. The interventions were mainly delivered to pregnant women at risk or new mothers and children. Two studies focused specifically on adults; one with cardiovascular disease (Allen et al. 2011 and Allen et al. 2014) and adults with type two diabetes (Hamid et al. 2011).

Outcomes encompassed a wide range of clinical health outcomes, infant health and child developmental outcomes within a primary prevention framework. Findings revealed that the nurse-led interventions with non-professional components had significant positive effects on maternal health (Tafts et al. 2015), depressive symptomology (Dennis and Dowswell, 2013), improved birth outcomes, child physical health and parenting skills (Meghea et al. 2012, Filene et al. 2013, Radcliff et al. (2013) and a reduction in the risk of ED visits in adults with type 2 diabetes (Hamid et al. 2014). The components associated with improved outcomes overall were a combination of psychosocial interventions, telephone support, pre and postpartum screening, and education. In conclusion,

it has been demonstrated that nurse and midwife-led community interventions incorporating non-professionals using a combination of psychosocial interventions, education and telephone support, delivered by well-trained individuals and within a trusting relationship have been effective. However adequate resources, appropriately skilled teams, access to training and quality assurance processes are needed to ensure success.

3.10 Preventative focus

Preventative health care includes interventions or measures taken to prevent disease or ill health as opposed to treatment of disease. It may be primary, secondary or tertiary (WHO 2008b)

3.10.1 Characteristics of Studies

A total of twenty papers (from 19 studies) reported on interventions with a preventative focus. This evidence is drawn from Systematic Reviews (n=3); Cluster RCTs (n= 5); Group RCT (n=1) and RCTs (n= 9).

The studies were predominantly conducted in the USA (n=13), followed by UK (n=3), Netherlands (n=1), Norway (n=1) and Iran (n=1). The risk of bias assessments of the RCTs included in this section revealed, that most information is from studies which fall into the unclear risk of bias category. One criteria in particular i.e. 'reporting bias' was high (Figure 11). This pattern coincides with the overall risk of bias assessment for all RCTs included in the evidence review

The AMSTAR quality appraisal assessment revealed that one SR (Lopez et al. 2015) was very high quality and the others (Ahmad et al. 2011, Brackney et al. 2015) were of low and very low quality respectively (Table 26). This is in contrast to the variability and predominant overall very good quality of the SRs in the evidence review.

3.10.2 Defintions

The studies reviewed did not define preventative interventions specificially.

3.10.3 Types of Intervention

Interventions varied based on their target population with a signficiant emphasis on maternal and child health (Table 27).

	Random sequence allocation (selection bias)	Allocation concealment (selection bias)	Blinding of participants & personnel (performance bias)	Blinding of outcome (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Fahs et al. 2012	🟡	🟡	🟡	🟡	🔴	🟡	🟡
Kokkvall et al. 2013	🔴	🔴	🔴	🔴	🔴	🔴	🔴
Kempe et al. 2014	🔴	🟡	🟡	🟡	🟡	🔴	🟡
Kinter et al. 2014	🟡	🟡	🔴	🟡	🔴	🔴	🔴
Halterman et al. 2011	🔴	🟡	🟢	🔴	🔴	🔴	🟢
Borawaski et al. 2014	🟡	🟡	🔴	🔴	🟡	🔴	🟢
Bannink et al. 2014	🔴	🟡	🟡	🟡	🔴	🔴	🟡
Pbert et al. 2011	🔴	🟢	🟡	🟡	🔴	🔴	🔴
Pbert et al. 2013	🟡	🟢	🔴	🟡	🟡	🔴	🟡
Wright et al. 2013	🟡	🟡	🟡	🟡	🔴	🔴	🔴
Cicutto et al. 2013	🔴	🟡	🟡	🟢	🟡	🔴	🟡
Brugha et al. 2011	🔴	🔴	🔴	🟡	🔴	🔴	🔴
Cooper et al. 2015	🟡	🟡	🔴	🟡	🟡	🔴	🔴
Dodge et al. 2013/2014	🔴	🔴	🔴	🟡	🔴	🔴	🔴
Mirmolaei et al. 2014	🔴	🟡	🔴	🟡	🟢	🔴	🟡
Christie and Bunting 2011	🟢	🟢	🟢	🟢	🟡	🟢	🟢

Figure 11: Visual Summary of the Risk of Bias Assessed Using the Cochrane ROB Tool – Preventative

Table 26: Summary of the AMSTAR applied to Preventative studies

	A Priori design	Duplicate selection and data extract.	Lit. search	Publication status as inclusion criterion	List of incl/ excl studies	Characteristics of included studies specified	Quality assessed	Appro. use of quality to formulate conclusions	Appro. method of combin. findings	Likelihood of publication bias assessed	Conflict of interest consider.
Brackney et al. 2015	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	DK
Lopez et al. 2015	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES
Ahmad et al. 2011	NO	DK	NO	DK	NO	YES	NO	DK	YES	NO	NO

Table 27: Types of Preventative Interventions

Type of Intervention	Authors
Postpartum	Lopez et al. 2015; Brugha et al. 2011; Christie & Bunting 2011; Dodge et al. 2013; Dodge et al. 2015; Cooper et al. 2015; Mirmolaei et al. 2014
School based	Ahmad et al. 2011; Cicutto et al.2013; Halterman et al. 2011; Kinter et al.2014; Pbert et al. 2011; Pbert et al. 2013; Wright et al. 2013; Borawski et al. 2014 ; Bannink et al.2014
Community obesity management	Kokkvoll et al. 2013
Cardiac intervention for female CVD prevention	Fahs et al. 2012
Non-pharmacological intervention for T2 DM in youth	Brackney et al. 2015
Immunisations for children	Kempe et al. 2014

Core components of preventative interventions included: education (Ahmad et al. 2011, Bannink et al. 2014, Borawski et al. 2014, Cicutto et al. 2013, Dodge et al. 2013, 2014, Fahs et al. 2012, Pbert et al. 2011a, 2013, Lopez et al. 2015); counselling (Brugha et al. 2011, Kokkvoll et al. 2013, Kinter et al. 2014, Lopez et al. 2015, Pbert et al. 2013); support (Bannink et al. 2014, Pbert et al. 2011, 2013); medication management (Halterman et al. 2011); interactive exercises (Borawski et al. 2014, Cicutto et al. 2013, Wright et al. 2013); role play (Borawski et al. 2014); home visits (Brugha et al. 2011, Christie & Bunting, 2011, Cooper et al. 2015, Dodge et al. 2013, 2014; Mirmolaei et al. 2014); videos (Borawski et al. 2014, Lopez et al. 2015) and social media i.e. websites (Fahs et al. 2012).

3.10.4 Role of the Nurse or Midwife

One of the interventions was interdisciplinary which included nurses (Kokkvoll et al. 2013) but the remainder of the preventative interventions were nurse-led (Kempe et al. 2014, Lopez et al. 2015), specifically HVs (Brugha et al. 2011, Cooper et al. 2015, Chrisite & Bunting, 2011); paediatric nurses (Kokkvoll et al. 2013); community nurses (Dodge et al. 2013, 2014; Fahs et al. 2012); midwives (Mirmolaei et al. 2014), school nurses (Ahmad et al. 2011, Bannink et al. 2014, Borawski et al. 2014, Kinter et al. 2014, Halterman et al. 2011, Pbert et al. 2011, 2013, Wright et al. 2013) and PHNs (Cicutto et al. 2013).

3.10.5 Population and Conditions

Population groups included: antenatal women (Cooper et al. 2015); postnatal mothers (Brugha et al. 2011, Christie & Bunting, 2011, Dodge et al. 2013, Dodge et al. 2015, Lopez et al. 2015, Mirmolaei et al. 2014); Children/adolescents (Ahmad et al. 2011, Bannink et al. 2014, Borawski et al. 2014, Brackney et al. 2015, Cicutto et al.2013, Halterman et al. 2011, Kempe et al. 2014, Kinter et al. 2014, Pbert et al. 2011, 2013; Wright et al. 2013); obese families (Kokkvoll et al. 2013); and females with CVD (Fahs et al. 2012).

3.10.6 Settings

The healthcare setting for studies included: hospital with follow up at home (Lopez et al. 2015); home visits (Brugha et al. 2011, Cooper et al. 2015, Chrisite & Bunting, 2011, Dodge et al. 2014, Mirmolaei et al. 2014); family practice (Kempe et al. 2011); community setting (Bannink et al. 2014, Brackney et al. 2015, Fahs et al. 2012) and schools (Ahmad et al. 2011; Borawski et al. 2014, Brackney et al. 2015, Cicutto et al. 2013, Kinter et al. 2014, Halternam et al. 2011, Pbert et al. 2011, 2013, Wright et al. 2013).

3.10.7 Range of Outcomes Assessed

The studies considered a range of outcomes, the majority unique to the area of preventative community nursing as outlined on Table 28.

3.10.8 Impact on Outcomes

Preventive care interventions led to improvements in nutritional outcomes and there were significant positive effects for the entire sample on the Framingham Risk Score. This score measures the 10-year cardiovascular risk for individuals but the intervention did not reach significance in the intervention group (Fahs et al. 2012). Similarly, a family lifestyle intervention (MUFI) aimed at children showed significant reductions in waist circumference at 2 years but only modest improvements in BMI (Kokkvoll et al. 2013), leading to difficulty in justifying the cost of implementation. In contrast, Kempe et al. (2014) with a public-private collaboration achieved success in the form of at least one influenza vaccination at the end of each study year for each eligible child. Furthermore the control group missed opportunities for influenza vaccines, compared to the intervention group. There were however non-significant results also such as

receipt of vaccine differences for 6-month-old to 5-year-old children and by children with high-risk medical conditions (Kempe et al. 2014).

Table 28: Outcomes Assessed by Telehealth Interventions

Type of Outcome	Studies
Mental health/wellbeing	Brugha et al. 2011; Christie and Bunting 2011; Bannick et al. 2014
Healthcare utilisation	Dodge et al. 2013
Anthropometric (e.g. BMI, lifestyle and health behaviours related to nutrition, diet and physical activity, 10 year cardio-vascular risk)	Fahs et al. 2015; Kokkvoli et al. 2013; Pbert et al. 2013; Wright et al. 2013
Biophysiological (e.g. lipid levels contraception use smoking)	Fahs et al. 2015; Pbert et al. 2011; Lopez et al. 2015
Physical outcomes related to illness or disease	Kinter et al. 2014
Management related outcomes symptom-free days, activity limitation	Halterman et al. 2011
School attendance	Ahmad et al. 2011; Circutto et al. 2013; Bannick et al. 2014
Hospitalisation	Ahmad et al. 2011
Knowledge / attitudes	Borawski 2014
Postpartum maternal care	Mirmolaei et al. 2014
Maternal sensitivity to infant engagement	Cooper et al. 2015
Immunisations	Kempe et al. 2014
Effective Type 2 diabetes prevention	Brackney et al. 2015

An asthma management programme (SHARP) achieved overall statistically significant results for the intervention group compared to the control group. In particular, these were increased use of symptom management techniques and up to to 7-9 hours of undisturbed sleep, which continued to increase over time. Another school based asthma intervention programme had significantly more: symptom-free days; fewer night-time symptoms; less rescue medication use; fewer days with limited activity; and exacerbation requiring treatment with prednisone. An asthma self-management education programme delivered by PHNs and certified asthma instructors had fewer school absences, reduced requirement for urgent care for asthma, less reported days of interrupted activity, and improved quality of life. A systematic review of nine studies (Ahmad et al. 2011) found that asthma led-management education resulted in

statistically significantly decreased missed school days (n=6 RCTs), asthma-related hospitalisations (n=2 RCTs), and decreased ED visits. However the quality of this SR was low.

An established HIV/STI school intervention resulted in a statistically significant increase in condom use skills, knowledge and beliefs at 4 months (Borawski et al. 2014). Similarly a school nurse–delivered smoking-cessation intervention was effective. Participants were almost twice as likely to be abstinent at three months and a significant decrease in the amount smoked and frequency (Pbert 2011). This study while not significant in relation to diet and activity levels did identify the schools nurse as helpful in enhancing understanding in healthy eating and activity and participants felt more comfortable in discussing their weight-related behaviours (Pbert et al. 2013). A school based, family focused, nurse-led intervention resulted in: significant BMI reductions sustained for 12 months and health behaviours/knowledge (Wright et al. 2013). However another school based intervention in the Netherlands did not have any significant results at 6-months in terms of mental health status; depressive symptoms; school absenteeism; debts; quality of life; alcohol consumption; and soft drug use (Bannink et al. 2014). Interventions to address PND, while found to have clinical benefits, did not have statistically significant results (Brugha et al. 2011, Christie and Bunting 2011). However the intervention did not appear to entail more than increasing the frequency of home visits and establishing therapeutic relationships. Interventions designed to enhance the mother-infant relationship to prevent PND similarly had no statistically significant outcome (Cooper et al. 2015).

The intervention group in Mirmolaei et al. (2014) study were statistically more likely to receive postpartum maternal care from a midwife, but this finding needs to be considered in the context of a country i.e. Iran which has an underdeveloped primary care system. The components associated with improved outcomes for child health and welfare were targeted nursing interventions which had greater effect on fruit and vegetable intake (Fahs et al. 2012) and health related skills such as condom use. When taught to adolescents by schools nurses there was a significantly greater effect (Borawski et al. 2014). The helpfulness of the nurse and the fact that participants felt more comfortable discussing weight issues with a nurse improved outcomes (Pbert et

al. 2013). Schools in the intervention group were more likely to have practices supporting an asthma-friendly environment. Inhaler training was associated with improved inhaler technique in the intervention group (Ciccutto et al. 2013). Asthma therapy intervention delivered in the school setting was associated with positive outcomes (Halterman et al. 2011). Similarly use of SHARP in school and community settings led by paediatric nurse specialists utilising interdisciplinary teams (Kinter et al. 2014). Nurses played a key collaborative role in implementing such interventions in school settings (Wright et al. 2013). The approach likely to achieve a goal of universal yearly vaccination needs to include all potential vaccinators from pre- schools, schools, and pharmacies (Kempe et al. 2014).

In terms of non-pharmacological Type 2 diabetes management, a systematic review found that the components for effective intervention strategies include: different types of physical activity; nutrition education; behaviour therapy; cultural sensitivity; and ongoing support i.e. telephone sessions, newsletters, and periodic meetings. Less common components comprised of peer leadership opportunities; CST; and motivational interviewing (Brackney et al. 2015).

With regard to postnatal care a universal structured home visiting programme, tailored to individual needs, was associated with benefits for families and was considered to be cost effective (Dodge et al. 2014). Another study had variable effects from structured home visiting yet the positives were increased service satisfaction and decreased use of emergency medical services (Christie and Bunting 2011).

Identification and psychological interventions prevents depression at 6–18 months postnatally in women who are not depressed (Brugha et al. 2011). In terms of postpartum education related to contraceptive use a Cochrane systematic review conducted by Lopez et al. (2015) found that outcomes improved with educational interventions that included written materials, video or audio recordings, or individual or group counselling.

3.10.9 Resource Implications

Resource implications were described by 10 of the 20 papers reviewed. These related to the cost of training nurses for the intervention, ranging from a 2 day workshop for nurses (Fahs et al. 2012) to 8 days training for health visitors (Brugha et al. 2011). There were obvious resource costs associated with extra home visits, but these were not specified (Christie and Bunting 2011, Cooper et al. 2015). Costs need to be considered for additional home visits where these were not a feature of an exisiting service (Mirmolaei et al. 2014). There were potential service costs if vaccine supplies were misjudged (Kempe et al. 2014). In contrast, costs were reduced by the accessibility of school nurses in the delivery of both smoking cessation (Pbert et al. 2011) and diet/activity interventions (Pbert et al. 2013). It was considered easy and not unduly time-consuming to integrate these activities in the existing school nurses workload. Similarly, school based programmes were found to have low or minimal costs for families (Wright et al. 2013). Specifically, in a home nursing programme, Dodge et al. (2013, 2014) identified that the $700 cost per family was offset by savings in hospital medical care costs before the infant's first birthday. However, a Cochrane systematic review of postnatal educational interventions (Lopez et al. 2015) concluded that some programmes would not be feasible in many settings due to costs and logistical factors.

3.10.10 Enablers and Barriers

The enablers where reported were: the potential for further public and private collaboration and the pooling of vaccine supplies between collaborators (Kempe et al. 2014); the opportunities provided by easily accessible school settings with support from peers and teachers (Brackney et al. 2015, Pbert et al. 2011); the great position of school nurses to provide weight management interventions (Pbert et al. 2013). Other enablers noted were the ability to involve stakeholders and community partners across school, home, and environmental contexts (Wright et al. 2013); identifying needs and linking families to appropriate community resources (Dodge et al. 2013); positive parenting behaviours, home environment quality and maternal mental health (Dodge et al. 2014); as well as participating with parents (Cicutto et al. 2013). Brugha et al. (2013) reported that that the intervention by trained HVs provides a universal, enduring preventive effect for depression in women who screen negative for depression

postnatally. Similarly, mothers reported interventions to be of considerable emotional and practical support and help in enhancing their appreciation of their infant's abilities and their ability to communicate with their infants (Cooper et al. 2015).

Barriers were not frequently reported within the literature but where they were (n=9), they related to: attrition rates in the study (Fahs et al. 2012); impact on collaboration related to uncertainty about vaccine supplies and availability of vaccine administration documentation (Kempe et al. 2014); family stress, poverty, poor access to care and difficulties in communication (Halterman et al. 2011); variation among HVs who delivered home visits noted although the trial did not alter the content of care provided (Christie and Bunting 2011). Barriers were described in relation to scheduling of activities within school, engaging parents, shifting school practices regarding medications in school, environmental and trigger management strategies were costly. Difficulty was outlined in obtaining parents' signatures on documents for children to carry medication at school (Cicutto et al. 2013). In alternative settings, delivering interventions in the home, differences in practice environment and culture were reported as barriers (Brugha et al. 2011). In particular Brackney et al. (2015) in their systematic review concluded that transportation to after-school community centres; poor school attendance; funding, training and environmental issues were barriers to participation in programmes.

3.10.11 Resource Implications

In terms of resource implications, more work needs to be done to reduce CVD risks to promote heart health among rural women (Fahs et al. 2012). For parents and obese children a family intervention was very costly and not effective (Kokkvoll et al. 2013). In vaccination promotion a public–private collaboration, led to significantly higher influenza immunisation rates, particularly for older, healthy children who have less frequent visits with providers (Kempe et al. 2014). School based asthma programmes involving collaborative work with school teachers and schools nurses may increase the use of asthma self-care behaviours and significantly reduce exacerbations (Halterman et al. 2011 Kinter et al. 2014). Both classroom teachers and school nurses are effective in conveying reproductive health information to high school students; however, teaching the technical (e.g. condom use) and interpersonal (e.g. negotiation) skills needed to

reduce high-risk sexual behaviour may require a unique set of schools nursing skills (Borawski et al. 2013). Similarly school nurse consultations have the potential to influence future health prevention of Type 2 DM (Brackney et al. 2015); mental health status for vulnerable adolescents (Bannick et al. 2014) and to improve selected self-reported obesogenic behaviours rather than BMI (Pbert et al. 2013). School nurse–delivered smoking-cessation interventions demonstrated efficiency and feasibility in improving abstinence in adolescent boys (short-term) and reducing frequency and amount in both genders (short term) (Pbert et al. 2011). School nurses are pivotal to the implementation of such interventions due to their knowledgeable nature and expertise in identifying the needs of overweight and obese children (Wright et al. 2013). The Public Health School Asthma Project resulted in significant improvements for students with asthma (Cicutto et al. 2013).

With regard to pregnancy and postnatal care Brugha et al. (2013) concluded that there were potential benefits for increased visits and focus on maternal psychological wellbeing rather than physical welfare of child and that the intervention was cost effective. Increasing the number of home visits increased satisfaction and reduced use of emergency medical services, but had no effect on parenting outcomes or EPDS score at 7 months (Christie and Bunting 2011). Similarly objective findings conflicted with mothers' report that a home visit intervention provided considerable emotional and practical support, including ability to communicate with their infants (Cooper et al. 2015). Structured home visits provides a feasible, and effective element of public health policy for families of new-born infants, including effective triage to community services (Dodge et al. 2013, 2014). A systematic review found that although half of the interventions reviewed were effective in reducing repeat pregnancies or births and increasing contraceptive use, the overall evidence of effectiveness was of low to moderate quality. Valid and reliable outcome measures are needed to obtain meaningful results (Lopez et al. 2015).

3.10.12 Recommendations for Practice, Policy, Education and Research

The recommendations for practice suggested by various researchers include considering more nursing interventions using behaviour modification e.g. cholesterol level reduction (Fahs et al. 2012). Postpartum care at home is effective in improving

maternal healthy behaviors such as breastfeeding and family planning (Mirmolaei et al. 2014). It was suggested that the 'Your Health intervention' could be easily embedded in schools nursing practice (Bannick et al. 2014). Schools nurses need to adopt continuing assessment and coaching to achieve and sustain accurate inhaler technique among school children (Cicutto et al. 2013). Of these RCTs there was just one (Fahs et al. 2012) where the quality risk of bias assessed was predominantly low and the others had a mainly unclear risk of bias quality assessment. Therefore the evidence is based on RCTs with unclear quality.

Vaccination policy should involve all potential vaccinators to maximise the uptake (Kempe et al. 2014). The use of Staying Healthy–Asthma Responsible & Prepared (SHARP) in school and community setting can be led by paediatric nurse specialists utilising interdisciplinary teams. This may in turn increase the use of: effective episode management; risk reduction/prevention; and health promotion self-care behaviours that impact asthma control (Kinter et al. 2014). School based asthma education programmes can lead to improved self-management of asthma, reduced absenteeism and reduced health service use (Ahmad et al. 2011, Cicutto et al. 2013). However another School-Based Asthma Therapy intervention, while found to be effective, would need to be costed (Halterman et al. 2013). Utilising school nurse resources may improve reproductive health teaching as students may be more comfortable and familiar with healthcare professionals (Borawski et al. 2014). Whilst the RCT from Iran made specific policy recommendation for postpartum home visits, there was an acknowledgement relating to specific constraints for developing countries. Nevertheless, there are lessons applicable to Ireland in the context of enhancing exisiting services versus developing new services and the consequential benefits for maternal and child health (Mirmolaei et al. 2014). The need for a feasible, cost-effective behavioural interventions has been well documented and the school nurse is in a positive position to provide this intervention to adolescents in an easily accessible location (Pbert et al. 2013). There is a need for gender-focused activities to assist in reducing incidences of overweight adolescents and chronic disease management; nurses play a key collaborative role in implementing such interventions in school settings (Wright et al. 2013). Universal/population based community home visiting intervention was found to be affective in linking families with appropriate community

services and reducing emergency room medical care (Dodge et al. 2013, 2014). On the basis of the evidence herein, there is confidence in the findings apart from that provided by Dodge et al. 2013, 2014). In contrast, the risk of bias of the RCT by Kempe et al. (2014) was assessed as unclear. There were no specific recommendations in relation to education but it is clear that a number of the interventions outlined would already have educational requirements for implementation. These have important implications for competency development.

Cardiovascular research needs to have larger samples and include more women with ethnic diversty (Fahs et al. 2012). Obesity interventions in children and adolescents should examine health in its broadest perspective and evaluate mental health and wellbeing in addition to other health outcomes (Kokkvoll et al. 2013). However, this conclusion is based on an RCT where quality was assessed as high risk. More research evaluating the effectiveness of interventions between boys and girls; high school students; and among youth at risk of developing Type 2 Diabetes Mellitus is needed (Brackney et al. 2015). Further studies should assess the suitability and effects of referrals and the subsequent help that adolescent participants attained during schools nurse consultations on the Your Health programme (Bannick et al. 2014). Additional research is required to improve adolescents stopping and abstaining from smoking (Pbert et al. 2011). Future research should be conducted on expanding the counselling intervention in a school setting so that it includes: additional visits extended over a longer period of time; and opportunities to engage in physical activity. Christie and Bunting's (2011) study did not demonstrate a clear benefit for women from the increased visits by HVs related to their EPDS score. An approach commencing in the antenatal period used by Cooper et al. (2015) to prevent PND and its associated problems was not recommended. However the depression prevention programme intervention by Brugha et al. (2013) provides some evidence of the impact to provide clinically significant, useful and persistent reductions in the prevalence of depression in postpartum women. They considered that it requires further independent evaluation. However, the evidence on which this is based is questionable due to the unclear risk of bias from the quality assessment. In contrast, to conclude from a high quality systematic review, valid and reliable outcome measures are needed to assess the

effectiveness of postpartum educational interventions on contraceptive use (Lopez et al. 2015).

3.10.13 Summary

This category included RCTS (n=15) and SRs (n=3), mainly from America but also Europe and the Middle East. The quality assessments did not differ substantially from those in the entire evidence review. The types of the preventive interventions reviewed included: Postpartum; School based; Community obesity management; Cardiac intervention for female CVD prevention; Non-pharmacological intervention for T2 DM in youth and Immunisations for children. All but one of the RCTs (Kokkvoll et al. 2013) were nurse or midwife-led and interventions were primary, secondary and tertiary and delivered to all client groups across the life-span from antenatal care to older adults.

Outcomes encompassed a wide range of bio-psychosocial measures within a primary, secondary and tertiary prevention framework with pre-school, primary and secondary school going children, mothers and parents. Findings revealed that nurses were effective at promoting healthy eating and healthy lifestyles in women at CVD risk (Fahs et al. 2012) and deminstrated significant increases in vaccination rates in children (Kempe et al. 2014). School based nurses are effective in asthma and type 2 diabetes management/ symptom reduction (Ciccutto et al. 2013, Halterman et al. 2011, Kinter et al. 2014, Wright et al. 2013), but the evidence is drawn from RCTs with an unclear risk of bias and an SR with low quality (Ahmad et al. 2011). School nurses were also found to be effective in promoting reproductive health (Borawski et al. 2014), healthy eating and smoking cessation (Pbert et al. 2011,2013). The components associated with improved outcomes overall were those that included targeted nursing and midwifery interventions, such as home visits with theory based interventions provided by educated nurses or midwives. However, just increasing the frequency of home visits in risk of PND resulted in increased satisfaction and reduction in ED visits, but was not statistically significant in terms of parenting outcomes (Christie and Bunting 2011). School nurses were found to have played a key collaborative or pivotal role in implementing interventions in school settings and linking with families and communities (Kinter et al. 2014, Wright et al. 2013, Halterman et al. 2011, Borawski et al. 2014, Bannick et al. 2014, Pbert et al. 2011, 2013). In conclusion, it has been

demonstrated that nurses and midwives engaged in preventative interventions across the lifespan have been effective, efficient, cost effective and satisfying for clients/consumers where considered.

3.11 Overall Chapter Summary

This chapter presented a detailed review of 118 studies organised into six categories areas - Integrated and Collaborative care (n=33); Home Based Community Nursing and midwifery (n=33); Telehealth (n=15); Transitional Care (n=9); Nursing and midwifery in community with Non-Professionals (n=10) and Preventative (n=18). Each category described and analysed the evidence emerging from the studies relative to 13 research questions. The quality of each study has been reviewed using either the Cochrane ROB or the AMSTAR as appropriate based on the design of the study. The narrative descriptions of the categories reveal the study populations, the types of interventions, the role of the community nurse and/or midwife in their delivery and, most importantly the outcomes and components of the interventions associated with positive outcomes. Consideration is also given to barriers and enablers to interventions as well as recommendations for policy, practice, education and research. Following consideration of further international evidence emerging from the grey literature, together with indepth analysis of existing Irish models of community nursing and/or midwifery, the data presented here will be further synthesised in the discussion chapter of this evidence review.

Chapter 4: Grey Literature

4.1 Introduction

This chapter presents the findings from the review of international grey literature. As outlined in Chapter 2, given the volume of international evidence in the grey literature emerging from the test searches, and recognising the need to adopt a systematic approach to the identification of studies for inclusion, the team agreed that given the timeframe of the study, it would be reasonable to select five countries for in-depth analysis of models and policies of community/midwifery nursing. This approach mirrors that of Hanafin and O'Reilly (2015) in their review on maternity systems commissioned by DoH. The countries for inclusion were selected based on the volume of their empirical research outputs, identified in the empirical evidence review (see Table 3). As a result grey literature in the USA, UK, Australia, Canada and the Netherlands was examined. As the country mandating this review, Irish grey literature was also reviewed. With the exception of USA, these countries and New Zealand were also included in the Hanafin and O'Reilly maternity systems study who noted that these jurisdictions have both commonality and divergence with the Irish health care system.

Documents were considered eligible for inclusion based on their focus on models/ interventions on community nursing or midwifery specifically (as opposed to documents outlining national strategy on healthcare services or on subgroups of populations or documents briefly referring to nurses as part of these services including multidisciplinary team context). In addition to documents retrieved using the search strategy outlined in Chapter 2, focused searches were conducted to consider grey literature in the above named 5 countries specific to models of community midwifery, community nursing, older person care, community intellectual disability nursing, mental health community nursing, and children's community nursing. Arising from this additional search, a document pertaining to community children's nursing in the UK (Department of Health, 2011) was identified. Furthermore, a document outlining models of care in the Netherlands was identified (Gray et al. 2015). None of the grey literature specific to models of community nursing for people with intellectual disabilities or those living with mental health issues were considered eligible for inclusion. Given that the Hanafin and O'Reilly study considers midwifery models of care in depth in their report, detailed consideration of midwifery has not been included

in the review of grey literature. However a brief synopsis of community based midwifery models of care is outlined in Section 4.8.

Table 29 provides a breakdown of documents screened and subsequently included per country sourced. In addition to these, other documents were included where appropriate to contextualise the health systems and community nursing structures in each country.

Table 29: Number of grey literature documents sourced per country including two additional documents as described above.

Country	Number from literature search
United States of America	1
United Kingdom	6
Netherlands	2
Canada	5
Australia	6
Ireland	5
TOTAL	*25*

In addition to enabling a more focused examination of models of community nursing and/or midwifery to be conducted, the grey literature also serves other important roles, including enabling the team to be assured that they have not missed any major trials or studies and also enables negative trials to be identified. We are satisfied that from the review of grey literature we have not missed any major trials and did not identify any negative trials.

An overview of the literature pertaining to each jurisdiction is now presented with additional background information included to set the context of care within each country. As the variation of the publications was diverse, not all papers discussed enablers, barriers and economic implications. However, these are integrated into the text for each country where relevant. The quality assessment, based on the summarised AACODS is available for each study in the sections below. The full data extraction tables for the grey literature review can be found in Appendix 10.

4.2 USA

The United States (US) has a mainly privatised, decentralised system with healthcare delivered mostly through private health care providers. There is some public health

insurance funding for seniors, disabled people, those who are economically disadvantaged and other eligible groups under the Medicare (federally funded) and Medicaid (federal and state funded) public health insurance. People who do not have health insurance, receive health care services through public clinics and hospitals, or state and local health programs (Ridic et al. 2012). Nevertheless, the lack of health insurance can cause considerable financial hardship and health insecurity for a large proportion of the US population (Ridic et al. 2012, Dressler et al. 2007) leading to a focus on health care reform within the Obama administration.

In the US, public health nursing and midwifery have a long history of comprehensive and robust models of nursing care and practice. Public health nursing is historically population focused and continues today to collaborate with other disciplines across a variety of settings. Yet, models of reimbursable public health nursing and midwifery care have evolved over the last 50 years with major influence from the way individual services are clustered together and offered to consumers through various insurance schemes. There are varying levels of payment coverage of specific services predicated on variables including a person's age, whether uninsured or insured through private or governmental sources, the level (comprehensiveness) of insurance coverage the person/family is willing to pay for, and state stipulations regarding which health services each state will financially support. There is wide variability across states. Fortunately, however, most state and county health departments continue to function with a mission to address population-focused and environmental health.

Public health and community health nurses can be either generalist or specialist prepared. University education, at the master's or doctoral (DNP) level would be the expected academic credential for these specialists, however in practice many health organizations employ generalist nurses prepared with either the associate degree or baccalaureate degree. Midwives would generally all have post baccalaureate education credentials, with current expectations of master's or doctoral (DNP) preparation.

Within the US grey literature, one document was reviewed (Kulbok et al. 2012) and categorised as an evaluation of a multi-disciplinary community participatory research team (CPRT) approach to implementing a youth substance misuse prevention program,

within a model of nursing. The aim of the study was to examine the effectiveness with CPRT and ecological, cultural and contextual dimensions and heath attitudes, determine intervention feasibility, and to refine the intervention for formal testing in other rural areas.

Key findings thus far in the ongoing project identify that the use of local knowledge and unique characteristics of the rural county provided direction in selection of the substance misuse prevention programme. The authors conclude that the use of the community participation and ethnographic model enabled identification of local knowledge, important long-standing public health nurse processes, and innovative strategies that public health nurses can use in community assessment and prevention programme development. Core public health nursing competencies are identified (these are outlined below).

Kulbok et al. (2012) note that the project is in the third of a multi-year implementation plan. Findings from this study have implications with relevance to one of the six key categories identified in the empirical literature review presented in Chapter 3, namely models of nursing and/or midwifery in the community as well as informing the organisation and delivery of nursing and/or midwifery in Ireland. Kulbok et al. (2012) reference the role of public health nurse as partner with communities and populations. In addition, the authors cite essential public health nurse competencies included in the Core Competencies for Public Health Professionals (Core Competencies) which identify competencies of staff of public health organisations (collectively) as they work to protect and promote health in the community. These competencies can be reviewed within specific disciplines including public health nursing (Council on Linkages, 2010). Kulbok et al. (2012) cite the following core skills considered necessary to implement community participatory health promoting roles: analytic assessment, cultural competence, program planning, community dimensions of practice (communication collaboration and linkages between public health nurses and stakeholders in a community [focus on ecological context in developing health-promoting programs]), financial planning and management; leadership and systems thinking; policy development; and skill in public health science.

Overall, the AACODS quality measures within the USA grey literature were met, however there was no clear distinction regarding the date related to content. Also, it was not clear how representative the paper was of work within the field.

	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Kulbok et al. (2012)	●	●	●	●	●	●

Figure 12: AACODS Tool USA Grey Documents

4.3 United Kingdom

Health services in the United Kingdom (UK) are mainly free at the point of use. The NHS operates based on 'universality' and equity, and provides preventive medicine, primary care and hospital services (Grosios et al. 2010; Boyle 2011). Publicly funded health care is the responsibility of the Secretary of State for Health, supported by the Department of Health. The Health and Social Care Act reformed the NHS in the UK in 2012. Its focus was on a move to clinically led commissioning of care, increased patient involvement, a renewed focus on the importance of public health, additional responsibilities for the National Institute of Clinical Excellence and the Health and Social care Information Centre as well as fair competition in healthcare markets in the best interest of patients (NHS England, 2014). Local authorities are responsible for local public health services.

Public Health England is responsible for immunisation, screening and young children. The clinical commissioning groups are responsible for secondary care, community services, mental health services and rehabilitation services. Finally, NHS England looks after primary care, specialised services, offender health, and armed forces health (DoH, 2014). Primary care in the UK is the first point of contact for general medical needs. This typically involves self-employed GPs and their practices, which usually enter into contractual engagements with PCTs. However, GPs may also be employed by alternative providers e.g. the commercial sector. NHS primary care services include community health services, NHS Direct, NHS walk-in centres, dentists, opticians and pharmacists (NHS/ Department of Health 2013, Boyle 2011). Furthermore, the primary care system acts as a 'gatekeeper' in determining and enabling access to more specialised or acute health care, such as in-hospital treatment (Boyle 2011).

Healthcare services in the UK services are mainly financed from public sources, primarily general taxation and national insurance contributions (NHS/ Department of Health 2013). A proportion of care is funded by private medical insurance, user charges, cost sharing and direct payments for healthcare delivered by the NHS / private providers. Over 12% of the population is covered by voluntary private medical insurance schemes, which mainly provides access to acute elective care in the private sector (Boyle 2011). Some services are not covered by the NHS, which patients are therefore required to pay for by direct payments, such as private treatment in NHS facilities, over the counter medicines, ophthalmic care, social care (Boyle 2011). Others are subject to cost sharing between the NHS and the patient, usually in the form of co-payments. Such services include NHS prescriptions and NHS dental care (Boyle 2011; Grosios et al. 2010). The UK has a myriad of nurses who work in the community setting such as district nurses, health visitors, community midwives, public health nurses, health visitors, nurse practitioners, school nurses and practice nurses (Department of Health, Public Health Nursing 2013).

A total of 6 documents (Gray et al. 2011, Lewis et al. 2013, Lindsay, 2013, DoH PHN 2013, RAND, 2012, DoH 2011) were included for analysis in the review of grey literature from the United Kingdom. These comprised of one strategy/policy document (DoH 2011), two descriptive case studies (Gray et al. 2011; Lewis et al. 2013), one discussion paper (Lindsay, 2013), one best practice guidance (DoH PHN 2013) and an evaluative report (RAND, 2012). Of these publications, two were classified as integrated/collaborative care models (Lewis et al. 2013; RAND 2012) and four were classified as nursing/midwifery models (DoH 2011, Gray et al. 2011; Lindsay 2013; DoH PHN 2013).

The primary focus of the documents varied greatly with Gray et al. (2011) reporting on qualitative data obtained from community nurses and their managers regarding planned radical changes to the role of the community nurse from a specialist discipline to a generalist community health nurse model. This model was proposed in Scotland and tested within four health boards. Data were collected using semi-structured interviews and focus groups regarding the proposed changes in ways of working.

The Lewis et al. (2013) document describes the care practice in three virtual ward sites in England, considering how well each site had achieved meaningful integration between health and social care, which included nursing leadership, integrated care, introduction of condition based initiatives, the challenges involved in changing current practice, and a vision and service model for the National (UK) community nursing. The use of this integrated care model across three clinical sites aimed to reduce unplanned hospital admissions for patients perceived as high risk for such admissions. Furthermore, Lindsay's (2013) review of the Leg Club model (the only specific condition based initiative identified) discusses the challenges and rationale of introducing a new service delivery for leg ulcer management based on patient empowerment, health promotion and education, and its implication for clinical practice.

The DoH PHN (2013) best practice guidance sets out the vision and service model for the National (UK) district nursing service, to deliver the best care and obtain the best outcomes for patients, building on Compassion in Practice - the National Nursing, Midwifery and Care Staff Strategy (Commissioning Board Chief Nursing Officer and DH Chief Nursing Adviser 2012). The focus of this guidance is on ensuring appropriate care is being delivered to the patients in the community in response to the ever-changing health and economic changes being faced by community nursing teams. The RAND (2012) report details an evaluation of Integrated Care Pilots across 16 sites across the UK. Organisations were invited to put forward ideas of ways of integrating care across community services in order to coordinate previously disjointed services into streamlined, more person centred and cost effective care for patients.

4.3.1 Models of Integrated / Collaborative Care

Three models of integrated/collaborative care were described in the documents reviewed. Based within nursing collaborative care models, one explored the utility of a virtual ward (Lewis et al. 2013) and a second considered Integrated Care Pilots (ICPs) (RAND2012) to drive improvements in care and well-being by reducing previously disjointed services and being more coordinated, effective, integrated and cost-effective. The virtual ward (Lewis et al. 2013) seeks to do this by targeting and supporting patients in the community, who often experience disjointed care and are considered to be high risk for unplanned hospitalisation due to multiple chronic conditions. The ICPs were selected focusing on end of life care, dementia care, COPD, long-term conditions,

and falls prevention. Central to the Rand (2012) report was a focus on horizontal integration, integrating community based services such as General Practitioner Services with Community Nursing / Social Services. Meanwhile, the virtual ward concept focused on the assessment of the patient by the MDT as if the patient were actually in hospital.

The effectiveness of these models of integrated care varied. An assessment of the efficacy of virtual wards described by Lewis et al. (2013) could not be made due to wide variations in the interventions delivered. Furthermore, virtual wards were compromised by several other improvement programmes being introduced in the NHS simultaneous to this initiative and the group of patients identified as 'high-risk for admission' represented just a small proportion of all unplanned admissions. The authors indicated that consideration should be given to patients with a moderate risk of hospital admission.

The ICP report by RAND (2012) contains a review of literature indicating that interventions used to integrate care can improve both service users experience and processes of care as well as being likely lead to reductions in costs. Evaluation of the ICP's based on quantitative, qualitative and cost data resulted in mixed outcomes. Overall reports from staff involved were positive. An increase in communication between departments was reported, but communication with social care departments was still seen to be problematic. There was also an overall increase in staff job satisfaction, but a need for increased training was highlighted. Over half of the staff surveyed reported that they felt patient care had improved as a result of the ICP. There were mixed reviews however from patients, with less than half reporting an improvement in the coordination of care. An unexpectedly significant increase in emergency admissions for pilot patients was also detected. This was balanced by a reduction in elective admissions and outpatient attendances, but financially there was no significant reduction in costs.

One policy document was identified specific to community children's nursing (RCN 2014; DoH 2011). The *NHS at Home: Community Children's Nursing Services* is a review of the contribution that these services can make to outcomes of integrated care for this

population group in the future (DoH 2011). The review identified gaps in the services in meeting the needs of children and young people with short. Long term and complex illnesses as well as those with disabilities. Community children's nursing was viewed as the 'bedrock' of the care pathways in services that are *"accessible, equitable, comprehensive and flexible for all children and young people with a nursing need regardless of geography or diagnosis"* (p. 5). It was reported that children's nurses need to be part of community teams, embedded in a comprehensive service working closely with allied health professionals and integrated at the point of delivery. One initiative in Newcastle, was described as a 'virtual ward' approach which is similar to that described above by Lewis et al. (2013), albeit with a child population. Examples of comprehensive services such as the latter were provided with reference to: (i) children's nursing working as 'teams within teams' in relation to specific groups of children according to their clinical needs involving both generalist and specialist children's nurses and supported by community support workers (complex cases) who are training in individuals children's care; (ii) nurse led model of personalised and home based care; community children's network designed to provide a more unified approach to children's community services across health services regions. It was concluded that the success of developing and implementing children's community nursing depended on: having a vision for children's services; having this service as part of wider and multi-agency services; collaborations with allied professionals; and 24 hour service. Albeit scant, the review offered some evidence that children's community nursing reduces hospital admissions, lower healthcare costs and is beneficial to children's psychosocial wellbeing.

4.3.2 Models of Care

Three documents considered models of care (Gray et al. 2011; Lindsay 2013; DoH PHN 2013). Gray et al. (2011) studied how proposed changes to community nurses' role, from specialised disciplines to a generalised role was perceived by community nurses in Scotland. Through the use of focus group discussions, it was found that proposed role changes were perceived as demoralising and a waste of previous specialist training. The authors discussed how the current, specialist role was linked with increased job satisfaction and feelings of autonomy amongst the nurses interviewed. They found that nurses believed that the change in role would compromise patient care. Moving

forward, the authors suggest that policy makers need to focus more on the perceived value of the profession and its links to job satisfaction, in order to retain the current workforce and support the knowledge and skills of the existing workforce.

The DoH PHN (2013) guidance included in this review outlines a model for district nursing to meet future health needs. The model uses 'Compassion in Practice's six values and six actions areas' within district nursing. There are three aspects considered central to the model (1) Population and case-load management; (2) Support and care for patients who are unwell, recovering at home and at end of life and (3) Support and care for independence. Within the report are proposed measures for assessing impact of the model and ensuring improved patient experience. These measures include assessing the impact of the model by using District nurses to: 1) contribute to population health needs; 2) leading care and contributing to healthy communities; and 3) working in partnership with social care providers. As well as these measures, there is an emphasis on enhancing patient experience and striving for quality from the perspective of the patients. The model aims clarify the role of the district nurses to ensure a wider appreciation and realisation of the community nursing service.

One document (Lindsay, 2013) focuses specifically on the treatment and prevention of leg ulcers, discussing the introduction of a new service for the management of leg ulcers within the community. The author highlighted recent studies in the UK which have outlined the financial costs associated with the current treatment of patients with chronic leg ulcers. The incidence of leg ulcers within the UK was estimated as 0.76 / 1.42 per 100 person years for men and women respectively, costing between £600 - £900 per patient per year (Watson et al. 2011). Outlining the significant resources used to treat this group of patients, the author describes the benefits of a new service called "The Leg Club Model" which was originally used in Australia. This Australian model was described in section 3.7.7 of this report (impact and outcomes). The model comprises community based social clinics where patients are integrated into an environment where other people are experiencing leg ulcers. Whilst not intended to replace existing modes of treatment for this group of patients, this model enhances the care they already receive, and aims to address the psychosocial needs as well as the physical ones of the patients. Reports of a previous randomised controlled trial in Australia (Edwards et al.

2009) include improved healing rates, increased quality of life, functional ability and reduced pain. The author also reports increased benefits for staff, outlining that the 'traditional' role of the community nurse can be quite isolating. The 'leg clubs' are seen as an opportunity for nurses to work together and share best practice. The 'leg clubs' are also said to be a cost effective way of delivering care to patients, both financially and in terms of time management. The 'leg club' model was mentioned by the DoH in its 'Quality, Innovation, Productivity and Prevention' (QIPP) programme (DoH 2014).

4.3.3 Barriers and Enablers

Factors were identified in the UK Grey literature specific to the management of change, a key area of consideration when implementing or proposing new models of community nursing care such as the virtual ward or ICPs as described above. With regard to the ICPs specifically as described by RAND (2012), the more complex the interventional change, the more complex the process is to illicit changes in practice (RAND, 2012). Strong leadership was cited, together with the engagement of staff, as important facilitators to success. Training and clear information can assist in managing staff resistance to role change and consideration should also be given to supporting patients with change since new and unfamiliar methods of care co-ordination can result in resistance at this level and in turn can impact on outcomes (RAND 2012).

Figure 13: AACODS Tool UK Grey Documents

	Authority	Accuracy	Coverage	Onjectivity	Date	Significance
Gray et al. 2011	🟢	🟢	🟢	🟢	🟢	🟢
Lewis et al. 2013	🟢	🟢	🟢	🟢	🟢	🟢
Lindsay 2013	🟢	🟢	🟢	🟢	🟢	🟢
DoH PHN 2013	🟢	🟢	🟡	🟢	🟢	🟢
RAND 2012	🟢	🟢	🟢	🟢	🟢	🟢
DoH 2011	🟢	🟢	🔴	🟢	🟢	🟢

4.3.4 Quality of Studies

The majority of the AACODS quality assessment criteria were met for the UK grey literature, but again, due to the diverse nature of the papers, not all mentioned limitations of the work presented (Figure 13 above).

4.4 The Netherlands

The Netherlands is a small, densely populated country comprising of 12 provinces and 3 islands. Dutch healthcare policy, acknowledging the aging population and respecting

autonomy and independent living, seeks to enable people to remain at home for as long as possible (Van Eenoo et al. 2014). The Dutch healthcare system is divided into three 'compartments': long-term care for chronic conditions; basic and essential medical care from GP visits to short-term hospital stays and specialist appointments or procedures; supplementary care e.g. dental work, physiotherapy, cosmetic procedures (Schafer et al. 2010, Daley et al. 2011). Health services are funded by a mix of obligatory social and private insurance, with additional co-payments for long-term care. Long-term care, including nursing and personal care at home, is funded by the Health Insurance Act, the AWBZ (Exceptional Medical Expenses Act), statutory co-payments, private insurances and personal payments (WHO, 2012). The prime responsibility for home nursing and personal care is with the Ministry of Health, Welfare and Sport. The professionals providing community nursing care to adults and older people with health related conditions are certified nursing assistants and nurses (minimum 3 years vocational training). Every Dutch person is required to register with a GP (primary care provider or PCP), who acts as a 'navigator' and 'gatekeeper'. Many GP practices are solo practices, but support each other through 'cooperatives' to provide out-of-hours care (Schafer et al. 2010; Daley et al. 2011). A recent development is the re-introduction of community nurses who will coordinate the care, living and wellbeing of people within one neighbourhood. This also includes the coordination between home care and GP's (Van Eenoo et al. 2014; Daley et al. 2011)

The review of grey literature specific to the Netherlands resulted in the inclusion of two papers relevant to the scope of this review (De Blok, 2011; Gray et al. 2015). Both De Blok (2011) and Gray et al.'s (2015) discussion papers related to the Buurtzorg model of care. This initiative has attracted considerable attention internationally and is a nurse-led organisation consisting of self-managed teams of nurses providing homecare to patients. Established to improve the quality of care, reduce costs and empower nurses, over four years (2007-11) the initiative has grown with 3,300 nurses working in 330 teams caring for 40,000 patients per year. Highly educated, generalist nurses provide all levels of homecare for people with terminal illness, those recently discharged from hospital, those with chronic illness, dementia and those considered at risk with comorbidities. This care ranges from technical care to personal care, as

required by the patient and where possible, the patient's community resources are mobilised to provide additional support.

De Blok (2011) claims that by using a higher ratio of qualified nurses than other homecare models in the Netherlands, Buurtzorg is more cost effective and has higher levels of satisfaction. These claims are supported in Gray et al.'s (2015) case study of a self-governing nurse team working within the Buurtzoorg model to provide comprehensive rather than 'siloed' care. The team is non-hierarchical, working closely with other professionals in the MDT. A web application enables staff to complete relevant documentation associated with patient care and to communicate with other team members. Expert nurses, specialising in different areas develop standards of care and are available to provide support as required. Quality is assessed based on patient experience, effectiveness of interventions as measured by the Omaha system (a classification and intervention model)[3] and Dutch nationally agreed quality indicators. De Blok (2011) ends the article discussing the financial model powering the initiative and outlines a new development focusing on the provision of home-help services. The model appears to achieve savings as, in the Netherlands, insurers pay for home care on an hourly basis, and Buurtzorg's teams of nurses have used fewer hours to meet patients' needs than have other service provider organizations. External evaluations have demonstrated very positive results including a high satisfaction rate and a low cost base relative to other homecare organisations (De Blok 2011; Gray et al. 2015). Moreover, according to Gray et al. (2015), surveys of employees over several years indicate the organization has the most satisfied workforce of any Dutch company with more than 1,000 employees.

It is important to note the limitations inherent in these publications. De Blok (2011) provides a very enthusiastic descriptive report of the Buurtzorg, which may lack objectivity as De Blok is the model's founder. In addition, Gray et al. (2015) notes that may be some concern that this model 'cherry picks' patients.

[3] The Omaha system is a research-based taxonomy designed to enhance practice, documentation, and information management across home care, hospice and assisted living case-management settings. http://www.omahasystem.org/problemratingscaleforoutcomes.html

Whilst the grey literature in this review for the Netherlands has generated only two new documents for consideration (possibly as a result of our need to restrict documents to the English language), the Buurtzorg model of care is considered a good practice example of integrated/collaborative care models (Nandram and Koster, 2014) that has garnered recognition internationally as an exemplar of best practice in community nursing. Early efforts are underway in Japan, Norway, Sweden, the United Kingdom, and the United States to adapt the model (Gray et al. 2015). An assessment of the quality of the Netherlands literature using the AACODS tool (Tyndall, 2010) demonstrated that most of the quality measures were fulfilled (Figure 14), however, as DeBlok (2011) is the model's founder, the AACODS for this paper did not reach the objectivity standard .

	Authority	Accuracy	Coverage	Objectivity	Date	Significance
De Blok (2011)	●	●	●	●	●	●
Gray et al (2015)	●	●	●	●	●	●

Figure 14: AACODS Tool Netherlands Grey Documents

4.5 Canada

All citizens and permanent residents in Canada may apply for public health insurance which funds the majority of care through taxation. Private health insurance cover is optionally paid by the individual and covers areas such as dental care, physiotherapy and prescription medication. Community health nursing in Canada may be described as including all nurses who work outside hospitals or long term care and is comprised of registered nurses, nurse practitioners and licensed practical nurses who are educated to diploma or degree level (Underwood et al. 2009). Community health nurses are generally publically funded and are governed within individual provinces and territories, which have their own health insurance plan. These areas are Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, North West Territories, Novia Scotia, Nunavut, Ontario, Québec, Saskatchewan, Yukon and Prince Edward Island. The First Nations and Inuit health branch of Canada have a distinct separate remit.

Each of the geographically defined territories in Canada is governed by ministries or Departments of Health with differing organisational sub-divisions within each territory.

Community nurses, who are also termed visiting nurses, home health nurses or public health nurses (Pijl-Zieber 2015), work locally from various locations which include public health centres, family practices, community health centres, home health offices, public health units, health centre, or local community health centres (Crea & Underwood 2008; Valaitis et al. 2014). Working within multi-disciplinary teams, their main function is to provide primary, secondary and tertiary health care using a population based approach (Underwood et al. 2009). The First Nations and Inuit branch (Health Canada) have localised public health services' delivery with regional offices across Canada and within this service, nursing care is delivered via health offices, health stations, nursing stations and health centres (Crea & Underwood 2008). The theoretical foundation of community nursing in Canada is based on generic nursing theory and knowledge integrated with home health and primary health care principles (Community Health Nurses of Canada (CHNC) 2011) and draws on the metaparadigm of person, environment, social justice, nursing and health (Schim et al. 2007).

The grey literature referring to community nursing within Canada was reduced to five papers. Three reports promote models of community nursing (CHNC 2011; Canadian Nurses' Association (CNA) 2013; CNA & Aboriginal Nurses Association of Canada (ANAC) 2014), while one discussion paper considers community nursing based on care delivery at street level (Lee Metro 2015), which can be classified as home based nursing[4]. Two papers considered general competencies and standards for community health nurses within home care (CHNC 2011, CNA 2013). Two papers focused on specific sub-populations within Canada, namely, aboriginal peoples (CNA & ANAC 2014) and illicit drug users (Lee Metro 2015). In contrast, the fifth paper (Pijl-Zieber 2015), a discussion paper based on the model of community nursing care in Canada, provides a debate on the policy-practice gaps in providing a realistic community nursing service underpinned by primary health care objectives. All papers consider the specific elements of community based nursing and emphasise issues such as practice adaptability, policy orientation, partnership approaches to population need, care equity and client accessibility to required care.

[4] Although this population is noted to be homeless the paper argues for interventions and care supports to be delivered on the streets where substance abusers may live.

Within the publications, the population type and settings that community nurses practice in includes: health centres, homes, schools (CNA 2011, CHNC 2013); workplaces (CNA 2013); and other traditional community nursing areas (CNA 2011, CNA & ANAC 2014; CHNC 2013, Pijl-Zieber 2015); but also include non-traditional settings such as street level care for illicit drug users (Lee Metro 2015). In addition, as detailed in relation to First Nation and Inuit communities, there is a specific dedicated service for minority groups in Canada (CNA & ANAC 2014). Age range in the publications is not given, thus, reinforcing the life-span approach in care delivery in Canadian community nursing practice.

Two publications articulate the scope of practice of community nurses in Canada (CHNC 2011, CNA 2013). Community health nurses' practice is underpinned by the principles of primary healthcare, which integrates multiple ways of knowing in the implementation of individual and community partnerships as well as the promotion of empowerment and social justice within populations, multiple community level settings and care systems (CHNC 2011, CNA 2013). The model developed by the CHNC (2011) is generated from a review of the literature, an environmental scan and stakeholder focus groups and delineates 13 components which provide structure, process and values that supports nurses' control over the delivery of community nursing care. These components are: 1) client, 2) code of ethics, 3) community health nurse, 4) community health nursing standards, 5) delivery structure and process, 6) determinants of health, 7) discipline specific competencies, 8) government support, 9) management practices, 10) professional relationships and partnerships, 11) professional regulatory standards, 12) theoretical foundation and 13) values and principles. This framework is supported by seven benchmarking standards of care: 1) health promotion, 2) prevention and health protection, 3) health maintenance, restoration and palliation, 4) professional relationships, 5) capacity building, 6) access and equity and 7) professional responsibility and accountability. The CHNC (2011) state that this framework provides guidance for the delivery of services and professional development of nurses working in community care. The report also provides for excellence in care through a defined benchmarking system which contributes to care standardisation across Canada.

In a publication on how to optimize home health nursing in Canada, the CNA (2013) examined relevant literature and held a stakeholder consultation process. The process focused on how community nursing competencies can be optimised to their full potential. Findings identified five areas of development. Firstly, leadership excellence is essential to provide supportive environments; secondly, health systems need to be aligned to comprehensively facilitate care in the home; thirdly, nursing proficiency needs to be fostered in community nursing staffs' competency base; fourthly, inter-professional respect should be fundamental in team relationships and lastly, technology needs to be integrated into community nursing to enhance efficiency of care and communication. Recommendations in both papers include community nurses using these documents to guide and develop practice and the utility of these models is considered beyond front line practice to include community health nurses who work within education, research and administration to ensure a standardised and cohesive approach (CHNC 2011; CNA 2013).

A paper by the CNA and the ANAC (2014) examines community nursing within a specific population, the aboriginal people. Aboriginal people are recognised as having a particular, unique culture which requires sensitivity in care delivery and intrapersonal relationships. Basing findings on a review of the literature, interviews with key informants and an online survey, the paper noted that cultural understandings by community nurses is seen to be enhanced through the recruitment of aboriginal people to the nursing profession to work with their own people and enhance cultural understandings through communities of practice. Moreover, it was recognized that the habitat of some Canadian aboriginal people can be remote and thus require an enhanced approach to recruitment and retention of community nursing staff to ensure health potentialisation. Five priority areas identified for strategic action: 1) integration of indigenous ways of knowing and being, 2) addressing institutional barriers to aboriginal health nursing and aboriginal health, 3) education: recruitment and retention, 4) practising nurses: recruitment and retention 5) building capacity for leadership and advocacy. All five areas were considered interdependent and necessary to increase health potentialisation within integrated healthcare which includes aboriginal health nursing, aboriginal health leadership and aboriginal health (CNA & ANAC 2014).

The second discussion paper also argues for positive discrimination in another marginalized population, that of illicit drug users (Lee Metro 2015). The aim of the paper is to indicate how community nursing practice needs to accommodate to the specific needs of this population in the context of adaptable care delivery skills such as how to work with homeless people, the need for outreach street clinics and the provision of nurses with backpacks with medications and harm reduction supplies. The author contends that community nurses should also have appropriate education in specific issues related to illicit drug use, such as lifestyle issues and health problems. Lee Metro (2015) argues that such adaptation is essential to accommodate the culture of illicit drug users and counteract this population's common negative health experiences such as homelessness, HIV and hepatitis. In particular, it is argued that community nurses should champion the needs of this marginalized group through political advocacy and to have systems of integrated, interdisciplinary health care responses (Lee Metro 2015).

The final paper is a critical discussion on community nursing delivery in Canada. Pijl-Zieber (2015) fundamentally questions the current policy practice gap and argues that competencies delineated in public health and community nursing policy documents are idealist and are not always feasible in Canadian health care due to issues such as the lack of appropriate placements for students as well as a mismatch of policy and the actual political priorities. Consequently, Pijl-Zieber (2015) calls for a debate on what actually comprises community nursing in primary care and proposes that a careful review of reality is required to orientate policy to reflect practice.

The economic costs for the implementation of the recommendations are not comprehensively outlined or addressed in all papers. For example, while it is recognized that the move beyond a medical model is necessary, the CNA (2013) simply observe that an over emphasis on cost containment stunts the community nursing services' scope of practice and appropriate funding is essential to attract and retain staff. Furthermore, Lee Metro (2015), drawing on research from the British Columbia Centre for Disease Control (2014), points to potential fiscal savings and the social advantage of specific care to illicit drug users in terms of reducing crime, overdose rates

HIV/AIDS, HCV, public injecting, unemployment rates and increasing education opportunities.

The Canadian documents also noted issues related to enablers and barriers to the implementation of service provision. The CHNC (2011) state that the implementation of its proposed model and standards will enable population health to be achieved as the *model 'provides guidance into supporting nurses' control over the delivery of nursing care and the environment in which care is delivered'* (p.3) while the standards *provide 'a vision for excellence'* (p.7), recognizing that care excellence requires a minimum of two years' experience with mentoring, leadership and peer support. As cited previously, the CNA (2013) argue that the enablers consist of transformational leadership excellence, the alignment of health systems, nursing proficiency, interprofessional collaboration and appropriate supportive technology. However, challenges in community health nursing ideals are recognized with the CNA (2013) pointing to barriers on several levels such as those at the individual level (client and nurse) and organisational level (employer, association and academic). For example, Canada is experiencing changing patient and nurse demographics, a varied working environment, theory practice gaps, client diversity as well as questions on the capacity of home care and the role of the community nurse (CNA 2013; Pijl-Zieber 2015). Community health nursing needs to acknowledge and address these challenges and develop responsive and appropriate needs based service.

In conclusion, four documents describe particular ways of delivering or operationalizing models for community nursing (CHNC 2011, CNA 2013, CNA & ANAC 2014, Pijl-Zeiber 2015), while one paper considered a home-based community nursing intervention (Lee Metro 2015). The Canadian grey literature does advocate for particular structures, processes and values to underpin the specific nature of nursing in the community, ether as a generic approach (CHNC 2011, CNA 2013), which must be mindful of matching policy to practice (Pijl-Zieber 2015) and accommodate for demographic change (CNA 2013) or a population specific approach (CNA & ANAC, Lee Metro2015). Such approaches demand support such as defined standards which delineate the practice of nurses working in the specialist area of community and population health (CHNC 2011) and they also require a clear input of policy makers (Pijl-Zieber 2015, Lee Metro 2015).

The two documents focusing on specific populations highlight the need for positive discrimination in care delivery. This is required to adapt to the individual needs of marginalised populations and to enhance issues such as cultural competencies and lifestyle issues (CNA 2013, CNA & ANAC 2014, Lee Metro 2015), It highlights important transferrable knowledge for minority groups in Ireland which translate to cultural adaptability for more effective care delivery. As Canada has a generalist, public health and population based approach to care under a publically funded system within territories and First Nation and Inuit communities, many of the findings and guidance in these grey literature publication have applicability to the Irish environment. In particular, any development of community nursing in Ireland requires careful consideration to avoid a policy-practice gap and needs determined leadership for successful population based outcomes.

Overall, the quality of the Canadian grey literature was good according to the AACODS quality assessment tool (Figure 15). Most of the papers met all of the assessment criteria, with only one paper being written by a nursing student, and published within a student Journal.

Figure 15: AACODS Tool Canada Grey Document

	Authority	Accuracy	Coverage	Objectivity	Date	Significance
CNA & ANAC, 2014	●	●	●	●	●	●
CNA, 2013	●	●	●	●	●	●
CHNC, 2011	●	●	●	●	●	●
Pijl-Zeiber, 2015	●	●	●	●	●	●
Lee Metro, 2015	●	●	●	●	●	●

4.6 Australia

Australia's health-care system consists of both public and private providers with services provided across many levels. Public sector health services are provided by all levels of government: local, state, territory and the Australian Government. Private sector health service providers include private hospitals, medical practices and pharmacies (AIHW 2015). The Australian Government and the state and territory governments fund and deliver a range of other health services, including population health programs, community health services, research, Aboriginal health services,

mental health services, and health infrastructure (AIHW 2015). Responsibility for the overall coordination of the public health system is on all Australian health ministers including Commonwealth and state and territory ministers.

Primary health care is delivered in a variety of settings, including general practices, Aboriginal and Community Controlled Health Services, community health centres and allied health services (AIHW 2015). Through assessment and referral, individuals are directed between primary care services, or into secondary and other health services. In Australia, hospital services are provided by both public and private hospitals. Sixty-one Medicare Locals were created in 2011 as local organisations, to coordinate and deliver services in line with local needs (Australian Government 2013 cited by AIHW 2015). However, these are currently being replaced by a smaller number of Primary Health Networks, which are expected to align more closely with state and territory health networks (AIHW 2015).

The Australian Government's funding contributions include a universal public health insurance scheme. Medicare includes free treatment for public patients in public hospitals, benefits or rebates for approved health services and subsidising costs of many prescribed medications (AIHW 2015). Patients may have Medicare cover only, or a combination of Medicare and private health insurance. The government-funded schemes are supplemented by social welfare provisions, and additional government programs are targeted at improving health services and outcomes for specific groups, such as people living in rural or remote areas, Indigenous Australians, those with chronic illnesses, older people, and those in the Defense Forces or war veterans (AIHW 2015).

The analysis of Australian grey literature resulted in six documents of relevance to this evidence review focusing on a national strategy for tele-health published by industry specialists (Medical Technology Association of Australia, (MTAA) 2012), a model of dementia care for Western Australia published by the Department of Health (2011), a strategic community health plan for Sydney (Sydney Local Health District, 2012), a model of integrated primary care for South West Sydney (NSW Government / South Western Sydney Local Health District. 2012) and two qualitative research studies, one

exploring the role of leg clinics in leg ulcer care in the community (Shuter et al. 2011) and one defining the role of the community based child health nurse in Western Australia (Borrow et al. 2011). In addition to these documents, the Primary Health Research and Information Services (PHRIS) website provided a number of definitions considered appropriate for inclusion. Apart from the definitions outlined by PHRIS regarding practice nursing, and Borrow et al. (2011) relevant to child health nursing, there were no other specific definitions of community nursing. In dementia care, it is noted that nurses are well placed to facilitate best practice 'at the coalface' in the clinical processes of early identification of risk factors, baseline cognitive screening, promoting the foundations of essential care and adhering to clinical standards required for dementia care (DoH, 2011). Whilst the Sydney community health strategic plan and model for Western Sydney, defined community health care in detail, specific definitions of community nursing were not included.

Models of care described varied with regard to population focus. Two considered the whole lifespan (Sydney Local Health District, 2012, NSW Government/ South Western Sydney Local Health District, 2012); one focused on children (Borrow et al. 2011); one on people with leg ulcers (Shuter et al. 2011); one with a predominant focus on those with chronic illness and the elderly (MTAA, 2012) and one model was dementia specific (DoH, 2011). Locations of care varied between clinics and the person's home.

Key features of models described included maintaining a person at home through improved assessment of care and clear communication (DoH, 2011, Borrow et al. 2011) and the use of monitoring technology (MTAA, 2012); providing care close to home through multidisciplinary primary care services (Sydney Local Health District. 2012) designed to function at different levels based on population size (NSW Government / South Western Sydney Local Health District. 2012, Shuter et al. 2011, Borrow et al. 2011); empowering patients to actively participate in their care (DoH, 2011, Shuter et al. 2011, Sydney Local Health District. 2012, Borrow et al. 2011) and provision of a person-centred approach (DoH, 2011, MTAA, 2012, Borrow et al. 2011).

A wide variety of outcomes were investigated, including good care outcomes, adverse outcomes related to functional decline (DoH 2011), mean survival time, glycaemic

control, Emergency Room (ER) admissions, hospital readmissions, health related quality of life, mortality, number of bed days, detection of anomalies/ events, need for inpatient evaluation, time to clinical decision, disease related readmissions, cardiovascular mortality (MTAA 2012), rate of hospitalisations (MTAA 2012, South Western Sydney Local Health District, 2012), adult and infant mortality, costs (South Western Sydney Local Health District, 2012), psychosocial changes (Shuter et al. 2011), rates of palliative care provision, range of palliative care services available in Australia, characteristics and diagnosis of patients receiving palliative care services, palliative care phases, and palliative care benchmarks (Australian Institute of Health and Welfare 2013).

A wide variety of components were reported, many with very positive effects. Age friendly principles implemented across the trajectory of a dementia care model were reported to result in good care outcomes (DoH, 2011).

Daily monitoring of vital signs was associated with an increase in mean survival time in diabetic patients, and daily monitoring of oxygen saturations was associated with a 71% reduction in ER admissions in respiratory patients (MTAA, 2012). Likewise, home monitoring for COPD patients was linked to significant improvements in COPD-related ER admissions, health-related quality of life and reduced mortality (MTAA, 2012). Transmission of daily ECG and BP readings was also linked to a significant reduction in hospitalisation (43%), and number of bed days (68%) among cardiac patients (MTAA, 2012). Similarly, home monitoring of patients with heart failure was associated with a 50% reduction in risk of heart failure related readmission, and 55% reduction in cardiovascular mortality (MTAA, 2012).

Tele-health based monitoring of blood glucose and blood pressure resulted in improved glycaemic control in diabetic patients. Furthermore, a home telehealth program was linked to a 25% decrease in hospital bed days and a 19% decrease in hospital admissions, among veterans with chronic disease (MTAA, 2012). Use of implanted devices to monitor cardiac patients were also found to have positive effects. Such devices included pacemakers, and cardiac defibrillators. Remote monitoring of such

devices led to a decrease in office visits and earlier detection of clinical anomalies and 'clinically actionable events', and a 50% decrease in mortality (MTAA, 2012).

Primary care was identified by the South Western Sydney Local Health District (2012) as important in optimising maternal and child health outcomes, improving adult wellbeing, avoiding preventable conditions and improving care of older people. They state that health systems with strong primary health care have lower rates of hospitalisation, fewer health inequalities and better health outcomes such as lower adult mortality and lower infant mortality at a more efficient cost than those that do not. They elaborate that this effectiveness may be due to the defining characteristics of primary care such as being first point of contact, continuity, co-ordination and being highly visible to local communities. However, ambulatory or community care for individuals receiving palliative care was associated with more days per episode of care (average 36.9, median 21) compared with inpatient care (average 11.9, median 7 days). However, differences in quality of care or other relevant outcomes such as patient satisfaction with care, are not reported (Australian Institute of Health and Welfare 2013).

Leg Clubs for individuals in the community with leg ulcers were identified as successful as the interaction and collaboration involved empowered individuals, and the empathy and support they received encouraged participants to challenge healthcare professionals' advice, in order to obtain better care, and improved quality of life. Therefore, participants became 'agents for change' (Shuter et al. 2011).

Regarding costs and resource implications, the MTAA (2012) report that a literature review on the effectiveness of tele-health found strong positive evidence, particularly in relation to reduced travel (time and distance), increased patient productivity and reduction in total costs. However, saving depended on the type of technology used, and the patient group. Furthermore, lack of reimbursement was reported as a barrier to this type of care. The DoH (2011) cited training programmes as a resource issue in implementing a dementia care models, and lack of resources was identified as a barrier to accommodating changes in the practice of community based child health nurses (Borrow et al. 2011). The South Western Sydney Local Health District (2012) suggest

that funding for growth of primary and community care is likely to come from a variety of sources such as national and local government and the private sector.

Factors which enabled successful implementation of these care models included information management and technology, electronic medical records, governance, community involvement and consumer participation, locally and culturally appropriate services, access to training and support, GP involvement and leadership, access to flexible funding, supporting the role of community health in primary healthcare (South Western Sydney Local Health District, 2012), volunteers to enable implementation of the Leg Club (Shuter et al. 2011), and good facilitation skills to enable community inclusion and inter-agency collaboration (Borrow et al. 2011). Facilitating the governance structure change process for a restructured community nursing model in Australia, Maddock et al (2011) propose a 5-year comprehensive project plan, involving six interrelated stages that would serve as indicators of project progress. The focus for their clinical governance framework is for improved outcomes for the client and the delivery of a systematic patient-centred nursing service which is sustainable, accountable and quality assured. Such a framework may inform the DOH in developing a community nursing strategy in Ireland.

Barriers to implementation included lack of reimbursement for costs (DoH, 2011), workforce shortages, fragmented service systems, inter-professional rivalry and dominance of the acute setting (South Western Sydney Local Health District. 2012), isolated working conditions of community nurses, time constraints, changes in practice, lack of resources, increased numbers of multi-cultural clients, and changing family dynamics (Borrow et al. 2011).

Overall, the findings regarding community based care models are generally positive, with particularly promising results demonstrated by tele-health and a community nursing model of dementia care. A number of recommendations have been made in relation to the community based models of care reviewed. In implementing a dementia based model of care, stakeholders should adopt relevant framework documents, simplify access to community care, facilitate early screening, assessment and diagnosis, strengthen partnerships with multidisciplinary specialists, implement inclusive

discharge planning, provide workforce training, and involve the person with dementia and their carer as partners in care (DoH, 2011). The MTAA (2012) further recommend that appropriate policies for the integration of remote monitoring be introduced, using cost effective funding models and supplemented by additional pilot programs.

In relation to recommendations for improving practice for community based child health nurses, Borrow et al. (2011) emphasise the need for more resources, particularly resources to assist in supporting culturally and linguistically diverse families, mapping of child health nurses' workloads, development of community health client dependency rating criteria reflecting the social determinants of health, specific staff development opportunities to reflect the increased complexity of work, managerial support for clinical (reflective) supervision, and additional clerical assistance.

Aspects of importance to community care models, as identified by the Sydney Local Health District's Strategic Plan (2012) include equity and a focus on marginalised populations, prevention and early intervention, acute and post-acute treatment e.g. hospital-at-home services, multidisciplinary care, community participation in planning and implementing services, and development of a community health profile, research evidence base, and new technology and business processes.

The South Western Sydney Local Health District (2012) states that there is a need for further research to investigate outcomes of primary care models. Furthermore, participatory action research is identified by Shuter et al. (2011) as a good method of research for understanding and improving practice, as the findings of this type of research may be more meaningful to practitioners as they more closely reflect real situations as they naturally occur. This method highlights the potential for expanding operations that are normally clinically based (particularly chronic conditions) but transferable to a community setting, so that they become 'agents of change' for improved social inclusion and community engagement, particularly for marginalised groups.

To conclude, the documents reviewed within the Australian grey literature broadly align themselves to three of the six categories identified in the review of empricial

evidence outlined in Chapter 3. Models of care, that include discussion of the role of the community nurse or midwife in dementia care are outlined by DoH (2011) and in primary care by Sydney Local Health District (2012) and NSW Government / South Western) are described. Interestingly, one of these documents draws on the Irish PCT approach as it's reference model (DoHC, 2001). Telehealth is also considered (MTAA, 2012) and preventative interventions / models described with regard to community child health (Borrow et al. 2011) and leg ulcer care (Shuter et al. 2011).

The quality of the studies within the Australian grey literature review was positive (Figure 16). As with all of the grey literature, due to the nature of papers reviewed, there was limited comment on whether they were peer reviewed, limitations were only occasionally stated, and methodology was not always outlined.

Figure 16: AACODS Tool Australia Grey Documents

	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Borrow et al. 2011	🟢	🟢	🟢	🟢	🟢	🟢
Sydney Local.Health District 2012	🟢	🟢	🟢	🟢	🟢	🟢
Shuter et al. 2011	🟢	🟢	🔴	🟢	🟢	🟢
DoH, 2011	🟢	🟢	🟢	🟢	🟢	🟢
MTAA,2012	🟢	🟢	🔴	🔴	🟢	🟢
South West Sydney Local Health District 2012	🟢	🟡	🟢	🟢	🟡	🟢

4.7 Ireland

Ireland, as the country mandating this review of effective models of community nursing and midwifery has been examined in depth to ascertain the models and initiatives currently in place, together with their associated effectiveness.

4.7.1 Context of healthcare in Ireland

Ireland is an island nation situated in the North Atlantic to the west of Great Britain. Politically the country is divided between the Republic of Ireland, an independent state and Northern Ireland, part of the United Kingdom. The population of the Republic of Ireland is 4.6 million making the country the second most populated island in Europe after Great Britain (CSO 2011). Life expectancy in the Republic has increased by two

and a half years in the last decade largely due to reductions in mortality rates from the principal causes of deaths such heart disease and cancer. A significant feature of the population, relates to the growth in the number of people aged over 65 with this cohort increasing by 20,000 people each year (DoH 2015). This trend is set to continue and will have implications for future planning and health service delivery particularly within the community setting. In addition, Ireland has the highest birth rate in the European Union (Eurostat 2015), which has particular relevance to public health nursing workloads.

With regards to the Irish health care system, overarching responsibilities lies with the Irish Government, exercised through the Department of Health, under the direction of the Minister of Health. The Health Service Executive (HSE) is the national health body in Ireland, although a range of other governmental bodies and agencies are involved in healthcare management and delivery. Front line services in Ireland are delivered through 7 hospital groups and 9 community health care organisations. In addition, there is a strategic focus on particular specialist areas in 33 clinical programmes, one of which is primary care (HSE nd).

Much has been done to develop and improve the Irish health care system since the 1990s, as is evidenced by the number and range of health strategies that have been published (DoHC 1994, DoHC 2001, DoH 2013). The primary and consistent aim of these strategies is to improve health outcomes and health care delivery. Since 1994 (DoH 1994), health care policy in Ireland has reorientated to primary health care. From a community perspective, the Department of Health and Children's strategy document Primary Care: A New Direction (2001) is particularly significant in that it emhasises the importance of primary care as an appropriate setting for the management of most health and social service needs. Referral to hospital services should only be necessary when care needs are too complex. Therefore, primary care should be the centre of the health care system, with greater integration and liaison between primary and secondary care services. A range of recent strategy documents such the HSE Health Promotion Strategy Framework (HSE 2011), Future Health 2012-2015 (DoH 2012), the and the Department of Health Statement of Strategy 2015-2017 (DoH 2015) further

emphasise the pivotal role that primary care will play in the Irish Healthcare system of the future.

The Healthy Ireland Framework 2013-2025 (DoH 2013) stresses the need for governance and policy, partnerships across settings, empowerment of people and communities, health service reform, research, monitoring, reporting and evaluation. This will be achieved by leadership and accountability, an intersectional whole-system approach, partnerships and building community and personal responsibility for health, early intervention, promotion of healthy aging and a lifespan approach, and measurement and evaluation of progress. The implementation of this framework is overseen by the Cabinet Committee on Social Policy, and the Department of Health. However, despite significant advances in the development of primary care, major challenges remain, particularly with regards to primary care reform. One of the challenges for the health services relate to communication and connectivity. The E-Health Strategy Ireland (HSE/DoH, 2013) supports the development of e-health which may help to promote a more efficient, transparent, accessible and safe health service and promote higher quality of care. This report emphasises that e-health must be seen as a national investment into healthcare infrastructure, which appears likely to result in economic gains. However, the need for training and development of skills for staff is also recognised, and the report highlights the need for appropriate leadership in implementing e-health.

A key driver of the reform agenda at a national level is the Health Information and Quality Authority (HIQA) which, established in 2007, is responsible for providing health information, monitoring standards, implementing national quality assurance programmes and considering costs and clinical effectiveness. It is also responsible for most accreditation mechanisms for publicly funded health care services in Ireland. However, mental health care is not regulated by HIQA, but by the Mental Health Commission (MHC) (McDaid et al. 2009). The HSE have agreed a number of metrics/indicators for Primary Care, however these are primarily focused on physiotherapy, occupational therapy and orthodontics (HSE 2014). The full list of these metrics/indicators can be found on the HSE website and include items such as GP out of hour's service, physiotherapy referral, occupational therapy, orthodontics, methadone

treatment, substance misuse, homeless service and traveller health screening. Priorities for a PHN related quality care metrics (QCM) systems commenced in 2015, with priority areas of documentation, wound care and child and maternal care. The Office of the Nursing and Midwifery Services' Director anticipates that these QCM areas will be developed in 2016 (NDPHN in partnership with Shannon 2014).

The Irish health care system is funded primarily by taxes, including pay-related social insurance (PRSI) and other sources of government income, such as excise duties (McDaid et al. 2009). Other aspects of funding come from private sources, such as out-of-pocket household expenditure on GP, visits, pharmaceuticals, public or private hospital stays and payments to private health insurance providers (McDaid et al. 2009). The percentage of the population with private health insurance has dropped from a high of over 50% of the Irish population (McDaid et al. 2009) to a current estimate of 40%. Within the government's agenda of reform towards a single tiered universal health insurance(DoH 2012), all children under the age of six are entitled to universal primary care including GP care without fees at the point of services.

In relation to older people, one particular report was identified as pertaining to the grey literature. The HSE (2012) document is a joint initiative between the Directorate of Clinical Strategy and Progammes (CSP) of the Health Services Executive (HSE) and the Royal College of Physicians of Ireland (RCPI). It is a health services response to the increasing numbers and special needs of older people who present to acute hospitals. It provides a context for a changing demographic with those over 65 years of age to increase from 11.4% currently to 18% of the population over the next 30 years. It provides a framework in which services and systems need to change to meet this predicted demand. Essentially, it states that care of older frail adults should be located in the community. Care needs to be provided by a variety of healthcare professionals including GPs, practice nurses, PHNs, social care professional and geriatricians. This requires governance and clear communication lines to be in place to ensure provision of quality safe care. The report identifies challenges such as achieving high quality standards that are accessible for all service structures, having clear pathway for referral, coordinated multidisciplinary care through management structures and the provision of continuing education for staff. Realising the report goals requires good

partnership between primary care healthcare professionals and acute services, a representation of the older person within all service provision (planning, implementation and evaluation) and role recognition of the interdisciplinary team. Effective implementation of the model also requires adequate staffing resources, structure, and cost saving initiatives for all service components.

In examining the demographic and health profile of those utilising Public Health Nursing services in Ireland within The Irish Longitudinal Study on Ageing recently examined Murphy (2015) found that the PHN service appears to be responding to the needs of people with difficulty in ADLs and IADLs. There are high levels of utilisation of PHN services by those aged 85 years and older. Given the age profile and health status of service users, the associated mortality rate is high and therefore PHNs have an important role in the provision of end of life care for patients and families. The authors concluded that PHN services in Ireland are dynamic and responsive to changing levels of need and increasing numbers of people requiring access. Satisfaction with the PHN service was high (90%), with dissatisfaction mostly related to insufficient service provision.

With regards to the population group of persons with intellectual disability, they are frequently absent in terms of primary health care considerations. However, as a population group, their needs within the community are deserving of greater attention. A number of studies have identified that people with an intellectual disability are living longer, they also experience far higher rates of avoidable deaths than those in the general population (McCarron et al, 2015; Heslop et al, 2014; MENCAP, 2012), pointing to the need for support services to be delivered in a manner reflective of the specific needs of those with an intellectual disability. These all have implications for nursing in the community in terms of generalist versus specialist nursing care providers. As relocation occurs to community based residences and people with an intellectual disability further avail of mainstream health services and community supports it is imperative that the role of the Registered Nurses in Intellectual Disability (RNID) is recognised and integrated into community services. Studies have identified that although people with an intellectual disability are availing of community based services more than ever, such services and the health professionals providing them are often

times not adequately educated or prepared to support people with an intellectual disability (McCarron & Lawlor, 2003; McCarron et al., 2013).The proposed integration of the RNID into community health care teams will serve to ensure that community based nursing services are accessible and developed to support people with an intellectual disability and their families appropriately (HSE 2016).

4.7.2 Organisation and delivery of community nursing and midwifery care in the community

The organisation of community nursing and midwifery services in Ireland is both complex and varied. Public Health Nurses (PHNs) constitute the largest group of community nurses and generally work from a local health centre in a designated geographical area, as part of a multidisciplinary team. PHNs are engaged in the delivery of care at primary, secondary and tertiary levels and consequently work with a multiplicity of diverse client groups. These client groups include those who require a domiciliary clinical nursing service, older people, families with infants and children (including preschool and school children), people with physical and intellectual disability, people with chronic illness and people discharged from the psychiatric service (DoH 1966; DoH 2001). The introduction of registered general nurses in the provision of additional secondary and tertiary care has extended the community nursing service. However, the complexity of care delivery has led to difficulties in both clarifying and defining the boundaries of community nursing practice particularly with regards to public health nursing (ONMSD, 2011, O'Dwyer, 2009, Begley et al. 2004), While other nurses work in the community such as psychiatric nurses, learning disability nurses and palliative care nurses, they generally operate within the organisation and structure of their own institutional setting (O'Dwyer, 2009). Similarly practice nurses work under the direction of general practitioners and are therefore not integrated into the community nursing service. Some maternity hospitals operate a community midwifery scheme and initiatives are underway nationally to provide additional community midwifery services.

4.7.3 Review of Empirical Irish Literature

The review of empirical literature conducted for this study, applying the inclusion and exclusion criteria outlined in detail in Chapter 2, generated no Irish studies. Whilst of course, there are studies published in the empirical literature specific to community

nursing or midwifery in Ireland, there were no systematic reviews, meta-analysis or randomised controlled studies published within the timeframe of review (November 2010 – October 2015).

4.7.4 Review of Irish Grey Literature

The review of grey literature generated a total of five documents that were specific to models of community nursing or midwifery and relevant to this study. This included one narrative review (Pye, 2011), and four reports (Socio-Econmic Review, 2011, HSE 2014, ONMSD 2011; National Directors of Public Health Nursing in Partnership with Shannon 2014). The four reports are mainly concerned with supporting community based care and are based on the principles of primary care which include-accessible, affordable, available and appropriate care services. These principles need to be included in any future model of community nursing.Within the five publications, three were focused on nursing models (Pye 2011, NDPHN in partnership with Shannon 2014, ONMSD 2011) while three were integrated/collaborative models (Hussey and Roger 2014, Socio-Economic Review 2014) Overall, a high quality was identified for all of the reports and the narrative review within the Irish grey literature according to the AACODS quality checklist (Figure 17).

	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Pye, 2011	●	●	●	●	●	●
National DPHNs + Shannon 2014	●	●	●	●	●	●
ONMSD 2011	●	●	●	●	●	●
Hussey and Roger 2014	●	●	●	●	●	●
Socio- Economic Review, 2014	●	●	●	●	●	●

Figure 17: AACODS Tool Ireland Grey Documents

From her narrative review, Pye (2011) stated that the Public Health Nurse has an important role to play in Irish Healthcare System and his/her work, however the current context of care presents challenges related toi recruitment, resources, increasing patient dependence, the need for "High-Tec" care, the availability of hospital beds and the measurement of nursing activities. While these challenges are not unique to public health nursing, and apply to other community based nursing groups, the paper

does provide a clear context of working in public health. In addition, this document provides core information which could potentially assist in workload and workforce planning. Pye (2011) identifies the need for distribution of current vacant caseloads as well as public health nurses also acquiring corporate caseloads arguing for a reform of the community nursing system. Furthermore, public health nurses need to understand the caseload composition with specific admission and discharge criteria for cases. Furthermore, gaining knowledge to co-ordinate care, development of a strategic governance group, availability of a dependency model, and clear eligibility for health and social services would also assist in forward planning.

Similarly, The National Directors of Public Health Nursing (NDPHN)in partnership with Dr. Michael Shannon Director, Nursing & Midwifery, (2014) set out a strategic development plan for PHN services in a *Quality Integration and Collaboration: A strategy for Community Nursing* consultation document. Within this report the vision for the PHN service is to deliver a universal service which achieves high quality holistic services in primary care. The NDPHN in partnership with Shannon (2014) identified that there was a dramatic increase in those eligible for the Irish medical card from 2003 to 2012, and this resulted in an additional 700,000 individuals were eligible for PHN services. Such an increase has created further strain on a service which is already dealing with a reduction in PHNs employees(NDPHN in partnership with Shannon 2014). Key recommendations for reform include; structure and organization of service; role expansion and extension; clinical governance and leadership, information and communication technology; professional development; monitoring and evaluation. It is evident from this report that strategic and substantial changes need to be made within the PHN services to ensure the delivery of efficient high-quality care to individuals in the community.

The ONMSD report (2011) is concerned with changing practice to support service delivery by utilizing the Population Health Information Tool (PHIT). The use of this tool enables an identification of individuals needing care and can present changes in demographic and epidemiological trends, which can guide areas related to staffing, skill mix and general service delivery (ONMSD 2011). The aims of the PHIT action research project 2006-2008 were to:

"Identify sources of information that are available on health and health needs and to explore how this information can be accessed, recorded and used to develop a population health model for use in community nursing practice" (p.11)

ONMSD (2011) identifies that the traditional information sets used by public health nurses are inadequate in managing effective high standard care. Through the development of the PHIT tool, a framework has been created to address the complexities of PHN caseload management in primary care. The ONMSD report (2011) recommends the development of structured competencies for effective caseload management. Such structures needs to be filtered into educational modules for MDT and third-level nurses to inform best practice in this area. PHIT recommendations were also noted in the areas of health information; quality & and governance; research and development; service development and workforce planning; education and professional development. The PHIT is key to populating health information submitted from public health nursing caseloads, and responding to the changes in health needs of those in the community (ONMSD 2011).

The annual Socio-Economic Review titled 'A New and Fairer Ireland'(2011) identifies a number of key policy areas for review. With regards to healthcare, the core policy objective involves the provision of adequate healthcare that enables citizens to attain health, as it is defined by the WHO (2006). The review argues that community based health and social services require a model of care that is accessible, responsive and supportive of local communities. Four specific areas of care are prioritised: Older People's Services; Primary Care and Primary Care Teams; Children and Family Services; Disability and Mental Health. Primary care is recognized as a key component of the model and the review recommends a significant increase in the healthcare budget with a minimum of €600 million investment over a five year period in the prioritised areas. Specific reference to community nursing is made only within the context of the composition of primary care teams and the need to increase the number of these teams at a national level.

Hussey and Rodger (2014) describe how case reports were used to provide evidence of the specific uniqueness of nursing in care provision, particularly realted to ehealth. The report aims to demonstrate how the profession manages nurse to nurse and nurse to

MDT inter agency communication to support front line care to older persons in one area in Dublin North. The emphasis is on nursing services which cross the acute and primary care domains. These case reports form part of a phased approach to articulating the nursing contribution to eHealth Ireland. The key finding centres around the duality of the nursing role and the challenges associated with working both independently and as part of a co-ordinated multi-disciplinary team. The report concludes by recommending that nurses must embrace future design and technology so that the dual role that nursing plays in health service provision is not lost, but accounted for in future ehealth programmes.

While these documents, similar to the publications in other countries, provide guidance and demonstrate the need for integrated care and the introduction of technology to enhance practice, progress needs to be mandated in a national way in terms of rolling out programmes and resourcing these programmes appropriately. The future metrics proposed for public health nursing (NDPHN in partnership with Shannon 2014) will help to standarise community nursing practice. As with any reform, there is also an onus to ensure that community nursing practice roles in the future are comprehensively situated in the discipline of nursing, the inter-disciplinary team and within the health system itself. Equally, reform would be necessary within the educational preparation of community nurses to ensure professional development and community nursing qualifications are 'fit for purpose'. Such reform also needs to emphasise clinical governance systems to facilitate quality and evidence based safe practice which meets population needs effectively and efficiently.

Regarding costs and resource implications, Pye (2011) identified the recruitment moratorium, lack of funding, budgetary restrictions are impeding change within the community setting. Coordination and integration approaches that efficiently utilise resources provide high quality care for individuals in the community setting (HSE, 2014). The PHIT system assists in efficiently utilising resources in relation to competent caseload management and identifying a clear need for specific budget allocation in certain area (ONMSD, 2011). Within Hussey and Rodger's (2014) case report, it was acknowledged that significant time is needed in understand new ehealth systems. The Socio-Economic Review (2011) identifies numerous areas that need to be prioritised

within the health budget in relation to community care and restructure, such as childcare services, elderly respite, mental health services, health inequalities, increase primary care teams, health promotion, and education. Such reform is noted to require significant investment (Socio-Economic Review 2011).

Barriers to change within the PHN community setting included the broad and generalist role of PHN, maintaining competence when dealing with large client groups in the community, pressure on geographical model, funding, lack of clarity on the eligibility of community nursing services, and less availability of acute beds (Pye, 2011). The NDPHN in partnership with Shannon (2014) report has identified a wide range of reform barriers with regard to child health and protection, school nursing services, health promotion and health improvement activities, information technology, and the complexity of nursing care in the community

Factors which may enable change in the PHN services include corporate caseloads, IT systems, strategy development, and the reconfiguration of services incorporating strong leadership and governance (Pye, 2011). For reform to take place a comprehensive account of the current available workforces and those required in the future needs to be made available (Socio-Econcomic Review, 2011, NDPHN in partnership with Shannon, 2014). Furthermore, to address client demand in the community a proposed division of primary care teams into PHNs who focus on children and families in the community, while the second cohort deal with corporate case management (NDPHN in partnership with Shannon, 2014). ONMSD (2011) identifies audits as an integral component in reform. Effective case management supports and efficient caseload management is crucial to the provision of integrated care in the community (ONMSD, 2011). Equally important, in the implementation of ehealth communication systems within nursing is to ensure that both the disciplinary input and the nurse's input into multi-disciplinary care planning is represented comprehensively and across care setting in the context of case management.

4.8 Synopsis of Midwifery Models identified in Grey Literature

In Ireland, maternity care is delivered under the Mother and Infant Scheme, this provides a shared model of care and involves the woman's general practitioner and hospital obstetric services. Antenatal care is provided by the GP and hospital services,

the majority of women give birth in hospital, and after a short postnatal stay, the woman and baby returns to community services which are provided by the PHN and GP. Women can opt for public or private obstetric care. Where Self- Employed Community Midwives (SECM) are available, suitable women can choose to give birth at home under the care of a midwife. Key to models of midwifery is an integrated approach to care with a focus on the needs of the woman and close collaboration with all members of the multidisciplinary team including, obstetricians, paediatricians, GPs, PHNs and other health and social care services.

Over recent years, in response to women's increasing demand for choice in maternity care, a number of community midwifery services have emerged. The Mid-Western Regional Maternity has traditionally provided a local postnatal community service but Early Transfer Home Schemes have more recently developed in the large Dublin maternity Hospitals (Coombe Women and Children's, National Maternity and Rotunda). The Dublin hospitals also established midwifery-led services which include outreach community clinics and Domino services. These services are also available in Cork University Maternity Hospital and Waterford University Hospital. There are currently two midwifery-led units, one in Drogheda and the other in Cavan but no free standing midwifery-led units or birth centres. The Department of Health has recently released a National Maternity Strategy (DOH 2016) which places the woman at the heart of the maternity service. The strategy proposes the development of outreach services with community midwives providing antenatal and postnatal care as part of a multidisciplinary team including GPs and PHNs. PHNs will continue to provide postnatal services to support new mothers and babies. As this report (DOH 2016) is now available, the grey literature relating to midwifery in the community for the chosen countries is outlined.

In the Netherlands women access maternity care through a midwife in the community and can choose home or hospital birth (KNOV 2014). Close co-operation across maternity services is considered a key factor and guidelines are used to identify women suitable for home birth. Postnatal midwifery care is provided for up to 8 days and a maternity care assistant provides 24-49 hours of postnatal home care. In Canada, one paper (Department of Health and Social Services 2012) explored models of midwifery

care for remote regions in the North West Territories, focusing on cost effectiveness as well as health and social factors. The report concluded with a recommendation for a community model of midwifery care, due to its cost effectiveness and strong evidence base, supporting enhanced health and social outcomes. This model was advocated as providing culturally appropriate health care, while respecting choice of community based birth. It was noted that the service was dependent on the recruitment and retention of midwives and recognition that high risk women would still require evacuation for secondary or tertiary midwifery services (Department of Health and Social Services 2012).

In Australia five reports werem included for review in relation to the maternity services (Australian Ministers' Health Conference 2010, Homer et al 2010, Australian Health Ministers' Advisory and Council 2013, Kruske 2012, National Maternity Services Inter Jurisdictional Committee 2013) with varying levels of focus on community nursing and midwifery. The National Maternity Service Plan (Australian Ministers' Health Conference 2010) includes some discussion on models of care and while midwives are included, the report reflects the multidisciplinary provision of maternity care. Continuity of care is recognised as important for women with increasing demand for midwifery continuity of care models. The Service Plan acknowledged that women's choice should be respected and supported by improved access for continuity of care for those who choose to use this service. Progress against the plan was published in 2013 and reported expanding midwifery models of care in several regions and an increase in the availability of publicly funded homebirth services (National Maternity Services Inter Jurisdictional Committee 2013). Various examples of continuity models and case load midwifery care and community services were provided. A more recent publication (Australian Health Ministers' Advisory and Council 2013) provides an update on the Service Plan and identifies the continued strengthening of midwifery models of care. Other key documents for Australia include the development of competencies for Primary Maternity Services which identifies the skills, knowledge, behaviours and attitudes required for primary maternity service providers and a mechanism to assist meeting these requirements (Homer et al 2010). An additional report of the maternity care needs for Aboriginal and Torres Strait Islander women, recognise the value of midwifery models of care for low risk women (Kruske 2012).

The driving force for change in midwifery and maternity service provision in the United Kingdom was the Midwifery 2020 report produced by the Chief Nursing Officers of England, Northern Ireland, Scotland and Wales (DOH 2010). The report recognises the commitment across the UK to the development of community midwifery services with midwives being the first contact for pregnant women. The report reflects previous documents in identifying that midwives continue to be the lead health care professional for women with straightforward pregnancies in largely community based services. In addition, for women with complex pregnancies, midwives are required to coordinate care within a multidisciplinary framework, liaising with obstetricians, general practitioners, health visitors and maternity support workers. The midwife's contribution to public health is also recognised. This report was produced based on findings from three commissioned reviews (Masterson 2010a, Masterson 2010b, McNeill et al 2010).

It is noted that effective maternity services are interdependent on primary care, specialist services and the range of early years services provided in community settings. A systematic review of midwife-led models of care that did not emerge in the review of empirical literature search was also identified in the grey literature search. This review was commissioned by the RCM (Devane et al. 2010) and concludes that midwifery-led care is as safe as consultant/doctor-led care for women with normal pregnancy and birth, and can provide additional health benefits. The economic issues were explored for a UK setting and benefits were noted. Specific to Northern Ireland, The Strategy for Maternity Care in Northern Ireland 2012-2018 (DHSSPSNI, 2012) also focuses strongly on the provision of midwife-led services for women with a straightforward pregnancy based in the community and within midwife-led units (MLUs). Currently in Northern Ireland there are eight midwife-led units, five alongside (thereby situated beside a consultant-led unit) and three free standing midwife-led units (GAIN 2016). The Maternity Strategy Implementation Group has made large strides in the implementation of the strategy's key objectives, including the provision of antenatal care and postnatal care predominately within the community (GAIN 2016).

These documents highlight that the integration of services and effective communication across primary and secondary sectors is required and should involve GPs, hospital

clinicians and community health providers, with mutual understanding of respective roles and responsibilities.

4.9 Summary

The grey literature in this section included six countries: US, UK, Netherlands, Canada, Australia and Ireland. Overall, the quality of the papers relating to nursing in the community and reviewed within this grey literature search, according to the AACODS (Tyndall, 2010) was favorable, with most quality indicators being fulfilled. As mentioned previously, the diverse nature of the papers reviewed made it difficult to demonstrate methodology and limitations.

Within the six countries, the publications detail both general lifespan approaches to community nursing within settings such as clients' homes, health centres, schools (CNA 2011, Community Health Nurses of Canada 2013, Pye 2011, Sydney Local Health District 2012, NSW Government/South Western Sydney Local Health District. 2012, NDPHN in partnership with Shannon 2014), street level care (Lee Metro 2015) and workplaces (CNA 2013) with one publication acknowledging how monitoring technology could enhance community nursing practice (MTAA, 2012). Many papers identified the advantages of an integrated primary health care approach provided specific principles of care delivery which integrated population need generally (DoH 2011, Sydney Local Health District 2012, NSW Government/South Western Sydney Local Health District 2012, Socio-Economic Review 2011, NDPHN in partnership with Shannon 2014).

For the international papers that evaluated practice outcomes, it was found that integrated care services improved health (RAND 2012, MTAA 2012). These improvements were demonstrated in reduced hospitalization rates and lengths of hospital stays, improved case management (MTAA 2012), economic savings (RAND 2012, DeBlok 2011, Gray et al. 2015, Lindsay 2013, CAN & ANAC 2014), empowerment of the patient (Shuter et al. 2011), reduced isolation of the community nurse (Lindsay et al. 2013), job satisfaction and patient satisfaction with care (DeBlok 2011, Gray et al. 2015). However, some mixed results were found in relation to efficacy of interventions, communication care patterns and patient review of services (RAND 2012). In particular,

role change was greeted with some reluctance in Scotland as this was seen to be demoralizing and lacked valuing previous training (Gray et al. 2011). This finding has application in Ireland in terms of considering a reform within the structure and delivery of community nursing services.

Particularly related to Ireland, reform has also been noted in terms of eligibility for services, with the change in medical cards for older people combined with a rising older people demographic having a significant impact on public health nursing services (NDPHN in partnership with 2014). Two publications noted the need to develop particular care services for population groups(CNA and ANAC 2014, Lee Metro 2015), the Socio-Economic Review (2011) advocated for positive discrimination for vulnerable groups. (HSE, 2012, National Advisory Committee on Palliative Care, 2001). Equally, plans for the introduction of a universal health insurance system (DoH 2012) may have an impact on the workload of PHNs if eligibility to care other ages groups is extended. Potentialising leadership, partnership and integrated care is a common theme within the reform agenda reform of the health care system in general and community nursing as a discipline (DoHC 2001, DoH PHN 2013, NDPHN in partnership with Shannon 2014). Similar to findings within the empirical literature and the grey literature from the six selected countries, reform should also include the integration of technology to enhance care effectiveness and efficiency (Hussey and Roger 2014, MTAA 2012)

While the grey literature has presented guidance in terms of general integrated care (Sydney Local Health District 2012, NSW Government/South Western Sydney Local Health District 2012, Kulbok et al. 2012, Socio-Economic Review2011), and for community nursing (CHNC 2011, CNA 2013, CNA & ANAC 2014, Lindsay 2013, Shuter et al. 2011, NDPHN in partnership with Shannon 2014), additional evaluation is needed to identify benefits and challenges, particularly in the contexts that some reports are aspirational, thus as Pijl Zeiber (2015) notes the reality of practice requires comparison. With regards to community midwifery services, the thrust of all included documents and reports reflects the move towards community delivery models for straight forward low risk women.

Chapter 5 Email Survey of National Leaders in Ireland

5.1 Introduction

This chapter presents the findings from an email survey undertaken with key stakeholders in community nursing in Ireland: Directors of Public Health Nursing and professional development co-ordinators for practice nursing. Findings are presented as an overview of responses mainly including a description of projects in practice within the community setting.

5.2 Survey Approach

An invitation to participate in an email survey to identify effective models of nursing or midwifery practice in Ireland was sent, via email, to recognised national leaders in community nursing and midwifery. This included the Chair of the National Director of the Public Health Nursing group, all Public Health Nursing leaders (DPHNs and Assistant DPHNs) listed on the UCD PHN programme list (n=32) and all professional development co-ordinators for practice nursing currently in post (n=4). Respondents were required to complete a data collection grid recording information about any models/intervention or initiative involving community nurses or midwives in their areas. In addition, they were asked that where there is published information about the model / intervention available, that a copy of this publication be included with their submission.

5.3 Responses to the survey

A total of 15 responses, together with four supplementary published papers were received from HSE Community Healthcare Organisation Areas 2, 4, 5, 7 and 8. The response rate was somewhat disappointing but may be a reflection of the relatively short timeframe given for questionnaires to be returned. It was also noted by one respondent that the short timeframe prohibited a consultation with the 1800 individual practice nurses in post and this in turn reduces the likelihood that smaller, more localised quality initiatives were included. The depth of submissions received varied significantly, with ten respondents completing the survey table and five electing to submit short descriptions as an alternative. For those who completed the table, the amount of information submitted varied greatly. Where additional publications were

not included about a model or initiative, the assumption has been made that such publications do not exist.

Three of these 15 submissions focused on one model in CHO 8 (Pye (2015); Nally (2015): Bourke (2015)). Five submissions, two from Lawlor (2015) focusing on a cancer education programme for nurses and chronic disease management education modules offered through Centres for Nurse Education are outside the scope of the study and have not been included in this review. Two from McSharry (2015) discuss educational programmes in ear irrigation for nurses and an introductory practice nurse education programme. These are not included as they are primarily educational in nature and do not provide additional information regarding models of community nursing or midwifery in practice. The fifth from McQuillan (2015) focuses on an educational programme for nurse prescribing of medicinal products, indicating that to date 29 practice nurses have been trained and are prescribing; however the submission does not focus specifically on a model of care or discuss outcomes and has therefore not been included in this review. However, we appreciate that these educational programmes are of value, have the potential to expand the scope of practice for community nurses and midwives and that such educational opportunities may require more considered review elsewhere.

5.4 Models of Integrative / Collaborative Care

Three models of integrative / collaborative care were submitted, one focusing on the whole population (Pye, 2015; Nally, 2015; Bourke, 2015) in Longford/Westmeath CHO 8 and the others on support for breastfeeding mothers and people with leg ulcers / wounds in Castleisland (Castleisland PHNs, 2015). These are described in detail below.

Integrated Community Nursing – Longford / Westmeath CHO 8

Pye (2015) and Nally (2015) returned two submissions relating to the implementation of an integrated nursing team in the PHN service in Longford/Westmeath CHO 8. PHNs lead the service, which also includes RGNs and HCAs, managing all clinical nurse referrals across a population of approximately 126,000 (Hanafin and O'Reilly, 2015). The model represents a shift from a generalist, geographical arrangement to a specialist approach, similar to UK models of health visiting and district nursing (Hanafin and O'Reilly, 2015). Two teams of PHNs have been established, centred in the three urban areas of CHO 8, with one dedicated to child health, welfare and protection where PHNs hold individual caseloads. The second team, usually PHN led, adopts an integrated approach providing clinical nursing care to all those eligible, in association with RGNs and HCAs and working closely with the wider Primary Care Team. Burke's (2015) submission explains that a CNM3 leads specialist palliative care services and Palliative Care Clinical Nurse Specialists provide an integrated service with RGNs and PHNs for those who require palliative care support and intervention. Clerical support is also available for the teams. Rotation between teams can occur after an agreed time period.

Guidelines regarding management, dependency, record keeping and prioritisation have been developed and active case load management is maintained through dependency scoring, regular meetings, a single point of contact and clinic based interventions where feasible. A buddying system is used for high dependency patients where two nurses assume responsibility for care. The evaluation of the model, conducted from multiple stakeholder perspectives by Hanafin and O'Reilly (2015) demonstrates positive effects in the areas of quality and risk, governance, financial and caseload management. More specifically, 94% of staff involved in the new model were in favour of it and service users were also positive and were not as concerned as the nurses allocated to the integrated care team, about lack of continuity associated with multiple individuals providing care as part of a team. The wider MDT identified a number of positive features associated with the model including:

- A shared, common focus with better understanding of roles and improved personal and professional relationships between the team.
- Improved communication about clients.
- Reduction in inappropriate referrals.

- Improved access.

The PHNs assigned to the child health team noted an improvement in their own skill set since the new model commenced and appreciated that they had more time available to engage with mothers and children. PHNs assigned to the integrated care teams recognised that by sharing the care of clients with the wider PCT, they were able to obtain different views, share information and benefit from additional support, including the possibility of joint visiting as required. The model also brought greater flexibility to them as practitioners.

Performance indicators from a child health perspective, following the introduction of this model showed better performance as compared to national statistics, with a higher uptake of immunisations, and a higher percentage of developmental checks carried out on time (Hanafin and O'Reilly, 2015). After the implementation of the integrated PHN teams, a reduction in caseload (by about one third) was noted, but there was an increase (by one quarter) in the amount of admissions over the same time period. It was highlighted however, that the needs of the population of the towns involved were in fact higher than the national average. With specific regard to safety, 80% of the staff working in the integrated PHN teams and the child health teams confirmed that there was an embedded culture of safety within the organisation, compared with only one third nationally. This was attributed mainly to increased communication, peer supervision and shared clinical decision-making. Also, during weekly team meetings, the Assistant Director of Public Health Nursing was present, which aided open discussions and ability to examine critical incidents and risk assessments. Good leadership and governance practices were also demonstrated including service audits, documentation and guideline writing and review, and clinical supervision.

The introduction of the integrated nursing model also resulted in financial benefits. A decrease in budget by 16% was mainly attributed to a reduction in staffing levels. There was also a 26% drop in mileage and expenditures by the PHNs, and despite this reduction, four out of five nurses considered that they has enough resources to carry out their duties, compared to one third nationally (Hanafin and O'Reilly, 2015).

Hanafin and O'Reilly (2015) noted the challenges associated with the new approach, including concern regarding continuity of care for clients, potential for loss of expertise, the role of the team leader and possibly reduced scope to engage in prevention and early intervention. However, Bourke's submission regarding this model notes that PHNs also operate both a continence screening service and lead immunisations and vaccinations in schools.

Nally's (2015) submission indicates that the model will be extended to rural areas of CHO 8 in January 2016. However, Hanafin and O'Reilly (2015) urge caution in simply lifting a model for roll out on a wider scale unless due attention is given to personnel, caseload management and guidelines/documentation necessary for the model to operate safely and efficiently. More specifically they consider that any scale up would require: (1) workforce planning assessment, considering skill mix and roles; (2) adequate clerical and administrative support; (3) team building and change management support; (4) investment in IT hardware, software and training; (5) additional development and resources with a focus on interventions for older people; (6) support for co-location of teams; (7) a review of the PHN curriculum; (8) training for existing staff assuming leadership roles and (9) ongoing practice development.

The evidence presented regarding the integrated model in CHO 8 suggests that more robust studies focusing on impact on specific outcomes, possibly using a RCT methodology are warranted (Hanafin and O'Reilly 2015).

Castleisland PHNs – Breastfeeding Support and Leg Ulcer / Wound Care

In addition to the model described in CHO 8, feedback from Castleisland PHN services described integrated models of breastfeeding support and leg ulcer/wound care.

The breastfeeding support group, established by PHNs is supported by wider members of the PCT including dietitians, community physiotherapists, community SLT and parents offering peer support. The model aims to prolong duration of breastfeeding as indicated by WHO (2002) and has resulted in increased attendance at PHN child health and developmental assessments. Furthermore the model offered socialisation opportunities for new mothers, thus preventing isolation and there is narrative

evidence to suggest that members have also met independently from the group and have established a walking group. Other than this narrative discussion of benefits, no further empirical evidence was presented to indicate an impact on breastfeeding duration. Further robust research is required.

The increase in referrals to the PHN service of people with leg ulcers / wounds, together with the increasingly older population promoted the Castleisland PHNs to develop a leg ulcer / wound care clinic. This nurse-led intervention is supported by GPs and other professionals in the primary care team as appropriate. A community based tissue viability nurse specialist is available at the clinic for complex wound management. The five-day service can extend to a seven day service, based on demand and activity statistics show 1492 patients were assessed and treated over an 11 month timeframe. Patients who have used the services have the option of self-referral back in, as necessary. The model is based on those such as Lindsay Leg Clubs as described previously. The evidence based for interventions such as this is growing internationally. It would be useful if the outcomes associated with this initiative could be utilised to inform international studies in the future and add to this growing evidence base.

5.5 Preventative

Four initiatives were submitted regarding interventions that can be considered preventative in nature as outlined below:

Tralee PHN Service: Maternal and Child Health (CHO 4)

Tralee PHN service has established a 'Meet a mum' group where parents can engage in education regarding attachment, massage, tummy time, nutrition, weaning, first aid and postnatal health and wellbeing. Post programme evaluation indicates that parents find the group valuable and facilitators friendly, inclusive and encouraging. No further details of evaluation against specific outcomes was included in the submission.

Tralee PHNs also facilitate the Parenting Plus programme twice yearly for parents of children aged 1-6 years (Keane, 2016). Up to 10 parents attend each programme, which is evaluated, however no further details of the evaluation against specific outcome was included in the submission. The 'Parenting Plus' programme is a Public Health Nurse

led programme offered to parents of children aged 1-6 and 6-11 years of age, and is based in the local Family Resource Centre. These programmes are delivered to groups of approximately ten parents on each occasion.

Practice Nurse Initiatives: Medication Protocols for Immunisation (CHO 5)

McQuillan (2015) described the development of medication protocols for practice nurses administering seasonal and primary immunisations to children, enabling them to work within their scope of practice. No formal evaluation of the protocols has been conducted however McQuillan advises that practice nurses using them value them and consider them to be effective. McQuillan notes that a project to reach agreement on National protocols has not been successful due to a lack of review and consensus.

Mayo Practice Nurse Anticoagulation Service (CHO 2)

The majority of GP practices offering anticoagulation services in Mayo have delegated responsibility for the co-ordination and delivery of warfarin services to practice nurses (McSharry, 2016). Practice nurses engaged in anticoagulation management attend an education programme recommended by the local professional development co-ordinator. More than 113 practice nurses have participated in the training to date. Delivery of the intervention is supported by clinical guidelines and tools including a personal competency assessment tool for completion by practice nurses. Posters and publications outlining the initial start-up of the initiative have been developed. Evaluations indicate that 780 patients were attending 37 GP practices in Mayo for warfarin services and it is suggested that community co-ordination offers a more responsive, accessible method of anticoagulation management than traditional models where the person was required to attend a clinic in a general hospital setting. Concern regarding the cost of test strips for point of care INR monitoring was expressed and as a result bloods are still being analysed in acute services. This presents a barrier to additional cost savings achieved through reduced use of lab services and timely results for the patient and healthcare team in primary care.

Supporting Carers – Castleisland CHO

Sheila Kissane, a PHN from Castleisland, spearheaded the development of a carers support programme, supported by the PCT. Participants are recruited from PHN

caseloads and through advertising in local media. The wider MDT provide input to the group and wider agency groups e.g. the Carers Assocation also participate and provide support. In addition, members of the community with complementary therapy skills to offer, such as massage, or meditation contribute to the programme. Participants report that they enjoy the group, appreciate the break from caring, engage in discussion in a safe confidential environment and have established new friendships. Aside from this feedback on the initiative, no other evaluation reports were included.

5.6 Community Nurses Working with Non Professionals

One initiative was submitted that described how community nurses worked with non-professionals in the area of parental support.

Tralee: Maternal and Child Health (CHO 4)

A 'Community Parent Support Programme' has been in place since 2001 where parents visit other parents at home, offering support. Referrals to the programme are from PHN's, social workers and other support agencies. Information is provided about immunisation, health care, nutrition and development, and the initiative is considered to facilitate community integration. The programme is currently being offered to 230 families at any one time by six community parents and is well received by parents within the community. No additional evaluation information was submitted.

5.7 Summary of Survey Responses

Whilst the response to the email survey was low, and contained multiple submissions on one model of nursing and five submissions focused on education, the exercise has been valuable in terms of providing an insight into the various initiatives underway in some areas of the country. The submissions made by Pye (2015), Nally (2015) and Bourke (2015) describe and critically evaluate a new model of public health nursing in Longford/Westmeath, which offers a new approach that is feasible and acceptable to service users, community nurses and the wider primary care team. However, the approach would benefit from more rigorous research in advance of any national adaptation and robust consideration must be given to workforce planning, case management and associated policy, procedure and guideline development. Other models of integrated care, operating in Castleisland for breastfeeding mothers and those with leg ulcers are described, but are lacking in robust evaluation data to enable

outcomes to be assessed. The four preventative initiatives included focus on maternal and child health, carers, those requiring anticoagulation management in primary care and protocols for practice nurses delivering immunisations. Again these initiatives are limited in that they do not offer any robust data to support their effectiveness. Finally, one submission described an innovative model of community engagement where PHNs support parents to provide support and advice to other new parents at home. This model aligns with the theme described in Chapter 3 where registered nurses are supported by non-professionals in the community; however there is no robust evidence available to evaluate the initiative against agreed outcomes. The evidence presented is limited by the low response rate and cannot be considered reflective of models of community nursing and/or midwifery nationally.

5.8 Summary

This chapter presented the findings from a survey of national leaders in community nursing. The review of Irish models of community nursing and midwifery was conducted in a systematic and robust manner considering published empirical evidence, a review of grey literature (presented in Chapter 4) and an email survey of community nursing leaders. However, the responses were impacted by the short time frame to return surveys and also the varied level of information contained in responses received. In addition, out of the 15 responses returned, 5 were deemed inappropriate for this review. Moreover, the yield of evidence from this process is somewhat limited due to a lack of high level studies specific to Ireland emerging from the empirical review, a paucity of Irish grey literature specifically focusing on models of nursing or midwifery in the community and a poor response rate to the email survey.

What is apparent from this small survey is that there are pockets of service improvement related to both the management of specific health conditions (Castleisland PHNs) and population groups (Pye, 2015; Nally, 2015; McQuillan, 2015), however, these services are unstandardised from a national perspective. Despite this, Chapter 5 has provided a description of two models of integrated care, one of which is whole population based and others that are population specific.

As many documents in Chapter 4 were guidance documents (grey literature) or in this chapter mainly unevaluated initiatives (survey), there was limited capacity to consider

outcomes, economic impact or application in community nursing practice. However, contemporary policy directions and various reports (CNA 2013; CHNC 2011; HSE 2015; Sydney Local Health District 2012; DoH PHN 2013), with some support from the literature in this chapter (DeBlok 2011; Lee Metro 2015; Pye 2015), suggest community nursing is potentialised through a population based approach which targets need within an integrated model of care. This model is appropriate for population demands in the twenty first century and should also employ emerging technology to increase quality care and service effectiveness and efficiency. The majority of initiatives submitted were considered preventative in nature but lack robust evaluation data, a limitation that is further discussed in the next Chapter.

Chapter 6: Discussion and Recommendations

The aim of this evidence review was to identify a model to guide nursing and midwifery in the community in Ireland. The evidence while not providing an overarching model did reveal multiple interventions relevant to the development of a proposed model. These will be discussed in an effort to conceptualise how a model might be framed, informed by the best available evidence. It is apparent that most interventions involving nurses either as leaders or participants in community based health service innovations are beneficial or, when compared to existing models of provision including medical provision, are at least non-inferior. The evidence provides support for more cooperative and closely integrated working between nurses, and then with other community health professionals supported by technical and non-technical resources.

The empirical findings were organised into six categories as presented in Chapter 3. These categories were analysed and condensed into four synthesised themes, namely: (1) Integrated and Collaborative Care; (2) Organisation and Delivery of Nursing and Midwifery Care in the Community; (3) Adjuncts to Nursing Care in the Community and (4) An Overarching Model of Care. These synthesised themes which also encompass the grey literature, are used to structure further discussion and inform the development of a conceptual framework.

Theme 1: Integrated and Collaborative Care

The Irish healthcare system has been guided by international and national policies which are underpinned by the principles of equity, access, accountability and person-centredness since 2001 (DoHC, 2001a). In the Primary Care Strategy launched in 2001 a commitment was made to re-orientate the health services to the philosophy of primary health care and to fund primary care developments (DoHC, 2001b). In addition to promoting the development of a strategy for nursing and midwifery in the community, it also emphasised the need for integration and closer collaboration between primary and secondary services and teams. This review of empirical literature and relevant grey literature from the selected countries supports the concept that the ideal health service is one that is both integrated and collaborative.

Health services are provided by a large number of varying professional and non-professional personnel. Nurses and midwives, while constituting the largest professional groupings in the health services, remain just two of the many professionals involved in the provision of healthcare in the primary, secondary and tertiary sectors. It is intuitively apparent that integrated and collaborative care is likely to be more effective than a more fragmented and segregated arrangement. A recent systematic review (Savage et al. 2015) conducted for the DoH concluded that

> *"A well-designed generic model of chronic disease prevention and management within an integrated care approach to service delivery can lead to positive clinical, process and service utilization outcomes".*

Therefore it would seem reasonable to suggest that this also would be an important approach to guide nursing and midwifery[5] in the community.

The terms 'integration' and 'collaboration' are used interchangeably; integration implies fostering closer connections at the macro and micro service level. Whereas, collaboration is typically conceptualised in terms of interpersonal working, and thus a key component of effective, efficient, person-centred care. Connectivity is the essence of a seamless primary, secondary and tertiary health service underpinned by a high degree of collaboration in order to function. These twin concepts of integration and collaboration are the preferred care or overarching philosophy and are the key to providing care to patients/clients with complex needs e.g. chronic diseases or at risk of chronic diseases as well as delivering preventative care. Savage et al. (2015) refer to both integration and collaboration in their definition of integrated care as an *"organizing principle characterised by a smooth, holistic, continuous and seamless journey between services tailored to the needs of service users. The ultimate goal of integrated care is to improve the quality and efficiency of care and services, and to avoid fragmentation. The methods for achieving integrated care are through care co-ordination, collaboration, shared care, and multidisciplinary working".* They go on to

[5] This evidence review concentrated on nursing in the community in recognition of the fact that there was a review of maternity services previous undertaken (Hanafin et al. 2015). However, where there were interventions related to midwifery in the community, these were included within this evidence review and thus constitute part of our synthesis and discussion.

discuss four levels of integrated care at the clinical, professional, organisation and system level.

The nature of the empirical papers reviewed in Chapter 3 specific to integration and collaboration, referred mainly to case management[6]. The interventions described were led by physicians or community based nurses. The types of nurses were not always specified apart from referring to them as practice nurses, 'primary care nurses', public health nurses, specialist nurses or those who had received specialist training. In the absence of a detailed description, it could be assumed that the nurses were either general nurses or that no consideration was given by the authors as to whether the difference in the type of nurse could make a difference to outcomes.

The empirical literature provides a good deal of high quality evidence to inform the debate regarding the value of nurse-led as an alternative to physician-led care (Clarke et al. 2010, Swan et al. 2015, Heise and Van Servellen 2014, Albers-Heitner et al. 2012, Houweling et al. 2011, Martin-Misener et al. 2015). For example the meta-analysis by Clarke et al. (2010) revealed that home based nurse-led cardiac rehabilitation was an accessible, effective and relatively low-cost supplement to hospital-based cardiac rehabilitation and should be considered for patients who are stable. The systematic review by Swan et al. (2015) found that that Advance Practice Nurses (APN) in primary care delivering general health promotion, performed equally as well as physicians, in relation to both clinical outcomes and patient satisfaction. The rationale for this SR was to identify the safety and effectiveness of APNs in the face of a shortage of primary care physicians. This has obvious implications for any country facing GP shortages in the future and should be considered in terms of chronic disease prevention. Indeed our review demonstrates that, in a high quality, global systematic review and meta-analysis

[6] Note: In the US the terms case management, care management and care coordination are often defined in ways that reflect complementary or overlapping characteristics. Providers, consumer groups, insurance companies, and governmental entities may vary in how each uses the term(s), however in the literature the terms are generally used interchangeably when describing a collaborative process to meet person/family comprehensive health needs with available health resources. http://www.cmsa.org/Home/CMSA/WhatisaCaseManager/tabid/224/Default.aspx accessed 21 Jan 2016 McDonald et al. (2007).

(n=30,247) conducted recently, nurse-led care for chronic disease management compared favourably with physician-led care when nurses were adequately trained to manage complex conditions with collaboration in the form of minor support and short communication with the physician. Furthermore, Heise and Van Servellen (2014) found that the effective components in medication adherence and depression were: nurse-led care management, referral and feedback to mental health and social care providers. Substituting nurse specialist-led intervention for physician-led in primary care, is recommended in relation to continence management (Albers-Heitner et al. 2012) and diabetes management (Houweling et al. 2011). Furthermore the nurse-led interventions in relation to preventative care resulted in higher patient satisfaction (Van Dillen & Hiddink, 2014), however the quality of this latter review was low. Martin-Misener et al. (2015) indicated that NPs providing complementary or alternative primary care have equivalent or better patient outcomes than physician-led care and are potentially cost-saving. Even though consultations were longer, patient satisfaction was higher. Whilst this may have implications for the development of a model of primary care services, evidence for NP cost effectiveness in alternative provider specialised ambulatory care roles is promising, but limited by insufficient studies.

Evidence has revealed a number of initiatives that seek to address the challenges relating to a disjointed, fragmented service both in Ireland (e.g. Pye (2015), Nally (2015), Bourke (2015)) and in other jurisdictions (e.g. Lewis 2013, Rand 2013). As such the aim of these initiatives is to achieve better integration and collaboration. One is the concept of virtual wards (Lewis 2013) for the integration of health and social care for people with multiple chronic conditions in the community and the other is the Integrated Care Pilots in the UK (Rand 2013). Initiatives such as these are important to inform the development of a community nursing model in Ireland since they suggest that quality of care can be improved if well led, person centred and responsive interventions are delivered to meet local circumstances. However, they are confined to district nursing and curative care of adults and older people.

The pilot undertaken in the Longford / Westmeath area (Pye (2015), Nally (2015), Bourke (2015)) which separated the preventative maternal and child health from the curative adult and older persons elements of the traditional generalist PHN caseload. This initiative is akin the separate HV and district nursing model in the UK. Preliminary

evaluations have demonstrated positive effects in the areas of quality and risk, governance, financial and caseload management (Hanafin and Dwan-O'Reilly 2015b) and there was 'buy in' from the Irish community nursing staff in the Midlands (Hanafin and Dwan-O'Reilly 2015b). This contrasts with the experience in Scotland when district nursing was re-orientating from specialist to generalist which provoked negative staff views (Gray et al. 2011). The Midlands pilot has been endorsed by in the consultative document by the NDPHN in partnership with Shannon (2014). Further consideration should be given to high-level research to augment current evaluations and add to the international literature to demonstrate the potential effectiveness of the Longford/Westmeath model, possibly using the MRC Framework for Complex Interventions.

Whilst there is some evidence to suggest that there is a potential for nurse-led interventions and models to effectively alleviate possible primary care shortages in the future, there remain questions regarding what is the best model of integration; which client groups and health problems require integration at the community level or at the community and hospital levels; and what models and/or service innovations are the most cost effective. Such changes require that the role of the nurse be clearly defined with evidence-based guidelines, adequate educational preparation and protocols to manage care within scope of practice parameters.

Theme 2: Organisation and Delivery of Nursing and Midwifery Care in the Community

Organisation and delivery of nursing and midwifery in the community is framed within the context of levels of prevention, transitional care, and home based care as discussed in Chapter 2. At the level of primary prevention, evidence is drawn primarily from maternal and child health (Lopez et al. 2015, Brugha et al. 2011, Christie & Bunting 2011, Dodge et al. 2013, Dodge et al. 2015, Cooper et al. 2015, Mirmolaei et al. 2014, Sydney Local Health District Strategic Plan 2012). In terms of postnatal maternal and infant health interventions the evidence was inconclusive due to the high risk of bias of the RCTs reviewed. Nevertheless, what can be concluded from these studies is the benefits of home visits by trained specialist nurses providing theoretically underpinned interventions that have specific person-centred outcomes. This conclusion is supported by a Cochrane review which also concluded that valid and reliable outcomes for

maternal and infant health, specifically educational interventions, are needed to obtain meaningful results (Lopez et al. 2015). This need for rigorous evaluation against agreed outcomes is clearly required if community nursing and midwifery services are to be effective and efficient. Nurses in the community in Ireland are already providing preventative initiatives such as Breastfeeding Support Groups led by PHNs in Castleisland and the mother and parent-focused initiatives in Tralee in Co. Kerry - but these are small scale and no doubt responsive need in line with public health principles, but are not either universally available or robustly evaluated.

At the secondary prevention level, the focus of high quality effective evidence comes from: community based nursing initiatives on immunisations for children (Kempe et al. 2014); community obesity management (Kokkvoll et al. 2014); and cardiac intervention for female CVD prevention (Fahs et al. 2012). At the tertiary level the focus is on: asthma self-care and symptom reduction (Kinter et al. 2014, Halterman et al. 2011); and non-pharmacological intervention for T2 DM in youth (Brackney et al. 2015). Other lower quality findings are from: schools based RCTs on smoking cessation (Pbert et al. 2011); healthy diet (Pbert et al. 2013) and increase in condom use skills (Borawski et al. 2014). This evidence demonstrates that nurses and midwives have been effective, efficient and satisfying for clients where interventions are provided by well-educated specialist nurses, using theoretically driven interventions that are person-centred, with specific outcomes. It is reasonable to conclude that the community nurse has a significant positive role to play in terms of primary, secondary and tertiary prevention, thus improving the wellbeing of certain at risk groups and improving public health outcomes.

Transitional care refers to a 'point of nexus' between hospital and home and is obviously a vital part of the adult or older patient's journey in a chronic illness (mainly cardiac, respiratory or diabetes) context to a healthier state. In many cases, this journey from hospital is albeit in a one-way direction, starting in hospital and following to the community. It is one particular area of care that focuses the minds of politicians and policy makers because of perceived difficulties in accessing transitional care that creates back pressure on hospital beds resulting in risk of increased readmissions when not managed correctly. Based on the significance of this issue, it is surprising then that

the volume of transitional care empirical literature here is small, even when drawing on additional evidence from the grey literature. This may have been due to the fact that studies were excluded if they originated in the hospital setting. The evidence review team were acutely aware of the recently commissioned and completed discharge planning review (Coffey et al. 2015) commissioned by the DoH. Consequently the studies reported here are exclusively community focused in their orientation.

Most transitional care interventions were nurse-led and took place at home or a community location. A good quality SR (Blair et al. 2011) examined 17 RCTs to assess the effectiveness of home versus hospital cardiac rehabilitation. The nurse-led models had a variety of components e.g. home visits, phone calls, education, support and coordination. However, the nursing components of the effective interventions were not separately identified and thus the precise implications for a nursing model remain somewhat unclear. Therefore this element would need to be explored further to inform a community nursing model for cardiac rehabilitation. Nevertheless in terms of outcomes where the nursing input was separately identified, transitional care interventions appears to be largely positive in relation to reduced readmission rates (Feltner et al. 2014, Wong et al. 2014, Verhaegh et al. 2014), reduced mortality (Feltner et al. 2014), increasing patient satisfaction (Wong et al. 2011, Wong et al. 2014) and improving health-related outcomes (Feltner et al. 2014, Fischer et al. 2012). However, there was also some mixed and neutral evidence (Utens et al. 2012) albeit from a study with a high risk of bias.

The components of interventions associated with positive outcomes appear to be home visiting (Feltner et al. 2014, Stewart et al. 2012, 2014B, Verhaegh et al. 2014, Wong et al. 2011), nurse-led case management or care coordination (Parsons et al. 2012, Fischer et al. 2012, Verhaegh et al. 2014), and telephone support (Feltner et al. 2014, Fischer et al. 2012). Whilst it was acknowledged that home care is an expensive intervention, telephone support alone was found to be insufficient (Wong et al. 2014). Whilst authors such as Verhaegh et al. (2014) conclude that the ideal content of transitional care programs and target groups are still unclear they are important areas for development, particularly where a country may have a KPI to reduce 30-day readmissions. It is however clear that integration and collaboration are of vital importance in transitional

care and authors such as Verhaegh et al. (2014) and Coffey et al. (2015) advocate for supported communication between primary and secondary care for effective transitions. This has fundamental implications also for Irish community nursing policy.

In summary the most effective transitional care models were targeted, home-based, nurse-led in a case-management or coordinated fashion with clear objectives and measurable outcomes. Evidence from a high quality meta-analysis and SRs revealed that transitional care interventions were effective in terms of health-related outcomes, self-efficacy and patient satisfaction in the intermediate and long-term (Verhaegh et al. 2014, Wong et al. 2014). However, the interventions had to be of high intensity in terms of nursing and other input to achieve short-term outcomes such as reduced re-hospitalisation rates (Fischer et al. 2012). The effective models needed to have clear and close integration across settings i.e. community to clinic or hospital and could be organised and delivered in either an outreach way or community located way.

Home-based nursing is an integral component of the delivery of nursing in the community and the literature reviewed revealed it to have a primarily positive influence but also mixed and neutral findings. The preventive and curative interventions reviewed were concerned with bio psychosocial outcomes in population groupings across the lifespan from birth to old age and most interventions were nurse-led.

High quality studies supported home based primary and secondary care interventions in the context of children and families (Butterfield et al. 2011, Wen et al. 2012, 2011, Paul et al. 2012, DeSocio et al. 2013, Mejdoubi et al. 2013, Chien et al. 2015, Mejdoubi et al. 2014, Ukawa et al. 2011) and for children with acute, chronic, complex or palliative care needs. A SR (Parker et al. 2012) found that a 'Care closer to home' model offers equivalent clinical outcomes to hospital care and the potential for reduced health service costs, but that this is sensitive to case mix, skill mix and change in the local health economy. The most common model reviewed were generic community children's nursing teams, condition specific services, nurse-led only or multidisciplinary teams. This suggests the need for home-based service models to be carefully planned in

terms of local need with adequate integration with existing services. This was a feature of the ICP as described previously by Rand (2012).

In terms of preventative mental health care, motivational interviewing by community psychiatric nurses was found to be effective for young adults with schizophrenic spectrum disorder (Chien et al. 2015) in a study with a low risk of bias. Community Psychiatric nurses also had positive psychological outcomes in promoting functional cognitive ability, mental health scores, depressive symptomology, self-perceived quality of health in older persons with cognitive decline (Chien et al. 2015, Behm et al. 2014, Ukawa et al. 2011). This high quality evidence suggests that there are opportunities to further develop nursing roles in promoting better health in those with greater mental health risks in the community.

A large scale high quality SR (Gomez et al. 2013) found clear and reliable evidence that home palliative care increases the chance of dying at home and reduces symptom burden in particular for patients with cancer, without impacting on caregiver grief. This justifies providing home palliative care for patients who wish to die at home. New home palliative care interventions must respond to the challenges ahead, posed by rapidly ageing populations with increased complexity and growing need for home palliative care. Another quality SR and MA (Luckett et al. 2013) addressing the organisation of services for persons with life limiting illnesses concluded that future trials should compare the relative efficacy of different models and intensities of specialist palliative care services (SPCSs) providing home nursing. They stated that the role of the SPCS nurse vis-a-vis other community service providers is of special interest and that future research is needed to guide optimal specialist-generalist communication and coordination.

In terms of older persons, an RCT found that home consultation programme by ANPs can be effective in reducing adverse health outcomes (acute events, falls, and hospitalizations) and was also cost effective (Imhof et al. 2012). However more research was recommended to identify the precise effective dose of home visits and this RCT was assessed as having a high risk of bias. From a curative perspective outcomes associated with leg ulcer interventions reveal neutral evidence with regards to healing

rates or proportion of ulcers healed in the home setting (Watson et al. 2011, Heinen 2012). Nevertheless, in Australia, leg clubs were deemed to enhance integration and collaboration of care resulting in improved care and quality of life for patients (Shuter et al. 2011). In the UK, Leg Clubs provide a well-accepted service that is considered more cost effective and efficient than the traditional district nursing practice of home visits (Lindsay 2013). However, this initiative is dependent on patients/clients having the mobility and the means to access the services. This initiative is also being implemented by PHNs in Castleisland in Co. Kerry as described in the submission to the survey, demonstrating a commitment to an evidence based person centred intervention.

A high quality SR by Tappenden et al. (2012) found that a health promotion programme for older people led by nurses and health visitors had improved physical functioning linked with ADLs, self-care and management, improved self-efficacy and agency as well as decreased hospitalisation and readmission rates, increased opportunity to receive care and remain at home. They concluded that it remains unclear whether home-based health promotion interventions involving communication directed at individuals, families and communities offer good value for money and may have considerable implications in terms of capacity. In particular they recommended appropriate training of nurses and further qualitative research to assess the client's perspective.

Home based nursing is mostly led-by nurses in the community and is organised and delivered to provide either preventative or curative care to different care groups across the lifespan. Preventative care results in significant outcomes for parents to support the care of their children. These all have even more potentially valuable long-term population health outcomes which were not measured. Nevertheless the interventions reviewed had at their core a focus on improving maternal agency and self-efficacy, an acknowledged goal of a public health approach to care. Similarly the care of individuals with chronic illnesses is acknowledged to be costly and thus there needs to investment in systems that not just support but also promote client self-management at home. There are recommendations for innovation in treatment methods to improve adherence (Weller et al. 2013), as well as further research into crisis resolution interventions for older people with mental health problems to ensure they are based on sound theory (Toot et al. 2011).

Home based nursing is acknowledged to be costly and there appears to be mixed evidence with regards to its cost effectiveness in nursing home care provision. The key costs are the number of visits conducted (Gomez et al. 2013, Corrieri et al. 2011) but the precise effective dose has not been adequately researched. However this evidence review did conclude that nurse-led care is more cost effective than medical care (Uitdehaag et al. 2014). Furthermore, it results in reduced hospitalisation/ readmissions, reduced health inequalities, lower adult mortality and lower infant mortality (Imhof et al. 2012, South Western Sydney Local health District 2012). There was a lack of standardised approaches to economic evaluation in cost effectiveness studies and further review and enquiry was recommended. Nevertheless the enabling components specific to community based nursing practice were considered to be the educational, supportive and preventative interventions employed (Poortaghi et al. 2011). Moreover home-based nursing facilitates increased opportunities to observe barriers to self-management and creates more viable interventions for client's own self-management (Marek et al. 2014). This evidence has implications for the organisation and delivery of community nursing in terms of ensuring the continuance of care delivery in the home setting. In analysing cost issues relating to palliative care in a primary care setting, the Australian Institute of Health and Welfare (2013) acknowledged that the cost of episode of care may be more expensive but the advantages in terms of quality of care and patient satisfaction are likely to be enhanced albeit inadequately reported.

The studies reviewed in relation to home based care demonstrate that many areas of nursing and midwifery have significant contributions to make in supporting clients in home based care. Diversity in the delivery and organisation of care can be captured under an overarching umbrella of care and case management. However, each study examined just one aspect of the delivery of home based nursing to individual client groups and nurses tended not provide care to more than one care group. A synthesis of the evidence points to the need for the development of a conceptual framework or model to underpin the organisation and delivery of clinical engagements in home based nursing in the community across client groups.

As tempting as it can often be to try to take a model or practice 'off the shelf' it is important to consider fundamental features of the organisation and delivery of services within the existing context including workforce planning, competencies, skill mix, education and professional development for staff. There are additional considerations such as facilitating the change management process, the need for clear governance structures, agreed quality and risk management procedures and consideration of the fit between the model or initiative and the geographical, socioeconomic and cultural context. Nursing and midwifery in the community cannot be considered in isolation. Apart from multidisciplinary team supports, there are others dimensions that are not often considered and are discussed in the next section as adjuncts.

Theme 3 Adjuncts to Nursing and Midwifery in the Community

Adjuncts to nursing and midwifery in the community refer to non-technical andtechnical supports. This section will firstly discuss non-technical supports, followed by technical supports, such as telehealth.

Non-technical supports are those provided by persons who do not have a professional qualification and work under the direction of a professional, usually a nurse. These are non-professional home visitors, liaison workers and para professional advocates (Taftes et al. 2015, Filene et al. 2013, Radcliff et al. 2013., Turnbull, 2012). The types of the interventions delivered by these non-professionals were: home visiting, psychosocial, psychological and behavioural interventions, information on child development and child care routines, lifestyle changes and medication adherence, risk screening, counselling, nutritional guidance, education on pregnancy and parenting. The majority of studies related to maternal and child health, whereas others (Allen et al. 2011, 2014, Hamid et al. 2011) were focused on risk reduction in chronic disease management i.e. CVD and Diabetes.

In studies with adults with cardiovascular disease, nursing in community with non-professionals resulted in clinical improvements such as cholesterol level and blood pressure reduction (Allen at al. 2011, Allen et al. 2014). In a study including adults with type 2 diabetes there was a reduction in the relative risk of ED visits (Hamid et al. 2014). It was considered that it was the combination of NP/CHW in the intervention that achieved significant improvement in CVD risk profiles with the additional benefit of

being cost effective (Allen et al. 2011, 2014). The behavioural intervention in terms of diabetes management resulted in and a reduction in the risk of ED visits in adults with type 2 diabetes, albeit with an increase in primary care utilisation (Hamid et al. 2014). These latter RCTs had a low risk of bias when assessed for quality and thus the inclusion of non-professional adjunct supports, which are nurse-led has potential value in organisation and delivery of nursing in the community. In the provision of homecare to adults and older people, certified nursing assistants are a core element of the nursing teams in the Buurtzorg model discussed earlier, which has been well evaluated from the patients' perspective (De Blok, 2011). However, the higher ratio of registered nurses to non-professional assistants is considered to be the component of higher levels of satisfaction in comparison with other Dutch healthcare models (De Blok, 2011). This model is of significant international interest and is currently being piloted in areas within the UK, America and Japan.

In terms of maternal and child health, findings revealed the nurse led interventions with non-professionals were found to have significant positive effects on maternal health, particularly emotional well-being and depressive symptomology (Dennis and Dowswell, 2013, Kemp et al. 2011, Tafts et al. 2015), improved birth outcomes, child physical health (Meghea et al. 2012), breastfeeding duration and parenting skills (Meghea et al. 2012, Filene et al. 2013, Radcliff et al. 2013, Kemp et al. 2011), attendance preventative child health appointments (Radcliffe et al. 2013). In most empirical papers the type of nurse-led care was not specified and those that were included: paediatric nurse practitioners, community nurses, midwives, and child and family nurses. It has been demonstrated that nurse-led interventions with well-trained non-professionals using a combination of psychosocial, educational and telephone support in the context of a trusting relationship with clients were effective. An initiative reported but not evaluated in the survey from Tralee Co. Kerry described a 'community parent support programme' in place since 2001. This is similar to a community mothers' programme and currently being delivered to 230 families at any one time. However adequate resources, appropriately skilled teams, access to training and quality assurance processes are needed to ensure success. Nonetheless, it needs to borne in mind that findings from a SR by Segal et al. (2012) revealed that home visiting programmes without theoretical underpinnings or clear objectives are unlikely to result in effective

outcomes for the prevention of child maltreatment in vulnerable groups (Segal et al. 2012). This finding is based on high quality evidence. Therefore, consideration needs to be given to robust, tailored, evidence based planning and delivery of nurse-led, non-professional team interventions in order to achieve effective outcomes.

Telehealth interventions in the community are deemed an adjunct or additional resource for nurses and midwives in the community, with promising potential in supporting care. As previously indicated, interventions can vary from nurse-led telephone and/or distance monitoring support using algorithm system from patients' homes to email, text messaging and electronic sensors with central reporting. The types of nurses engaged in these interventions are predominantly generalist nurses in GP practice, schools nurses, community nurses and community based Advanced Nurse Practitioners. Research from an RCT (Krum 2013) with a low risk of bias when assessed for quality demonstrated significant positive effects in reducing the number of patients with heart failure hospitalisations in rural and remote areas. One RCT showed a reduction in fatigue for patients with COPD and improved ADL and QOL readmissions although the risk of bias in this study was unclear (Mohammadi 2013). However, assuming effectiveness of the healthcare interventions were only evident if patients and nurses were able and accepting to engage with the technology. Successful outcomes in terms of reduction in hospitalisation, reduced bed days, risk of heart failure admissions and a cardiovascular mortality are associated with telehealth according to Australian technology specialists in the field (MTAA 2012).

Telehealth can assist people with the self-management of chronic disease and result in positive outcomes. Increases in self-management was evident following a telephone health mentoring intervention by community health nurses (Walters 2013); plus improved depression symptoms and general health (Gellis 2012, 2014) and heart failure (Cruz et al.2014) for patients with COPD. These findings are based on RCTs with unclear risk of bias evidence however; the latter SR demonstrated very high quality evidence. These studies identify clearly that technology is being deployed to expand healthcare delivery beyond traditional hospital and clinic boundaries to the home and community setting. Furthermore, support for the benefits of telehealth come from Australia where it is seen to empower patients to actively participate in their care (DoH,

2011, Shuter et al. 2011, Sydney Local Health District. 2012, Borrow et al. 2011) and provision of a person-centred approach (DoH, 2011, MTAA, 2012, Borrow et al. 2011). Decisions on the generalisable usefulness and effectiveness of small single technology (phone reminders) as well as whole "system" centralized monitoring (Gellis, 2012,14, Wakefield 2013) is difficult due to variability in study interventions, populations, outcome measures and training and level of engagement by nurses. Nevertheless, community nursing care with the use of technology has been shown to be satisfying to patients and effective, however, there is a need for interventions to be underpinned by theory, person-centred and have specific patient clinical outcomes.

Theme 4 An overarching model

No single model of community nursing and midwifery emerges from the literature. However, this is not surprising as both the empirical and the grey literature suggests that there is fragmentation and challenges in framing community nursing and midwifery services internationally and thus it is not unique to Ireland. Other countries such as New Zealand are similarly reviewing the international literature in a quest for a nursing and midwifery model (BoP DHB, Slat. 2014). The debate in terms of models tends to focus on generalist versus specialist and geographical versus non-geographical. The Buurtzorg (neighbourhood care) model as mentioned above (De Blok, 2011) is primarily focused on district nursing. Similarly, in the UK, the DoH (2013) proposed a district nursing model entitled 'compassion in practice', which was underpinned by integration, effectiveness, quality driven, person-centred, supported by telehealth while ensuring that 'every contact counts'. The service builds on its strong district nursing foundations and continues to have a curative focus but now emphasises the provision of opportunistic public health interventions while promoting self-care of clients.

Unlike Ireland, Canada's community nursing model is underpinned by nursing theory and integrated with home health and primary health care principles (Community Health Nurses of Canada (CHNC) 2011). Even those countries that didn't necessarily articulate a nursing theoretical model (Netherlands and Australia) did draw on other theories such as those supporting Nurse Family Partnership (Mejdoubi et al. 2013, Robling et al. 2015) and Maternal and Child Health Nursing (Tafts et al. 2015). The evidence from the empirical literature supports the value of theoretical underpinnings, specifying the intervention components which are then matched to appropriate health and social care

outcomes. This match permits the separation of outcomes at various levels in order to identify the components necessary to ensure effective, efficient health care outcomes. Despite these benefits, there is a paucity of trials which were theoretically underpinned. This has implications for an Irish model of community nursing and midwifery for the future. Irish models of community nursing proposed by the NDPHN in partnership with Shannon (2014) and Pye (2011) have been largely confined to PHN and Community Registered Nurses in the context of primary care teams. The competencies required for different levels of practice were considered.

The international literature has similarly examined the competencies that would be required for nurses and midwives practicing in a community setting and thus this has important implications for the development of any model. In the USA, the Council on Linkages between Academia and Public Health Practice (COL 2010) recommended three levels of core competencies for Public Health Professionals (2010). Tier 1 refers to entry level and Tier 3 is at senior managerial level. These have already been adopted in over 50% of state and local health departments and 90% of academic institutions in the USA. Supporting this view, in Canada there is a requirement for a minimum of two years' experience with mentoring, leadership and peer support to adequately prepare PHNs for practice (CHNC 2011). While detail in relation to the expertise of the nurses in the Buurtzorg model (De Blok, 2011) is not provided, there is evidence that the competencies required range from generalist to expert depending on the level of specialist care required. There is already evidence from the survey conducted as part of this evidence review that nurses in Ireland in the community are already engaged in continuing professional development education. Some of these include: initiatives to expand scope of practice e.g. chronic disease management, anticoagulation management and ear irrigation. These initiatives demonstrate a community/practice nursing commitment to continuous professional development to enhance service integration and improve the quality of care for clients. In the context of developing a national community nursing and midwifery model, there would need to be standardization in terms of clearly articulating the initial competencies required such as demonstrated in the North American examples above and a clear plan for continuous professional development. This strategic plan would need to be developed in consultation with all stakeholders including the regulatory body Nursing and Midwifery Board of Ireland

(NMBI). Implementing this strategic plan requires a national approach supported by effective leadership.

Components of effective interventions are an important consideration of any model. Those identified from this evidence review are numerous and are frequently context specific. Nevertheless they can be categorised to some extent. These include: adopting a care management approach; led by competent nurses; educated either as specialist or who had received training specific to the interventions; providing targeted home based interventions; supported by telehealth and non-professional support. These components ideally are delivered using a person-centred, team based approach taking cognisance of the determinants of health.

Factors impacting on any one of these components can either be enablers or barriers thus influencing the outcome of the intervention. Specifically the barriers to implementation of a successful primary care model in Australia relating to personnel were: community nurses working in isolation; workloads; clinical supervision; clerical assistance; fragmentation of services and inter-professional rivalries (South Western Sydney Local Health District. 2012). Fears regarding working in isolation have dual implications, both in relation to the remoteness (Blair et al. 2011) isolated working (Lindsay et al. 2013). There are organisational and service delivery challenges in planning how a model is structured and countries like Canada have varied their structures depending on the territory, influenced mainly by geographical diversity (Crea and Underwood, 2009) and environment (CNA 2013; CNA & ANAC 2014; Lee Metro 2015). Australia has similar challenges in terms of organising community nursing services and developments are currently underway in reforming Primary Health Networks (AIHW 2015).

Our review has examined elements associated with improved patient satisfaction in community nursing services and interventions. The evidence suggests that patient satisfaction is associated with a number of factors including: interdisciplinary homecare teams (Levine et al. 2012); case management (Senior et al. 2014); utilising non-physician (ANP) providers in primary care (Swan et al. 2015); consumer directed care (Low et al. 2011); being provided with advice about their condition as part of

ambulatory care (Martin-Misener et al. 2015); extra time expended by nurses with the patient (Houweling et al. 2011); home nursing visits to postpartum mothers (Paul et al. 2012); increased number of visits (Christie and Bunting 2011); home based care (Behm et al. 2014, Friedman et al. 2014, Gomez et al. 2013, Imhof et al. 2012, Parker et al. 2012, Toot et al. 2011; Christie and Bunting 2011; DeBlok 2011, Gray et al. 2015); using mobile apps to report measurements for people with heart faiure (Vuorinen et al. 2014); transitional care (Wong et al. 2011, Wong et al. 2014) and person centred structured home visiting programmes (Dodge et al. 2014).

Specific enablers for a model are appropriate Information Communication Technology (ICT), such as supportive technology and electronic medical records as they facilitate team collaboration, accurate documentation and evaluations. Achieving the effective deployment of ICT appropriate governance, consumer participation and appropriate training is required (Borrow 2011). Further enablers are: transformational leadership, alignment of health systems, clinical standards, nursing proficiency and inter-professional collaboration. All these enablers and barriers have very relevant implications for designing a community nursing and midwifery model in Ireland. Drawing together the themes presented and the evidence from the empirical and grey literature was challenging and the review team considered it useful at this point to graphically present their conceptual framework.

Conceptual Framework

Figure 18 refers to a conceptual framework drawn from the literature which captures the evidence visually. This can be used to inform a lifespan, person-centred approach to providing appropriate and effective nursing and midwifery care in a primary health care context and thus could represent a model to inform DoH deliberations. It is underpinned the principles of primary health care and person-centred care, supported by a philosophy of integration and collaboration. This home-based client (individual, family or community) needs to be at the centre of any health service, exists on a trajectory from conception to death and another trajectory from wellness to illness. Their health needs on any point of either trajectory can be mainly preventative or curative or a mixture of both. Care needs may require a generalist nursing approach or may require a specialist nursing or midwifery approach. The dimensions relevant to

nursing and midwifery which are critical to effective and efficient practice relate to: integration and collaboration; transitional where appropriate; appropriate education to include competencies and skills; targeted interventions and a care management approach. Effective and efficient care is supported by adjuncts including telehealth and non-professionals.

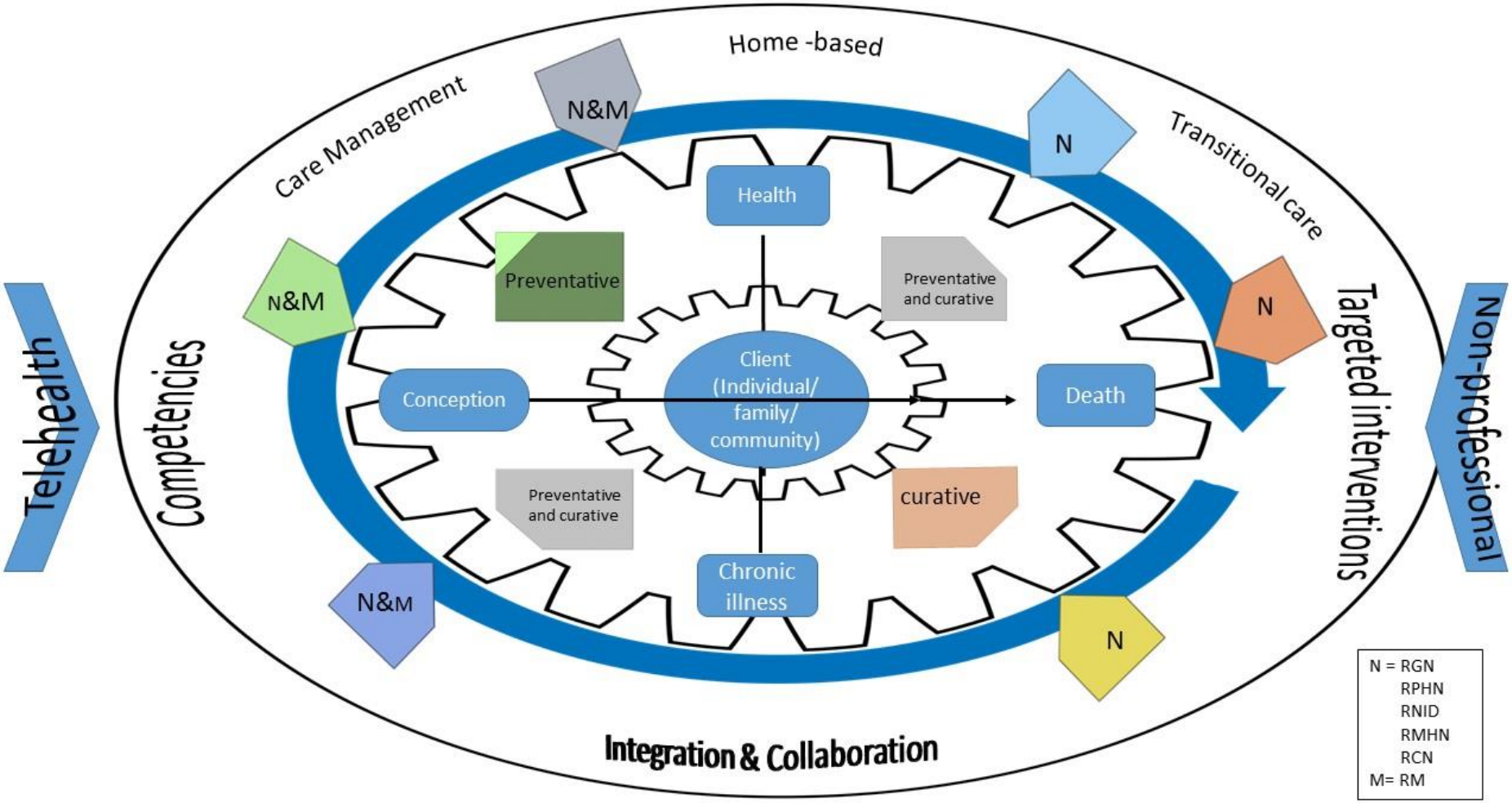

Figure 18: Conceptual Framework

Conclusion

In conclusion, this literature recognises that the contribution of nursing and midwifery in the community is fundamental to the health and well-being of populations. Nursing and midwifery in the community is a complex service and does not readily lend itself to proposing an ideal model. The aim of this evidence review was to examine current models of registered nursing and midwifery practice to inform policy development. Ultimately this policy will inform DoH deliberations in developing their long awaited model to guide nursing and midwifery in the community in Ireland.

The empirical or grey literature did not reveal one overarching model. This is not surprising as the care of populations and communities is a complex phenomenon and not readily amenable to an RCT or a Systematic review. Nevertheless, it was possible to identify from the literature the appropriate components from which an appropriate model could be conceptualised. This approach aided the description and synthesis of the research which facilitated the emergence of four final themes. These were: Integrated and collaborative care; Organisation and Delivery of Nursing and Midwifery Care in the Community; Adjuncts to Nursing and Midwifery Care and An Overarching model. Essentially they address the philosophy guiding primary care in the community of which nursing is an essential part; how that care is organised and delivered; what supports that care, and what are the components of a proposed model of community nursing and midwifery in Ireland.

The essential components of a model of nursing in the community are: right nurse or midwife providing the right care to the right people in the right setting. In essence there is space for both generalist and specialist depending on the care needs of the client, whether individual, family or community. Use of generalist nursing wrapped around specialist nursing in providing care where clients at all levels require such service input for optimum outcomes. This approach will ensure that clinical outcomes are meaningful and lasting and more sustainable.

Operationalising a model for nursing and midwifery in the community demands a need for strong leadership and effective clinical governance.

Recommendations

Based on this review and subsequent synthesis, we make the following recommendations:

- Develop an action strategy inclusive of all relevant stakeholders, underpinned by theoretical and empirical evidence to implement a model of nursing and midwifery in the community.
- Undertake a detailed examination of the full range of initiatives undertaken by nurses and midwives in the community using a predetermined criteria to facilitate comparison nationally and identify their alignment with evidence based interventions.
- Foster integration and collaboration from a health system to a personal level across all sectors to enhance responsive person-centred care.
- Adopting a new community nursing and midwifery model is recognised as a fundamental shift in health service reform and thus demands the input of robust change management principles and processes in order to be effective.
- Adopt realistic and relevant goals in terms of measuring cost effectiveness of nursing and midwifery interventions in the community, cognisant of the complexity of short, medium and long term health and well-being outcomes for primary care and public health interventions.
- Promote and support further research to identify how models and interventions of effective practice can be translated appropriately to the community context in Ireland.
- Develop a national strategic plan to support effective leadership and clinical governance for a community nursing and midwifery model.
- Ensure the application of the National Quality Framework to Nursing and Midwifery in the Community to enhance quality, effectiveness, efficiency and client/patient satisfaction.

- Optimise the full potential for the implementation of evidence-based nurse-led and midwifery-led care.
- Assess the effectiveness and impact of theoretically underpinned interventions on specific client health, well-being and satisfaction outcomes.
- Develop a national strategic plan in consultation with all relevant stakeholders, including the regulatory body Nursing and Midwifery Board of Ireland (NMBI), to support the development of a competency and continuing professional development framework for all community nursing and midwifery practitioners.
- Ensure the education and practice of nurses and midwives includes the full range of evidence-based interventions available, to augment community nursing and midwifery.
- Integration and collaboration requires resourcing of information technology systems both to enhance provider communication as well as enhance patients/clients' health outcomes.

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Appendix 1a: Integrated and Collaborative care

Multidisiplinary					
Source **Country** **Type of Evidence** **Aim**	**1. Definitions** **2. Overview of Models** **3. Main components**	**4. Population Group and Size** **5. Health Condition / Problem** **6. Healthcare context / setting addressed** **7. Nursing disciplines involved**	**8. Outcomes assessed and effects on outcomes** **9. Components associated with improved outcomes**	**10. Resource Implications** **11. Enablers** **12. Barriers**	**13. Key conclusions** **14. Recommendations for Practice, Policy, Education, Research**
Desiree et al. (2013). Holland. RCT *"To evaluate the effectiveness of collaborative stepped care in the treatment of common mental disorders."* (P.132).	1. NR. 2. The collaborative care model incorporates multiple interventions and has been extensively studied in the field of depression. Three different algorithms, for depression, anxiety and stress related disorders. These were further divided into mild and moderate. 3. This was a two-step intervention with the first step happening in primary care. Five 45 minute sessions on self-help based around psycho education, cognitive and behavioral exercises. Patients with moderate to severe disorders also received medication. Step 2	4. Adults 18+ Years (n=163) . 5. Common mental disorders diagnosed by GP including, panic disorder, agoraphobia, social phobia, specific phobia, generalized anxiety disorder, unipolar major and minor depressive disorder of dysthymia. 6. Step 1 in Primary Care in GP Practice and Step 2 in Out Patient Secondary Mental Health Service. 7. Psychiatric Nurses.	8. At 4-month post test the intervention group results were superior to the TAU group 74.7% (n=68) v. 50.8% (n=31) responders (P=0.003). At 8 and 12 month post-test no significant differences were found. 9. It is suggested that this approach brings about a faster response in remission rates. The rapid provision of low intensity treatment in primary care and improved collaboration between healthcare providers was deemed to be important.	10. Training costs for GP's and Nursing Team. 11. NR. 12. Possibility of selection bias. Difficulty in recruiting GP's and retaining GP's after randomization to TAU group.	13. Replicate study with larger participant numbers with a particular focus on cost-effectiveness. 14. NR.

	occurred in the specialist secondary mental health service.				
Levine et al. (2012). USA. RCT To test the effectiveness of the Choices for Healthy Aging (CHA) program vs usual primary care for reducing medical service use and improving satisfaction with care among a high-risk group of patients enrolled in a managed care organization located in Southern California.	1. NR. 2. Choices for Healthy Aging (CHA) program An interdisciplinary team that provided care in the home for chronically ill patients at high risk for hospitalization 3. (a) Early identification and treatment of exacerbation of the illness, (b) patient-specific health education, (c) self-management or caregiver management of the disease, and (d) advance care planning and other psychosocial issues. Follow-up home visits at least once a month. The home care physician was available to visit 24 hours a day, 7 days a week.	4. Older adults (n=298). 5. Chronically ill patients at high risk for hospitalization. 6. Home. 7. Care delivered via an interdisciplinary team, with core team members consisting of a physician, nurse practitioner, nurse care manager, and a social worker.	8. Satisfaction with care; Inpatient/ED Utilization; Admission rate; Predictors of medical services; Cost of medical care. 9. Satisfaction: Intervention group at 6 months reported significantly higher mean satisfaction with care than the usual care group (t = 2.24; P = .026) and significantly greater mean change in overall satisfaction with care compared with the usual care group (10.92 vs 1.93 respectively; t = 3.21; P = .002). Inpatient: Percentages of participants in the CHA and usual care groups who utilized 1 or more hospital inpatient days in the 12 months following study enrollment were 25.6% and 37.1%, respectively, a significant difference (c2 = 4.56, P = .02). Hospital Admission rate: The CHA group had a total of 78 hospital admissions for a 12-month admission rate per thousand of 500; the usual care group had 93 hospital admissions and an admission rate per thousand of 664.29.	10. Costs on average more than $2000 lower than costs of care for those enrolled in usual care. However lower hospital use among the intervention group, did not translate to a corresponding reduction in overall healthcare costs when adjusted for demographics and health conditions. 11. Team of medical and social service providers. 12. The intensity of the intervention may have outweighed the medical need for some of the patients. The risk stratification statistical program utilized for patient selection identified patients with fewer medical needs.	13. A program using a home-based interdisciplinary team of medical and social service providers can improve patient satisfaction with healthcare. 14. Additional research is needed to determine better methods to identify high-risk patients efficiently to improve clinical and service outcomes and reduce the cost of care. Managed care organizations need to consider targeting when designing programs for high-risk groups.

Low et al. (2011). Australia Systematic Review (n=35 i.e. 18 RCTs, 5 x non RCT and 12 x observational studies) To evaluate the outcomes of case managed, integrated or consumer directed home and community care services for older persons, including those with dementia.	1. Case management is defined as collaborative process of assessment, planning, facilitation and advocacy for options and services to meet an individual's health needs, through communication and coordination of available resources, to promote quality cost effective outcomes (p1). Integrated care has been defined as a discrete set of techniques and organizational models designed to create connectivity, alignment and collaboration within and between the cure and care sectors at the funding, administrative and/or provider levels (p2). Consumer directed care is conceptualized as giving consumers greater awareness, control and responsibility for their health care spending (p.2). 2. Case management, integrated care, consumer directed care. 3. Case management: telephone-based case management; computer	4. Adults > 60 years (n=53,597). 5. Chronic illness and those with dementia. 6. Home. 7. MTD Team, Nurse case managers, Physicians, case managers : social workers, primary care providers, Geriatric specialists.	8. Clinical outcomes: increased function, medication management, QOL, Social interaction, physical health. Decreased: depression, caregiver burden, pain, risk of mortality. Satisfaction with care Caregiver satisfaction Life satisfaction Service Use: risk of admission to hospital, ER, Nursing home, LOS; Community services use. 9. Case management –evidence of improvements in clinical outcomes. Integrated care increases service use and does not improve clinical outcomes. The lowest quality evidence was for consumer directed care which appears to increase satisfaction with care and community service use but has little effect on clinical outcomes.	10. Did not consider the cost-benefits of different models of community care. 11. Combining key elements of all three models may maximize outcomes. Key elements: a fully integrated care system which facilitates access to health and community services, in which consumers receive case management to maximize clinical outcomes and prevent unnecessary institutionalization and hospital use, and where consumers have as much control of their own care as they wish. 12. The inconsistencies in results between studies are notable - the studies reviewed were heterogeneous in their inclusion criteria, design, sample and methods of delivery. There was variability in the choice of instruments to measure outcomes, as well as outcomes	13. Different models of home and community care have differing outcomes depending on their focus. 14. Administrators and providers of services need to be explicitly clear as to the focus of their service and prioritization of outcomes. Future evaluations of community and home care should give detailed descriptors of the service context, intervention and care received by controls, and should measure a broad range of outcomes clinical and service outcomes.

	program assisted case management and case management in combination with cost subsidies. A central worker provided assessment, care planning, coordination of services and ongoing follow-up. Integrated care e.g. Program of All Inclusive Care for the Elderly (PACE) and Kaiser Permanente Northwest i.e. models where services were formally linked and coordinated. Consumer Directed: involves a budget for the purchase of services. Consumer choice ranging from selecting the type of services or selecting the service provider to hiring and supervising care staff.			measured. Most importantly, the health and social care systems in which the evaluations were conducted differ significantly	
Senior et al. (2014). New Zealand. RCT. To evaluate the effectiveness of a restorative care service: Promoting Independence Programmes (PIP) on institutional-free survival	1. NR. 2. Promoting Independence Programmes (PIP) Case management restorative care model 3. PIP: Consists of comprehensive geriatric assessment followed by an integrated care plan and rehabilitation delivered by	4. Older People >65 (n=105) 5. Chronic illness and Several IADL & ADL difficulty. 6. At home. 7. Multidisciplinary Teams.	8. Placement in residential care. Physical health of care giver. Caregiver burden. Use of personal care, home help, carer support, respite, day centre and day activity centres. Functional outcome measures. 9. Rate of decline in physical health for the caregiver in PIP was significantly slower than for usual care ($P < 0.01$)	10. NR. 11. NR. 12. NR.	13. Restorative care reduced permanent residential care placement compared with usual care for frail older people. Case management combined with multi-disciplinary care positively impacts on institutional-free survival for frail older people, but definitive evidence has been lacking

and health outcomes in frail older people referred for needs assessment vs usual care in New Zealand.	a multi-disciplinary team. combines case management, service coordination and home care with a restorative focus, Usual Care: community services.		Use of personal care, home help, carer support, respite, day centre and day activity centers more than the usual care group- not statistically significant.		14. Future research required to test this service model as a positive improvement in outcomes, especially given the positive trends demonstrated.
Stall et al. (2014). Canada. Syst Rev. (n=10 i.e. Observational study x 8 Cohort x1 RCT (Multisite) x 10 To describe the effect of home-based primary care for homebound older adults on individual, caregiver, and systems outcomes.	1. NR. 2. Home-based primary care (HBPC). Comprehensive ongoing primary care in the home.. 3. Core program components: Interprofessional care teams, Regular interprofessional care meetings and after-hours support. Initial in-home comprehensive geriatric assessment. Continuous systematic screening and patient care management.	4. Older adults > 65 (n =46,154). 5. Mainly veterans from the U.S. Veterans Affairs System. 6. Home-based primary care 7. Primary care provider /Medical directors; geriatricians; Nurse Practitioner, RN, Social Workers, pharmacists, dieticians, OT, kinesiotherapists.	8. Hospitalizations (pre and post) hospital bed days, emergency department visits, long-term care admissions, and long-term care bed days, Functional status; individual and caregiver satisfaction. cost analyses, medical education. 9. Significant reductions in hospitalizations (23% - 84% (P < .001 – p< 0.01) x 7 studies. Reductions in inpatient days before and after the HBPC intervention X 4 Studies: 37.4% (P = .04), 49.9% (P = .001), 69% and 62% (no P-values reported). Reduction in long-term care admissions X 3 Studies (10% (no P-value reported), 20% (P = .001), and 25% (no P-value reported.	10. Two reported substantial cost savings. Another two reported higher costs per patient after enrolment. 11. Ongoing house visits by primary care provider. Comprehensive and ongoing primary care in the home. 12. NR.	13. HBPC for homebound older adults can positively affect several important individual, caregiver, and system outcome. HBPC demonstrated substantial reductions in at least one of the inclusion outcomes of emergency department visits, hospitalizations, hospital beds days , long-term care admissions, and long-term care bed days. 14. More-robust financial analyses are required to definitively determine whether HBPC is cost effective.

Nurse as case manager					
Source **Country** **Type of Evidence** **Aim**	**1. Definitions** **2. Overview of Models** **3. Main components**	**4. Population Group and Size** **5. Health Condition / Problem** **6. Healthcare context / setting addressed** **7. Nursing disciplines involved**	**8. Outcomes assessed and effects on outcomes** **9. Components associated with improved outcomes**	**10. Resource Implications** **11. Enablers** **12. Barriers**	**13. Key conclusions** **14. Recommendations for Practice, Policy, Education, Research**
Adlbrecht et al. (2011). Austria. RCT + cost effectiveness study. To investigate *"a new disease management programme comparing usual care (UC) to home-based nurse care (HNC)"* and a BNC group (p. 315)	1. NR. 2. Disease management programme with 3 different models; hospital-based CHF clinic, HNC and the hybrid model BNC. 3. UC = outpatient care by specialist physician HNC = four home visits (1, 3, 6 and 12 months after discharge) and telephone contact by specialist HF nurse. Nurse assessed vitals, recorded interpreted needs and coordinated with treating physician to implement guideline-based medication. Nurse in charge of individualized patient and caregiver education and promoting self-management. BNC = as for HNC group + medical care decision-making based on amino terminal pro B natriuretic peptide levels.	4. Adult patients >60 years (n=190). 5. Congestive heart failure (CHF). 6. Specialised Outpatients and Home. 7. Specialised HF nurses.	8. The study found a substantial reduction in costs per year (after 18 mths) by 57% in BNC compared with UC, while HNC was found to be at least cost neutral, taking account of worsening heart failure re-hospitalization rates. Costs per live year saved were decreased by 74% (UC vs. BNC) to €3978 per year (P = 0Æ011). HNC also reduced costs but this did not reach statistical Significance. 9. Knowing the NT-proBNP blood level allows the treating physician to anticipate worsening CHF and thereby reduce re-hospitalization, but also permits varying the intensity of the home care thus optimizing financial resources.	10. Costs for the heart failure nurse were calculated based on hospital bills indicating costs of €80 per patient visit. This included expenditures for patient telephone contact. 11. NR. 12. Specialised blood test provided to BNC group supported by study funders.	13 There are very important benefits to anticipation of worsening CHF in reducing re-hospitalization and costs. The authors describe this as the first publication where cost-effectiveness for such models of care was calculated. **14.** The study could assist as a statistical model for future similar cost analyses.

Albers-Heitner. (2012). The Netherlands. Randomized Controlled Trial + Cost Effectiveness Study To determine the 12 month societal cost effectiveness of involving urinary incontinence nurse specialists in primary care compared to care as usual by GP's.	1. NR. 2. Targeted intervention. 3. Nurse asked patients to complete micturition diaries and advised them on lifestyle toileting habits, bladder and pelvic floor muscle training.	4. Patients with urinary incontinence (n=350). 5. Urinary incontinence. 6. Primary Care. 7. Urology Clinical Nurse Specialists.	8. Quality Adjusted and Life Year based on societal preferences for health outcomes. Quality adjusted life year based on patient preferences and the newly developed incontinence severity weighted life year. 9. Both QALY patient and ISLY yield slightly more favorable cost effectiveness results.	10. NR. 11. NR. 12. NR.	13. Adopting the nurse specialist intervention in primary care is recommended. 14. Conduct more research through careful monitoring of the effectiveness and costs of the intervention in routine practice.
Boult et al. (2011). USA. Cluster RCT To measure the effects of 'guided care' model vs usual care on multimorbid older patients use of 6 health services.	1. NR. 2. Guided Care provided by registered nurses trained in guided care model and assigned to primary care teams. 3. Comprehensive geriatric assessment, evidence-based planning, case management, transitional care, self-management, and caregiver support.	4. Adults 65+. (n=850). 5. Several chronic conditions associated with aging e.g. CCF, COPD, and Arthritis. 6. Primary Care. 7. Registered Nurses working in Primary Care who completed a course on Guided Care.	8 Annual use of health services (hospital admissions, hospital days, nursing facility admissions, ED admission, Primary Care visits, Home Health Care episodes) 9. Significant (29.7%) reduction in home health care by patients receiving guided care compared to usual care (OR, 0.70;95% CI, 0.53-0.93).	10. NR. 11. The environment in which the intervention of Guided care is implemented affected patient outcomes. 12. NR.	13. Evidence suggests that the guided care model reduces annual use of health services across all areas. 14. Further research is necessary to establish which environmental factors were enablers of positive patient outcomes. Also recommended to examine the effect of guided care on medication use.
Clarke et al. (2010). Canada. Meta-analysis. To compare the benefits and costs of home based intervention HBI with usual	1. NR. 2. Usual care was defined as normal health care and/or risk factor management at the time the trial was undertaken without supplementary secondary prevention intervention.	4. 39 studies reporting 36 trials were reviewed. Total number of patients not provided varied on outcome 644 to 2150. 5. Cardiac Rehab. 6. Home.	8. All-cause mortality (n=2150). HBI did not significantly improve mortality. Cardio-vascular events (n=778 to n=2078) HBI reduced risk of CV events (excluding stroke, transient ischemic attack, and heart	10. Approx. US$300 per patient adjusting for inflation. 11. NR. 12. NR.	13. HBI for CHD are an effective and relatively low-cost supplement to hospital-based cardiac rehabilitation and should be considered for patients who are stable. . Additionally they may address patient access

care UC in the context of cardiac rehabilitation.	HBI included a community focus incorporating Cardiac rehabilitation which was latterly defined as dedicated secondary prevention programs provided by health professionals in an acute (hospital) or community care provider setting. 3. The trials evaluated paper-based (n = 16), telephone based (n = 12), home-visit (n = 5), or electronic (n = 2) interventions.	7. Nurses, usually with specialist cardiac knowledge leading intervention in 11 of the studies reviewed .	failure) by 9%; but did not reach statistical significance (RR: 0.91, 95% CI: 0.78-1.05) Quality of life (n=644) HBI significantly improved QOL [weighted mean difference: 0.23; 95% confidence interval (95% CI): 0.02-0.45], HBI compared with UC resulted in systolic blood pressure (weighted mean difference: − 4.36mmHg; 95% CI: − 6.50 to − 2.22), smoking cessation (difference in proportion: 14%; 95% CI: 0.02-0.26), total cholesterol (standardized mean difference: − 0.33; 95% CI: − 0.57 to − 0.08), and depression (standardized mean difference: − 0.33; 95% CI: − 0.59 to − 0.07).		problems. 14. See Q13.
Cicolini et al. (2014). Italy. RCT *"To evaluate whether a nurse-led reminder program through email (NRP-e) may improve the existing primary prevention strategy for the management of the main CVDs risk factors in hypertensive patients".* (p834)	1. NR. 2. All participants received usual care and had to attend routine follow-up visits 1, 3 and 6 months after enrollment. Every day, all subjects completed a self-assessment form of the adherence to treatment and educational programme. In addition to usual care, the intervention group also received weekly email alerts and phone calls from the Nurse Care Manager	4. Adults (n=198). 5. Hypertensive (on active treatment for hypertension, or systolic blood pressure >140 mmHg; or diastolic blood pressure >90 mmHg). 6. Primary Care Centre. 7. (NCM) coordinated follow-up visits, recorded baseline and follow-up data using structured forms, and carried out the educational	8. Compared to baseline, after 6 months BMI, alcohol consumption, cigarette smoking, adherence to therapy hours, systolic and diastolic blood pressure, fasting blood glucose, LDL and total cholesterol, and triglycerides significantly decreased in both groups (all p < 0.01). Fruit intake and physical activity significantly increased, salt consumption did not significantly change. The percentage of subjects with low physical activity, uncontrolled	10. The dosing and timing of any intervention to be implemented beyond the research setting into routine clinical practice must be carefully considered, as nurse workload is typically high and time constrained. Once established, the NRP-e was simple and inexpensive, requiring an average of <20 min per day in addition to	13. The NRP-e improved a range of CVD risk factors and deserves further evaluation for the inclusion among existing care management approaches. Nurses play a pivotal role in healthcare promotion, and can encourage appropriate strategies to improve medication adherence and healthy lifestyle behaviors. 14. The provision of information alone may not be sufficient for behavior

	(NCM). 3, Recommendations were taken from current guidelines on healthy lifestyle.	programme.	hypertension or glycemia, high LDL and total cholesterol and triglycerides decreased in both groups (all p < 0.01). The mean number of alcohol units and cigarettes decreased, however the prevalence of drinkers and smokers did not vary. 9. At 6 months the intervention group showed a statistically significant greater improvement in BMI, alcohol consumption, cigarette smoking, fruit consumption, physical activity, systolic and diastolic blood pressure, LDL and total cholesterol (all p < 0.05). The prevalence of obesity, low fruit consumption, low physical activity, uncontrolled hypertension, high LDL and total cholesterol decreased much more in the intervention group (all p < 0.01). Fasting blood glucose and triglycerides reductions, compliance with therapy hours, did not show a statistically significant difference between groups. The intervention did not affect salt consumption.	normal practice. Coordinating follow-up visits, recording data and carrying out brief educational programmes can be part of ordinary duties, and the only additional actions specifically requested by the intervention were sending email alerts (once a week) and making phone calls to non-responding subjects. 11. Use of read receipts useful to determine who required a follow up phone call. 12. Older subjects may be less competent in email management, reading, and comprehension. There may be socio-economic barriers to the use of such interventions (computer access, language, health literacy).	change, and more tailored and targeted interventions are needed. Further studies with longer follow-up and older and more general samples are required to confirm the present findings.
Coburn et al. (2012). USA. RCT	1. NR. 2. Community based nurse care management – additional assessments of patients to identify	4. Adults aged >65yr (n=1736). 5. Medicare patients with one of more of six conditions (CAD, heart	8. Reduced risk of mortality. 25% overall reduction HR 0.75 [95% CI 0.57-1.00, p = 0.047] over 4.2 years of follow up (unadjusted for covariates) ; HR 0.73 (95% CI 0.55-0.98, p- =	10. No statistically significant difference in medical expeditures or health service utilization between study and control	13. The model of community based nurse care management is associated with reduction in all cause mortality among chronically sick

To evaluate the effect of the Health Quality Partners (HQP) programme of community based nurse care management on mortality up to 5 years post enrolment.	physical, functional, cognitive, psychological , behavioural, social and environmental needs through individualised care plans. 3. 15 item home geriatric assessment at outset. Individualised care plan. Group interventions re weight loss/ weight management; exercise; balance; mobility. Collaboration with patients' primary care physicians & specialists.	failure, diabetes, asthma, hypertension or hyperlipidaemia) deemed moderate to high risk of future health risk. 6. Home. 7. Community based nurses.	0.033) when adjusted for sex, age group, primary diagnosis, perceived health, number of medications, hospital stays in last 6 months, tobacco use. 9. Small group analysis undertaken but unreliable due to small numbers.	groups but subgroup analysis of the high risk stratum were reported to have 29% fewer hospitalisations and 20% overall expenditure than controls. In a subgroup with heart failure, CHD or COPD and at least one hospitalization in the last year have 39% few hospitalisations, 37% fewer ED visits; and 36% less Medicare expenditures – net saving to Medicare of US$397 per participant per month. 11. NR. 12. NR.	older adults participating fee for service Medicare. 14. Future research needs to allow time and cost to case find and enroll participants. Use of aggregated health data would also improve the recruitment process.
Coventry et al. (2015). UK. RCT *"To test the effectiveness of an integrated collaborative care model (ICCM) for people with depression and long term physical conditions"* (p.1) compared with Usual care (UC)	1. NR. 2. ICCM vs UC. 3. ICCM is a brief psychological therapy delivered by a case manager incorporating Behavioural activation, cognitive restructuring, graded exposure, and lifestyle management approaches for up to 8 face-to-face sessions. Included 2 sessions with a practice	4. Aged 16+ (n=387). 5. Measured depressive symptoms for at least two weeks in addition to a long term physical conditions - diabetes or heart disease. 6. Primary care. 36 general practices in the north west of England. 7. Practice nurses.	8. The primary outcome was reduction in symptoms of depression on self-reported symptom checklist-13 depression scale (SCL-D13) Significant reduction in anxiety symptoms (generalized anxiety disorder. Improvement but not significant in relation to global QOL, self-management (health education impact questionnaire), disability	10. Half day workshop training for practice nurses required. 11. The level of collaboration between psychological wellbeing practitioners and nurses was minimal. 12. NR.	13. Collaborative care containing brief low intensity psychological therapy delivered in conjunction with practice nurses in primary care can reduce self-reported depression and improve chronic disease self-management in people with mental and physical multi-morbidity. Treatment effect sizes were modest and were less than

	nurse at session 2 and 8 to collaborate on physical conditions and care plan. UC was standard clinical practice provided by general practitioners and practice nurses.		9. The integration with practice nursing was considered to be a component in improvements.		the pre-specified effect but were achieved in a natural setting with a deprived population with high levels of physical and mental morbidity. 14. Supportive evidence for integration of psychological and physical care for persons with long-term physical conditions.
Heise and van Servellen. (2014). USA. Systematic Review To identify research in which nurses played a role in managing anti-depressant medication adherence and to identify the specific nursing components of these interventions which produced improved outcomes.	1. NR. 2. No single model across studies but case management was the commonest model in the review. Nurse case managers or nurse practitioners working as sole or joint providers of adherence enhancement interventions (e.g. as part of a team). 3. Key components – care managers; nurses in primary care settings; nurse practitioners.	4. Patients identified as depressed using a standardised measure of depression and as non adherent to their anti-depressant medication using a clear measure of non-adherence. 5. Depression. 6. All included studies US based. 7. Nurse case managers; online trained psychiatric nurses; advanced nurse practitioners (psychiatric nurses with prescriptive authority).	8 Outcomes generally positive with nurse intervention associated with improved medication adherence. One study showed no significant difference. Size effect data cited for only one study which showed and odd ratio predicting higher treatment adherence in the intervention group of 2.11 (95% CI 1.02-4.36, p=0.04) 9. Care management/ monitoring; education about medicines and depression; feedback to healthcare providers; referral to mental health and social care providers.	10. NR. 11. NR. 12. NR.	13. Tentative conclusion that treatment programmes using nurses as case/care managers are significantly better than other approaches. 14. Further research recommended to replicate findings and to separate roles of nurses more adequately.
Jonkers et al. (2012). The Netherlands. RCT. To determine whether	1. NR. 2. Minimal psychological intervention. Five phase psychological intervention by nurse utilizing a diary kept by the patient Model	4. Patients aged >60. 5 Minor or mild to moderate depression and type 2 DM or COPD. 6. 89 primary care settings	8. Outcomes – reduced anxiety in intervention group (mean difference 2.5; 95% CI 0.7-4.2); better self efficacy skills (mean difference 1.8, 95% CI 3.4-0.2); better daily functioning (mean difference 1.7; 95% CI 0.6-2.7);	10. NR. 11. NR. 12. NR.	13 MPI administered by nurses was reasonably effective in improve care for chronically ill elderly people with minor or mild to moderate depression.

minimal psychological intervention (MPI) directly or indirectly improves self-efficacy, anxiety, daily functioning and social participation.	based on CBT and self management 3. Up to a max of 10 visits by nurse over 3 months. Phase 1 – gaining an understanding of origin of symptoms; Phase 2 – diary kept by patient; Phase 3 – diary discussed with nurse and used to help patient link mood and thinking to their behavior; Phase 4 – introduction to self management approach; Phase 5 evaluation of extent to which goals have been met.	in southern Netherlands. 7. Research nurses trained in DELTA (Depression in the Elderly with Long-Term Afflictions) intervention.	better social participation (mean difference 1.3, 95% CI 0.4-2.2) No differences noted between patients with different conditions. 9. NR.		14. Recommends further research to improve the efficacy of MPI. Detection and awareness of depressive symptoms, cognition and behaviours should become an integral part of the treatment of chronic disease and embedded in the regular ask of the practice nurse who monitors the patient's chronic disease.
Kneipp et al. (2011/2013) USA A Randomized Controlled Trial Evaluated the effectiveness of 'a community-based participatory research–grounded intervention among women receiving Temporary Assistance for Needy Families (TANF) with chronic health conditions in increasing (1) health care visits, (2) Medicaid knowledge and skills, and (3) health and functional status' (pg 1759)	1. NR. 2. Community-based participatory research–grounded intervention '1) genuine partnerships with the community, (2) shared decision-making, (3) capacity building, and (4) benefiting all partners' (pg 1760) 3. Intervention 9 months of case management delivered in a WTP by a PHN. The case-management interventions attempted to reflected the Stages of Change approach	4. Women (n= 432) receiving assistance from TANF not yet employed, ages of 18 and 60 years 1 chronic health condition, 5. 1 chronic health condition defined as "conditions that are generally not cured, once acquired" for this study The condition had to have a reasonable potential for interfering with functional status and, by extension, employment performance and absenteeism. 6. Local WTP, the African American community 1 urban and 1 rural county in	8. Data collected at baseline, 3 months, 6 months, and 9 months Outcomes Measures : visits to primary care assessed knowledge of Medicaid benefits with a 20-item questionnaire possible range of scores was 0 to 20 Medicaid skills competence using a rating tool that assessed the degree to which participants' behaviors indicated effective coping skills during standardized role play in 5 dimensions confidence to engage, emotional responses, content accuracy of responses, appropriate questions?,. range of 0 to 15 points, with a higher score indicating greater skills competence	10. NR. 11. Providing services on-site in local WTP offices, using lay community personnel to deliver Medicaid training, and basing the intervention largely on PHN competencies are features that facilitate transfer into practice 12. Uptake of this intervention requires careful consideration – including, culturally sensitive, acceptable screening tool; PHNs with similar educational levels,	13. PHN case-management intervention combined with Medicaid training is effective in improving health care visit rates for mental health, reducing depressive symptoms, and improving functional status among women in a WTP. Medicaid knowledge and skills competence increases were relatively small given the potential range of scores 14. NR.

1) genuine partnerships with the community, (2) shared decision-making, (3) capacity building, and (4) benefiting all partners.	PHNs interaction were a minimum of 4, 1-hour meetings with intervention group either in office or home visits Control group usual care in the local WTP.	north-central Florida 7. PHNs.	Depression (the BDI-II), SF-12 version calculated intervention ''nurse dose'' by having PHNs document the number of minutes spent with intervention group participants. 9. Despite slight improvement in general health, there was no group differences(P= .72). Functional status had overall improving trends also but non significant between groups (P= .09).	experience, and training; and integrating community members as program personnel partnering with nurse administrators at local health departments.	
Martin-Misener et al. (2015). Canada. Systematic review of 11 RCTs years 1980-2013. Evaluated nurse practitioners (NP) in alternative and complementary ambulatory care roles and reported health system outcomes to determine the cost effectiveness of NPs delivering primary care and specialized ambulatory care.	1. Ambulatory care; defined as health services not requiring overnight hospital stay 2. Alternative role; complementary role models for nurse practitioners. Alternative role: provide similar services to those for who they are substituting, usually physicians; goal is to reduce cost or workload or address workforce shortages Complementary role: provide complementary or extend existing services; goal is to improve quality of care p2	4. All ages, majority adults >18 (n=7600). 5. All conditions inclusive of CV, DM, hypertension,hi users of services, allergic rx, atopic dermatitis. 6. Ambulatory care in a community or hospital base. 9 studies except are general or primary care practices, OP clinic dermatology, 1 ED, 1 endoscopy clinic. 7. Nurse practitioners.	8. Clinical outcomes: 4 studies NP care at least equivalent to GP care in pt health outcomes. Drop diastolic blood pressure at 6 months larger in NP gp (356 patients) (mean difference: −3.0 mm Hg (95% CI−5.54 to −0.46); p=0.04). NP care higher patient satisfaction (1515 patients; I^2=0%) (mean difference: 0.15 (95% CI 0.11 to 0.20); p<0.0001) and also parent satisfaction. 9. NP longer consultation times and patients who consulted NP told the cause of their illness (relative risk (RR)	10. Difficult to determine cost effectiveness d/t secondary cost r/t cost of GP practice, other costs. -Meta-analysis 2 studies (2689 patients) NP care lower mean health services costs per consultation (mean difference: −€6.41; 95% CI −€9.28 to −€3.55; p<0.0001) 11. NR. 12. NR.	13. NPs in alternative provider ambulatory primary care roles h ave equivalent or better patient outcomes than comparators and are potentially cost-saving. Evidence for NP cost effectiveness in alternative provider specialised ambulatory care roles is promising, but limited by insufficient studies. 14. While some evidence indicates nurse practitioners in complementary provider specialised ambulatory care roles improve patient outcomes, their cost-effectiveness requires further study.

	3. Not defined in adequate detail.		1.12;95% CI 1.06 to 1.19; p=0.0001) (HQE), how to relieve their symptoms (RR 1.27; 95% CI 1.19 to 1.34; p<0.00001) (HQE), and what to do if the problem persisted (RR 1.06; 95% CI 1.02 to 1.09; p=0.002).		
Martinez-Gonzales et al. (2014). Switzerland. Systematic review & meta-analysis of RCTs (n=11) *"to compare effectiveness of nurse-led and physician-lead care on clinical parameters*" p 2.	1. NR. 2. Nurse-led primary care interventions to manage patient in general practices, community or ambulatory settings. 3. Nurse provided and led care for complex conditions that required specialized skills . 82% of trails (9/11) = specific guideline or protocol based. 3. In 1 of 11 trials: Nurse full clinical autonomy to manage pts disease. In 10 of 11 trails: nurses made independent judgments (adopting, initiating and prescribing treatment} with minor support or short communication with physician e.g. discuss patient records, develop actions plans, sign prescriptions.	4. Adults (n=30,247). 5. All conditions including complex conditions: HIV, hypertension, heart failure, CV diseases, DM, asthma, Parkinson's, incontinence, mental health and addiction. 6. General practices, community, or ambulatory care setting.. 7. Nurses – level of training varied.	8. Clinical outcomes: a. Systolic BP – significant reducing effect of nurse-led interventions (weighted mean differences WMD -4.27, 95% CI -6.31 to -2.23, p<0.0001) – from 5 trials b. Cholesterol and triglycerides – no sign diff nurse-led care and physician –led care in reducing mean level chol(TC) (WMD -0.08, 95% -0.22 to 0.07, p = 0.29 – from 4 trails c. Glycosylated haemoglobin concentration; no sign diff nurse-led and physician-led (WMD 0.12, 95% CCI -0.13 to 0.37, p=0.33 d. Lung and kidney function – so sign differences between nurse- and physician-led care (lung function – peak flow - at 12 or 24 months) or levels urine sodium excretion and serum creatinine at 6 months) e. Cardiac function: more pts with nurse-led care who had	10. NR. 11. NR. 12. NR.	13. Nurse-led care (delivered by nurse practitioners) demonstrate stat significant systolic BP reducing effect compared to physician-led care ; no sign differences in reducing diastolic BP, total CHOL and glycosylated haemoglobin. Results from the other 32 individual trial estimates reported 9 of the trials suggest nurse-led care) may be similarly (26 estimates) or more (6 estimates) effective than physicians in managing the variety of clinical parameters evaluated" in this analysis. 14. More high quality trials with larger number of patients need to be carried out to inform nurse-led care and comparison to better clinical outcomes. Additional studies should map clinicians' characteristics, including wider range of nurse care

			"decrease or regression in levels of functional exercise capacity, N terminal pro-brain natriuretic peptide or left ventricular end-diastolic volume index. f. Incontinence – no sign difference between nurse and physician-led care – freq(# and volume) or volume (# of pads) of incontinent episodes at 6 or 12 months. g. Parkinson's – no sign difference nurse- or physician-led care in fractures during the study or mobility stand-up test at 24 months. h. HIV – one trial – CD4 cell counts used indicator of ART initiation and …nurse –led care significantly lower CD4 cell counts (p 8) WMD 20, 95% CI 9.29 to 30.71, p=.000. 9. Not explicit/inconclusive & suggested that the level of skills may be critical for the success of disease management when physician nurse substitution takes place."		and tasks provided in many countries and various levels of training and clinical autonomy. Nurses role and level of experience required to qualify for substitution need a better definition of boundaries and task allocation in clinical practice.
Martinez-Gonzalez, et al. (2015). Switzerland Systematic review of 12	1. Task shifting ="clearly delineated tasks or functions traditionally from the domain of physicians transferred to nurses" p 3 task/functions "would be	4. All ages,primarily adults, (n=22,617) 5. Patients with heart, lung, metabolic, digestive, skin, infectious diseases and	8. Nurse-led care statistically not significantly different from physician-led care in 84% of pt outcomes reported. Remaining 16% statistically favored nurse-	10. Trained nurses NP and NP+ can address need for healthcare providers to many pt disease in primary care at time of physician	13. -description of nurses' competencies and training components often lacked detail p 4 -"trained nurses, mostly

RCTs To compare "the evidence about physician-nurse *task shifting* in primary care in relation to course [measures] of the disease and nurses' roles" (p 1) Compared family MD, paediatricians and/or geriatricians to nurses (NP, licensed nurse) on outcome measures related to the course of disease – symptoms, severity and complications. P3	delivered with autonomous or delegated responsibility" p 3 (differs from supplementation =nurse complements work of physician or extend range of services). 2 "*Task shifting* carried out in general practices, nurse clinics and healthcare centres, for wide range of possible diagnoses (diverse, minor acute, common or specific), in pts requiring single contact care, single contact and urgent care and /or ongoing care." P 4 3."tasks varied widely from assessment, hx taking,preparation, diagnostic, monitoring and prescription to decision on eligibility for and initiation of tx, referral, follow up and secondary prevention" p 4 Use of structured disease-specific protocols combining nonpharma interventions with pharma therapy and use of validated tools used 75-84% of studies p11 Note – Specific nurse tasks are listed within disease reviewed - wide variability.	diverse acute minor or common complaints (8 categories of conditions) 6. General practices, nurse clinics and healthcare centres 7 Nurse practitioners (w/ and w/o additional degree courses, registered nurse, licensed nurses	led care. From 1-4 trials were used to retrieve like outcome data r/t specific conditions --- Type of nurse: NP NP+ nurse practitioner, LN licensed nurse, RN registered nurse (NS= non significant) **<u>Clinical outcomes</u>** -Heart disease 12-48 mo NS difference pts w/ chest pain. At 12 months **NP** nurse led care significantly fewer pts (7.1% to 10.8%) who reported worsening chest pains. (RR 0.66, 95%CI 0.44 -0.98) -lung disease NS difference (**LN**) nurse to physician led care -metabolic disease @6 mo **NP+** nurse-led showed lower stroke risk (WMD -2.53, 95%CI, -4.32 to -0.74, CHD risk (WMD-2.00 95%Ci -3.14 to -0.86 -digestive disease **NP+** nurse led care 6 mo statistically improved (maintained/reduced) dyspepsia over physician care (WMD -2.30 95%CI -3.19 to -1.41 -Skin disease NS difference **NP+** nurse to physician care outcomes -infectious disease - NS difference **LN** nurse to physician care outcomes -diverse,acute, minor or common complaints **NP+** nurse and **NP** nurses NS difference	anticipated shortage, and cost of nurses less than physician in training and their delivery of healthcare (p 10) 11. Structured protocols, validated tools "might boost outcome improvement." "Non pharma and pt centred care approaches may also lead to successful nurse-led care interventions" p 12 "in all studies, nurses were trained and/or took courses for delivering the studies' interventions." P 11 12 NR	NPs, appeared to achieve outcomes of at least similar effects as physicians for management of disease progression in a wide range of pt populations." P 12 -"structured protocols and validated tools might be some of main boosters of outcomes improvement " in nurse-led care p 12 -"implementation of non pharma and pt centered care approaches may also lead to successful nurse-led care interventions." P 12 14. Future studies should include clear def of roles, qualifications, skills and experience of nurses (p 12) Need studies that describe interventions in greater detail (Note: au does not stipulate whether they refer to nurse or physician led intervention – it is assumed by aim of the paper they mean nurse led intervention).

	LIMITED DETAIL ON THE EXACT NURSE INTERVENTION(S) COMPONENTS ACROSS all TRIALS		between nurse and physician care outcomes **Service outcomes:** -length of consultations: longer time length by nurses than physicians WMD 1.90-3.80 95%CI 1.32 to 4.26 9. Care provided by **NP** nurse practitioners (p 11);use of clinical guidelines and validated tools – ex protocols combining non-pharma and pharma interventions p 11; suggest interventions that include "provision of info about causes of illness and pts disease" motivates pt to better outcomes; good communication skills by nurses p. 11		
Ortego et al. (2014). Spain. RCT To assess whether an exercise program supervised in primary care increases functional capacity more than unsupervised walking with incident cases of low-risk acute coronary patients, <80 years old.	1. NR. 2. Study involved primary care research nurse acting in a supervisory capacity for intervention exercise cycle program. Study suggests based on findings primary care nurses could act in capacity of supervisor of this intervention. 3. Patients were randomly assigned to either the intervention (SE) Group or a Control Group (UW). Patient in SE participated in a 6-month cycle ergometer	4. Adults <80 years old. (n=97) 5. Low risk Coronary Heart Disease. 6. Primary Care. 7. Primary Care Nurses working in Primary Care Centres.	8. Functional capacity as measured by peak oxygen consumption (VO2peak) in ml/kg per minute. Blood lipids (total cholesterol, HDL cholesterol, LDL cholesterol, and triglycerides), resting blood pressure, resting heart rate and body weight. 9. VO2 peak increased significantly in the SE group without (5.56 ml/kg per minute; 95% CI 3.38–7.74) and with (3.47 ml/kg per minute; 95% CI 1.76–5.18) values carried forward.	10. Limited resource needs including the use of inexpensive devices such as a cycle ergometer and HR monitor. The facilitation of supervision of this regime could be done by a primary care nurse or other member of the multidisciplinary team such as physical therapist, exercise specialist. 11. The supervision of exercise allowed for patients to be trained	13. The SE exercise training program increased functional capacity of low-risk CHD patients by 8% and reduced body weight by 4.5% compared to UW program. 14. This exercise program is an inexpensive intervention that could be implemented in primary care settings supervised by a primary care nurse or other member of the multidisciplinary team.

	exercise program supervised by primary care nurses. Those in the control group were assigned to an unsupervised walking program.		The SE group lost more weight, with a multivariate-adjusted difference of 4.56 kg (95% CI 0.91–8.21; $p < 0.05$) and 3.60 kg (95% CI 0.78–6.42; $p < 0.05$), respectively, and had increased their diastolic blood pressure by the end of the study, 4.46 mmHg (95% CI 0.17–8.76; $p < 0.05$) and 4.06 mmHg (95% CI 0.59–7.51; $p < 0.05$), compared to the UW group.	with careful control of the amount and intensity of exercise needed to achieve the optimal effect on their cardiorespiratory fitness, while preventing injuries and any adverse effects of exercise. 12. NR.	
Selvaraj et al. (2012). Malaysia. RCT. To compare COACH (Counselling and Advisory Care for Health) intervention delivered by PCP only, versus PCP assisted by nurse educators PCP-NE.	1. NR. 2. Patient education and empowerment with decision support as interventional strategies. 3. PCP is an addition to usual care delivered by Primary Care Physicians where all subjects received a COACH health booklet completed during clinic visits. The PCP-NE COACH programme was the standard care above plus bi-weekly telephone follow-up by trained nurse educators (NE) for 24 weeks incorporating provision of patient's self-management support, empowerment and discussion guided by the	4. Adults > 18years (n=297). 5. Patients at risk of Coronary Heart Disease (CHD) i.e. with a primary diagnosis of dyslipidaemia. 6. Malaysian primary care practices (n=21). 7. Trained nurse educators	8. 36-week study and the primary efficacy outcome was the mean percentage change from baseline LDL-C at week 24 between the 2 study arms. Both study arms demonstrated improvement in LDL-C from baseline. However the difference in mean change between groups was 2.55% - not significant (p=0.288), with a greater change seen in the PCP-NE arm. There was a significant difference in percentage change from baseline of HDL-C between the PCP-NE and PCP groups, 3.01%, 95% CI 0.12-5.90, p=0.041, at week 24 there was no significant difference in lipid outcomes between 2 study groups at week 36 (12 weeks after the programme had ended). There were no significant differences between	10. Cost of training nurses not described. 11. NR. 12. The lack of statistical significance was considered attributable to dilution of treatment effects with use of similar patient education methods in both groups, specifically, using the COACH health booklet.	13. Patients who received coaching and advice from PCP with or without NE showed improvement in LDL-cholesterol. Disease management services delivered by PCP-NE showed a trend towards add-on improvements in cholesterol control compared to care delivered by PCP alone. However, these improvements were not maintained on completion. 14. The COACH programme delivered more comprehensive care than usual, compared to the typical Malaysian primary care settings constrained by time and resources. As a result, in this study, patients from both study arms benefited from

	health education booklet. During the telephone follow- up NE provided reinforcement of the health education information and reminded patients to adhere to counselling advice and prescribed medications, as well as discussion of any adherence problems with PCPs. Phone call follow up.		arms in relation to statin treatment adherence, blood pressure and Framingham Coronary Heart Disease risk scores at week 36. Approx. 90% of subjects from the intervention arm expressed satisfaction with PCP-NE in helping them achieve health care goals through telephone follow-up. 9. The COACH programme delivered more comprehensive care for chronic disease for both arms of the study than usual care. As the health booklet was distributed to all subjects this diluted the difference in interventional effects between control group and intervention group.		increased knowledge of their health conditions. Authors concluded that the task of personalised patient education does not have to be solely the domain of the PCPs but can also be delivered by trained nurses. More significant findings might be elicited with the addition of a third study arm assessing the lipid outcomes among patients who received "actual" standard care delivery by local PCPs.
Stewart et al (2014A). Australia. RCT This study aims to assess Standard versus atrial fibrillation- specific management strategy (SAFETY)—a strategy that is specific to atrial fibrillation to reduce recurrent admission and prolong survival.	1. NR. 2. Nurse-led,home based programme focused on management of atrial fibrillation. 3. SAFETY intervention comprised a home visit and Holter monitoring 7–14 days after discharge by a cardiac nurse with prolonged follow-up and multidisciplinary support as needed.	4. Patients (n=335) with chronic, non-valvular atrial fibrillation (but not heart failure). 5. Chronic, non-valvular atrial fibrillation. 6. Primary care and hospital outpatient follow-up. 7. Community cardiac nurse, and multidisciplinary team (community).	8. Event-free survival from unplanned admission or death (both all-cause) and associated days alive and out of hospital. SAFETY intervention group achieved 146 967 (92%) of a possible 159 133 days alive and out of hospital, compared with those assigned standard management, who achieved 141 113 (89%) of a possible 158 446 days alive and out of hospital. Effect size 0.39, 95% CI 0.38–0.41; p=0250.	10. NR. 11. NR. 12. NR.	13. The atrial fibrillation-specific management strategy described in this trial represents a feasible and potentially cost-effective means to improve health outcomes for an increasing number of older individuals presenting with chronic atrial fibrillation and complex comorbidity, in whom recurrent admissions and premature mortality is common. 14. A specialist outpatient clinic could be established

			Median event-free survival as a proportion of maximum versus actual days alive and out of hospital (the coprimary endpoint) was prolonged significantly in the SAFETY intervention group compared with the standard managment group (99.5%, 95% CI 99.3–99.7 vs 99.2%, 98.8–99.4; effect size 0.22, 95% CI 0.21–0.23; p=0.039). 9. NR.		to provide rapid and definitive assessment and management of patients with chronic atrial fibrillation.
Swan et al. (2015). USA. Systematic Review (7 RCT's, 2 economic evaluations, 1 two year follow up study of included RCTs) To evaluate the *"safety and effectiveness of primary care provided by advanced practice nurses (APNs) and evaluate the potential of their deployment to help alleviate primary care shortages".* (p, 2)	1. NR. 2. Exploring the use of non-physician providers in primary care i.e. nurse practitioners (NPs), advanced practice nurses (APNs), physician assistant and midwives. 3. NR.	4. Patients, Nurse Practitioners and Advanced Nurse Practitioners (n= 10,911). 5. Cost and quality of care provided by APNs in primary care. 6.Primary Care. 7. Nurse Practitioners and Advanced Nurse Practitioners.	8. Physiological measure; Patient satisfaction; Cost of care; Healthcare resource; Process measures 9. Physiological- Cholesterol/high-density lipoprotein (HDL) ratio / diastolic blood pressure at 6 months were more favorable in ANP groups. Patient satisfaction- Four studies identified greater patient satisfaction in patients who received their care from ANPs and one study reported higher satisfaction Cost- Three studies estimated that APN care was given at a reduced cost compared with physicians using provider salary.	10. APNs delivered different care than that of a physician. However, quality remained the same with equal and/or lower cost. 11. There is a need to remove barriers that impede APNs from practicing to the full of their training potential. 12. NR.	13. APNs in primary care have accomplished equally as well as physicians in relation to clinical outcomes and patient satisfaction. 14. Future studies need to identify further outcomes that were omitted in this review. Furthermore, studies should include incidence of preventable hospitalisations; preventive care i.e. vaccines and disease screening. Future studies should include longer follow-up periods this will allow for the assessment of rates of retention in care

			Health Resources- Four studies explored consultation length: three identified APN were 3.0 to 4.3 minutes longer than physician consultations; Two RCTs reported fewer primary care visits among APN patients at 2 years; Patients often requested a return visit with ANPs and were more inclined to keep the appointment. Process Measures-One study identified APNs had providing increased rates of disease-appropriate care; patients assigned to the physician group versus ANP groups were less likely to have been told the cause of their illness (odds ratio [OR] 0.58, 95% confidence interval [CI] 0.44–0.76); how to relieve symptoms (OR 0.32, 95% CI 0.24–0.43) and what to do if the problem persisted (OR 0.61, 95% CI 0.41–0.90).		
GP/Physician as Case Manager					
Katon et al. (2012). USA. Cost effectiveness + RCT. To evaluate the cost-effectiveness TEAMcare compared with usual primary care (UC) in outpatients with depression and poorly	1. NR. 2. TEAMcare is a multi-condition collaborative treatment program composed of Physician-supervised nurse care to identify clinical goals and to develop individualized care plans. 3. Nurses educated patients	4. Adults (n=214). 5. With depressive disorder and poorly controlled CHD or diabetes. 6. 14 primary care settings. 7. Practice nurses.	8 Cost as measured by QALY, Depression scores and Hemoglobin A1c (HbA1c), systolic blood pressure (SBP), Low-density lipoprotein cholesterol (LDL-C) levels. Total intervention cost per patient was $1224. Over 24 months, intervention patients had a mean of 114	10. See Q8. 11. Intervention can be readily implemented. 12. NR.	13. This nurse delivered intervention has important benefits in terms of cost effectiveness and increase in depression-free days. 14. NR.

controlled diabetes or CHD.	and used motivational interviewing, behavioral activation and problem-solving strategies to help patients undertake specific self-care activities. Most participants had at least 4 visits and 3-4 telephone contacts per month from the nurse. UC participants consulted their primary care provided for concerns relating to depression CHD or diabetes		(95% CI, 79 to149) additional depression-free days and an estimated 0.335 (95% CI, −0.18 to 0.85) additional QALYs compared with UC controls. Intervention patients also had lower mean outpatient health costs of $594 per patient (95% CI, −$3241 to $2053) relative to UC patients. For adults with depression and poorly controlled diabetes, CHD, or both, the intervention seemed to be a high-value program that markedly improved QALYs - mean cost saving of $1773 per QALY. 9. NR.		
Richardson et al. (2013). UK. Cost effectiveness + RCT To present a cost effectiveness analysis, comparing costs and Health Related Quality of Life (HRQoL), as measured by quality-adjusted life years (QALYs), associated with Supporting Listening (SL), Pragmatic Rehabilitation (PR) and Treatment as Usual (TAU) for people	1. NR. 2. SL A non-directive counseling approach. PR involves nurses explaining symptoms in the context of a model of illness, providing a rationale for a collaboratively developed rehab programme, presented verbally and with a manual. TAU – provided by GP.	4. Adults 18+ years (n=296). 5. CFS/ME for longer than 6 months. 6. Primary Care. 7. Adult Speciality General Nurses working in Primary Care with no prior experience of CFS/ME.	8. Costs (Private expenditures, costs of informal care and costs of lost production at 08/09 prices to NHS) and outcomes as measured by QALYs. HRQL increased in all groups at Wk. 20. Returned toward baseline at Wk.70. 9. TAU delivered in primary care slightly more effective than PR or SL and at a lower cost.	10. NR. 11. Patients need to believe in the intervention model presented in order to engage fully. 12. NR.	13. Evidence suggests that patients with CFS/ME are not satisfied with the care received from primary care, and GPs find management difficult. Suggesting cost-effective solutions should be implemented is of limited use if patients feel that this option is not acceptable. 14. Research into effective management options for patients with CFS/ME required. In addition, the skills of GPs in diagnosing

living with Chronic Fatigue Syndrome /Myalgic Encephalitis (CFS/ME).	3. PR included an individualized programme of activity and improved sleep hygiene. PR and SL delivered over 10 sessions.				CFS/ME and offering acceptable treatment, or referral to specialist CFS/ME services, needs improvement.
Practice Nursing					
Clark et al (2012). UK. RCT. To determine whether screening for osteoporosis led to increased prescribing of medication for osteoporosis and reduced the incidence of new fracture.	1. NR. 2. Administration of a four item screening tool for osteoporosis. 3. 20 minute screening procedure including height measurement, back pain score, history of previous fracture and rib-pelvis measurement. Subjects scoring below threshold (4) evaluated by plain radiograph.	4. Women aged 65-80 years (n= 3,200). 5. Population screening study. 6. Recruited without specific exclusion criteria from 15 general practices in South West England. 7. Research nurses trained to the standard of practice nurses.	8. Allocation to screening increased prescription of osteoporosis medications by 124% (odds ratio [OR] for prescription 2.24 at 6 months; 95% confidence interval [CI], 1.16 to 4.33) and reduced fracture incidence at 12-month follow-up (OR for new fracture 0.60; 95% CI, 0.35–1.03; p.0.063) - although this did not reach statistical significance. 9. Screening alone associated with improved outcome although radiographic confirmation of previous vertebral fracture more strongly associated.	10. Preliminary cost effectiveness analysis suggest cost per QALY of £3000 although could be less if more women found to have fracture were prescribed medication. 11. NR. 12. NR.	13. Use of a screening tool for osteoporosis in addition to an information leaflet is worthwhile and the tool in this study may be better than alternative risk assessment tools. 14. More education of GPs may be required to improve prescribing rates in women identified by screening and maximize benefit.
Elley et al. (2011). New Zealand. RCT. *"To assess the cost-effectiveness of exercise on prescription with ongoing support in general practice"* (p.1223)	1. NR. 2. The original Green Prescription intervention involved brief advice and an exercise prescription usually delivered by the GP, followed by monthly telephone support for 3 months delivered by regional sports trusts. 3. Ten mins of brief advice; written exercise	4. Women aged 40–74 (n=1089) 5. Women who were less active than those performing moderate intensity exercise. 6. General Practice 7. Primary care nurses	8. Primary outcome – incremental cost of moving a person into an "active" category. Secondary outcome-incremental cost of increasing physical activity at 12 and 24 months. 9. Significant improvements in physical activity were found at 12 and 24 months (p<0.01); no significant difference in indirect costs between both groups (12 months: rate ratios: 0.99(95%	10. The total cost of the Green Prescription programme was $93.68 per participant. 11. Extra telephone support; 6-month face-to-face nurse follow-up contribute to higher percentage of participants who were active at 12 months.	13. Brief interventions involving exercise on prescription; brief face-to-face advice from a HCP; telephone follow-up; or print-based support can increase activity levels. 14. This intervention could be set up in areas other than general practice. Implementation of this intervention would also increase if it was applied

	prescription given by a primary healthcare nurse; telephone support for 9 months from an exercise facilitator; half-hour face-to-face session with the nurse at 6 months. Goal was at least 30 min of moderate-intensity physical activity five times per week.		CI 0.81 to 1.2) and (24months: rate ratio: 1.01 (95% CI 0.83 to 1.23, p=0.9); Cost–effectiveness ratios using programme costs were NZ$687 (€331) per person made 'active' and sustained - 12 months; NZ$1407 (€678) per person made 'active' and sustained - 24 months.	12. NR.	systematically to daily practice, with routine screening; delivery; and follow-up.
Gibson et al (2013). Australia. Syst rev. 10 studies included Association between chronic disease type 2 diabetes related hopitalisations and primary health care resourcing.	1. NR. 2. NR 3. NR	4. Patients with chronic illness of type 2 diabetes. 5. Type 2 diabetes. 6. Primary Health Care. 7. Practice Nurse part of the primary health care team including GP.	8. NR 9. NR	10. NR. 11. NR. 12. NR.	13. This study is inconclusive with regards to its outcomes. The impression from this body of work is that access to primary care (as distinct from use – which will be highly confounded by health status) is probably associated with a reduced rate of hospitalisation for diabetes-related ACSC. 14. "Collectively, study findings must still be considered inconclusive, and the relationship between PHC resourcing and hospitalisation for diabetes-related ACSC remains uncertain. Thus additional studies are needed that adjust for a wide range of potential confounders and consider more carefully how best to adjust for disease severity"

Harris et al (2015). UK. RCT. To examine if a primary care nurse-delivered complex intervention increased objectively measured step-counts and moderate to vigorous physical activity (MVPA) in people aged 60-75.	1. NR. 2. Behaviour change techniques and feedback from pedometers and accelerometers. 3 Components – pedometers; accelerometers; practice nurse consultations based on behavioural change techniques; patient handbook; individual walking/ physical activity plan; physical activity diary.	4. People aged 60-75 years registered with 3 GP practices (n= 289). 5. No health problem. 6. General practices in Oxfordshire and Berkshire, UK. 7. Practice nurses.	8. Average daily step count difference at 3 months – 1,037 (95% CI 513-1560) steps per day (P<0.001). Difference in weekly time spent in moderate to vigorous physical activity (MVPA) at 3 month– 66 (95% CI 36-96) mins/ week (p<0.001);. Difference in MVPA bouts >10 mins @ 3 months - 63 (95% CI 40-87) mins/week (p<0.001). At twelve months figures were:- Average daily step count difference 609 (95% CI 104-1115) steps/day (p=0.018); difference in time spent in MVPA 40 (95% CI 17-63) (p=0.001). 9. Sub group analysis suggests effects could be larger for men than women – 1534 (95% CI 775-2294) v 591 (95% CI 125-1307) (p=0.08) and stronger for couples 1750 (95% CI 850-2651) than individuals 692 (95% CI 61-1319) (p=0.06).	10. Intervention requires more time, training and support than is currently standard in NHS health checks or routine care. 11. Participants and nurses enthusiastic about the intervention – as documented in an accompanying qualitative study. Pedometers and accelerometers and goal setting and monitoring were seen as enablers of increased PA. Two stage recruitment process used in this study (with screening out of unsuitable patients) is recommended. 12. Weather and existing health problems were seen as barriers to increased PA.	13. The intervention increased both step counts and objectively measured MVPA in>10 bouts in 60-75 year olds at 3 and 12 months with no effect on adverse effects. 14. Practice nurses can safely deliver an intervention to increase objectively measured PA in older people and the intervention is acceptable to older people and nurses. Primary care is an ideal setting for delivering PA intervention. Future research needed to distinguish different aspects of PA intervention i.e. to separate effects of pedometer, accelerormeter, and nurse consultation. Research also needed in socio-economically deprived populations and in older people with higher levels of morbidity and disability. Inclusion of a qualitative element is also recommended. Also robust evidence on cost and cost effectiveness should be gathered before similar programmes are

					implemented on a large scale in the health service.
Hoare et al. (2011). Australia and New Zealand. Systematic review (n=47) To report *"on a review that examined the role of Government policy in primary care and its association with nurse-led care in the United Kingdom, New Zealand and Australia between 1998 and 2009."* (p.963)	1. A practice nurse "*is responsible for implementing prescribed programmes of care, working under the supervision of a GP* (Rashid et al. 1996)" (p. 972) 2. NR. 3. NR.	4. Practice nurses; general population; patients; general practice staff; prevention clinic staff; primary care staff. 5. A range of government policies associated with nurse-led care. 6.General Practice; Primary Care; Prevention Clinics. 7. Practice nurses.	8. The development of practice nurse; Government policy supporting quality improvement – clinical governance; Nurse practitioners in the UK; Nurse-led care in the UK; Education and career structure. 9. Strengthening frameworks for primary care nursing education and career pathways have been statistically significant in the UK and NZ; Quality and Outcome Framework (QOF), contributed to an improvement in patient and population-health outcomes. Nurse lead care has led to improved lifestyle; health status; fewer deaths; fewer coronary events; optimal care; reduced HbA1c; cholesterol levels; improved medication adherence; and has shown to be cost effective.	10. Further funding programmes will benefit nurses in becoming leaders in the field of patient care; education; collaboration and networking. 11. Clinical governance structures and the "Quality and Outcomes Framework" were vital to the development of the practice nurse workforce in England. 12. Strain on GP employer and nurse employee relationships impede collaborative practice.	13. New Zealand and Australia have not utilising their practice nursing resource. Standalone policies are ineffective in the development of nursing lead care. Career structure is limited for practice nurses in New Zealand and Australia. 14. Reducing heath inequalities is necessary, therefore, additional research is needed to investigate the role of nurse-led care in general practice. Funding in general practices in New Zealand and Australia need to assist in the development of the role of practice nurse or nurse practitioners. A "national quality framework with a plan for implementation may stimulate practice nurse development in New Zealand and Australia" (p.975).
Houweling et al. (2011). Netherlands. RCT. To determine whether the	1. NR. 2. Primary Care Nurse care of diabetic patients in comparison to GP care. 2. Practice nurses who	4. Adults with diabetes (n=230). 5. Diabetics. 6. General Practice.	8. Mean decrease in glycated haemoglobin (HbA1c) levels at the end of a 14 month follow-up period. No significance with regards to between-group differences with	10. Time needed to deliver Practice nurse led intervention as on average GP spent 28 minutes in comparison to practice nurses who spent 128 minutes per	13. The results show that a nurse, when following specific guideline protocols, achieves results which are comparable to those achieved by a GP with respect to blood pressure,

management of type 2 diabetes mellitus in a primary care setting can be safely transferred to practice nurses.	treated glucose levels, blood pressure and lipid profile according to a specified protocol (intervention group) Conventional care: general practitioner.	7. Practice Nurses.	respect to reduction in HbA1c, blood pressure and lipid profile. Both groups indicated improvements with regards to HbA1c, Blood pressure, cholesterol and lipid profiles. Significance re decrease in blood pressure in both groups; 7.4/3.2 mm Hg (intervention group) and 5.6/1.0 mm Hg (control group). Within both groups, more patients met the target values goals for lipid profile compared to baseline With regards to levels of satisfaction patients treated by a practice nurse (intervention group) were more satisfied with their treatment than those being treated by a general practitioner (control group) Within the intervention group, there was some deterioration recognised in the health-related quality of life and an increase in diabetes-related symptoms. 9. NR.	patient. However, this study argues the merits of this additional time resource being linked with increased patient satisfaction outcomes. 11. NR. 12. NR.	glucose and lipid profile regulation. Furthermore, most of the results regarding the process indicators were remarkably better in the group cared for by a nurse. 14. Authors recommend PNs should be allowed to prescribe medications in The Netherlands, as is common practice in some other countries.
Jansink et al. (2013). Netherlands. RCT.	1. NR. 2. Nurse led intervention focused on the provision of structured diabetes care	4. Primary care nurses (58 practices) educationally prepared to deliver structured diabetic care and their patients with type	8. This study reports no statistically significant improvements in diabetic outcome measures compared with usual care. The study	10. NR. 11. NR. 12. NR.	13. The intervention did not result in significant improvements. 14. Further research on

To determine if a nurse-led structured diabetes care with a protocol, record keeping, reminders, and feedback, plus training in motivational interviewing and agenda setting (intervention) was effective in comparison to usual diabetic care consistent with current diabetes guideline.	with a protocol, record keeping, reminders, and feedback, plus training in motivational interviewing and agenda setting. 3. Protocol, record keeping, reminders, and feedback, plus training in motivational interviewing and agenda setting (intervention).	2 diabetes (n=940). 5. Diabetes type 2-structured care programme vs usual diabetic care. 6. General practice. 7. Primary Care Nurses.	reports small changes in cholesterol outcomes. The intervention group was no more effective than usual care in terms of the reported consumption of alcohol, fat, vegetables and fruit, or physical activity. 9. NR.		lifestyle counselling embedded in primary care and the assessment of factors influencing the use of such counselling strategies is required. The adaptation of a health protection approach or a personalised lifestyle counselling approach as opposed to motivational interviewing technique in targeting lifestyle change with this care group should be considered.
Tiessen et al. (2013). Netherlands. RCT. To assess the costs and cost-effectiveness of cardiovascular prevention by practice nurses from a societal perspective in both treatment groups of the SPRING-RCT study completed in 2009.	1. NR. 2. Cardiovascular risk management. 3. The control group received standard treatment according to the 2006 Dutch general practitioner's guideline, conducted by specially trained practice nurses. The intervention group additionally received counselling based on self-monitoring at home, with pedometers, weighing scales and/or BP devices.	4. Adults (n=179) 5. Patients with an elevated cardiovascular risk. 6. 20 general practice settings in the Netherlands. 7. Practice nurse (trained in cardiovascular management) in general practice.	8. Total costs consisted of direct costs (medication, time spent by medical staff, self-monitoring equipment, patient transport to the practice) and productivity losses (absence at work of the working individuals that participated). In this population, the costs of cardiovascular prevention were higher in the intervention group, with annual costs per individual of €160 (control group- standard treatment) compared with €335 (intervention group- self monitoring at home). Costs per percent decrease in estimated 10-year cardiovascular mortality of €98 compared with €187, for the control and intervention group	10. For both groups costs predominantly consisted of societal costs and staff time and not of medication. As a considerable proportion of the target population for cardiovascular risk management consists of working individuals, productivity losses during practice visits have to be taken into account when deciding about cardiovascular risk management strategies. 11. NR. 12. NR.	13. Costs for cardiovascular risk management are found to be relatively low, for protocols based on the Dutch General Practitioner's Guideline on Cardiovascular Risk Management (version 2006). 14. This study supports the use of the Dutch General Practitioner's Guideline on Cardiovascular Risk Management (version 2006) for the targeted individuals in general practice. An added role for self-monitoring can be considered only for females and higher educated individuals.

			respectively. 9. Standard cardiovascular risk management by practice nurses is more cost effective than additional intensive counselling based on self- monitoring.		
van Dillen and Hiddink. (2014) The Netherlands Systematic Review (n=45) To *"describe PNs' actual role in lifestyle counselling in primary care and their cooperation with other health professionals"* (p.2)	1. NR. 2. Lifestyle counselling. 3. NR.	4.Practice Nurses (n=1 to n=606). 5. Weight Management. 6.General practice/primary care. 7.Practice Nurses.	8. Interventions where the nurse's main role is primary care provider larger effects on clinical outcomes are noted. Outcomes of these studies were divided into three categories: positive, neutral, and negative. 10 out of 12 intervention RCTs with PN achieved positive outcomes. 9. 26 studies identified that the role of the practice nurse in lifestyle counselling is needed; three interventions identified that PN spend more time with patients in consultation and therefore, patients were significantly more satisfied with PNs' care; 6 intervention studies indicated that PNs can attain similar health outcomes as GPs for a range of diseases.	10. 6 studies identified funding as barrier for "lifestyle counselling". 11.Collaboration with several disciplines. 12. Time was recognized as a barrier to nurses giving lifestyle counselling in six studies.	13. An MDT approach is more desirable to weight management care. It remains unclear as to whether a PN can provide care as a case manager in relation to lifestyle counselling in weight management. This may depend on context and situational issues. 14. Practice nurses need further training in case management of chronic diseases in primary care settings prior to it becoming an essential component in the role of the PN. Transferring the responsibility of such care to PN may encourage therapeutic prospects for obesity management. The value of PNs weight loss counselling may be improved by providing support in addressing barriers; securing support;

					and setting collaborative goals.

Appendix 1B Home Based Community Nursing

Source **Country** **Type of Evidence** **Aim**	**1. Definitions** **2. Overview of Models** **3. Main components**	**4. Population Group and Size** **5. Health Condition / Problem** **6. Healthcare context / setting addressed** **7. Nursing disciplines involved**	**8. Outcomes assessed and effects on outcomes** **9. Components associated with improved outcomes**	**10. Resource Implications** **11. Enablers** **12. Barriers**	**13. Key conclusions** **14. Recommendations for Practice, Policy, Education, Research**
Preventative					
Behm et al. (2014). Sweden. RCT. To analyse the long-term effects of preventive home visits and senior meetings with respect to morbidity symptoms, self-rated health and satisfaction with health.	1. NR. 2. Preventive home visits and group sessions with multiple health professionals (senior visits). 3. Three arm trial comparing preventive home visits x1 with 'senior visits' 4 weekly and one follow up home visit with usual care.	4. Adults >80 living at home, not requiring help with ADL and no cognitive impairment (n=459). 5. Variable levels of frailty and deemed at risk of health decline/ increasing frailty. 6. Community. 7. Registered nurses working alongside physios, OTs and social workers. All received training for the study.	8. Progression in morbidity significantly lower at 1 and 2 year follow-ups in both groups. OR 0.44 (p = 0.001, 95% CI = 0.27–0.73) for PHV and 0.61(p = 0.048, 95% CI = 0.38–0.99) for senior meetings after 1 year and 0.60 (p = 0.035, 95% CI = 0.37–0.96) for the PHV and 0.52 (p = .008,95% CI = 0.32–0.84) after 2 years. No sig. differences concerning the progression of symptoms. Self-rated health significantly lower in the senior meetings group v controls OR 0.55 (p = 0.039, 95% CI = 0.31–0.97) . Satisfaction with physical health sig lower at 1 and 2 year for both interventions. OR 0.49 (p = 0.015, 95% CI = 0.28–0.87) for PHV and 0.57 (p = 0.049, 95% CI = 0.32–1.00) for senior meetings, at 1 year; OR 0.43 (p = 0.013, 95% CI = 0.22–0.84)	10. NR 11. NR 12. NR	13. A decline in health outcomes in very old persons at risk of frailty can be postponed. 'Senior meetings' have a greater effect than preventive home visits with respect to self-rated health. 14. NR.

			for the PHV and 0.28 (p = 0.001, 95% CI = 0.14–0.59) for senior meetings at 2 yrs. 9. NR.		
Butterfield et al. (2011) USA. RCT. "To test the effectiveness of a multi-risk social/cognitive intervention on rural low income parents' (1) environmental health self-efficacy and (2) stage of environmental health precautionary adoption." *(p262)*	1. NR. 2. The translational environmental research in rural areas (TERRA) model: Assumes that interventions for reducing environmental risk have potential to positively impact both the frequency and magnitude of risks, as well as risk perceptions of family members perceptions. 3. Home visits. Interactive book guide for risk assessment; Health information to families & precautionary actions; Biomarking testing Control group – received a letter re: biomarking tests and values for each risk.	4. Rural family households with at least one child aged 7 yrs or less and with potable water from nonmunicipal source (n= 235). 5. Environmental health. 6. Rural community. 7. Public health nurses.	8. At 3 months Self-Efficacy: increased for general health environment and all risk factors (e.g. radon, water contaminants) (P<.001). Change in behavior –increased adoption of precautions for most risks (P <0.05). 9. NR.	10. NR. 11. NR. 12 NR.	13. Public health nurses' home visits should address addressing environmental risk reduction practices in addition to their focus on parenting and personal development. 14. Practice: Broaden the focus on PHN to include environmental health.
Corrieri et al. (2011). Germany. Systematic Review To determine if preventive home visiting is cost effective in preventing falls in the elderly.	1. NR. 2. Preventive home visiting to elderly to prevent falls - models very varied. 3. Nurse led interventions included assessment of fall risk; assessment of vision, hearing, balance mobility,	4. Adults > 65 years. 5. Risk of falls. 6. Home visits 7. Geriatric nurses (1 study); nurse practitioner (1 study); trained district nurse (1 study); nurse	8. Preventive home visiting cost effective for falls prevention (3 studies); 1 did not show cost effectiveness and one showed cost effectiveness for 1 subgroup only Cost per QALY in one study $20,383 (2008 prices); mean savings per patient in one study	10. This was a systematic review of cost effectiveness – see Q8. 11. NR. 12 NR.	13. Home visiting for falls prevention in the elderly was not shown to be comprehensively cost effective. Cost effectiveness appears to depend on careful adaption of selected measures for certain settings in special environments for

	feet, foot wear, cognition, functional data/ ADL, medication use and muscle strengthening.	unspecified (1 study).	$2958 (2008 prices); cost per fall prevented in another study $133 (2008 prices); cost per fall prevented $1525 (2008 prices) in another study. Results from the different studies were not combined. 9. NR		designated patients and disease patterns. 14. Some specific recommendations made to improve standardisation in future research.
DeSocio et al. (2013). USA. RCT. Secondary analysis Effectiveness trial of the new mothers' home visitation program.	1. NR. 2. Nurse visitation to: (a) 'increase healthy behaviors during pregnancy and through the child's development, (b) enhance maternal responsiveness and parenting skills', (Pg 163) (c) 'improve the life trajectory of mothers using education, employment, and delay of future pregnancies'. (Pg 162) 3. Control Group received 'free transportation, developmental screening/ referral for their children at 6, 12, and 24 months of age'. Intervention received 'free transportation and developmental screening plus intensive nurse home visitation up to infants' second birthdays'(pg 162) The goals of the	**4.** Pregnant women (28 weeks gestation) first birth aged 12 to 33 years (n=429) 5. Having two of three criteria for social disadvantage: (a) unmarried; (b) less than 12 years education (c) unemployed 6. County Health Department, and patients' homes. 7 Community nurse	8.Self-agency change, using the Pearlin and Schooler Mastery Scale Chronological age. Age used to represent development; The Shipley Institute of Living Scale of Intelligence administered to measure cognitive ability in relationship to chronological age Educational attainment Discretionary household income. Neighborhood poverty. 9. Self-agency increased between intake and 24 months in both the control group (3.01 to 3.11, $p < .001$) and the intervention group (3.00 to 3.22, $p < .001$).	10. NR 11NR. 12. Data reflect the experiences of unmarried adolescent mothers of two decades ago,	13 Findings supported the hypotheses- intervention including nurse visitation would influence self-agency change in a group of unmarried adolescent mothers. 14 NR

	7 Community nurse				
Friedman et al. (2014). US. Secondary analysis of data from two arms of a larger RCT. To gauge the impact of a home visit nurse on specific activities of daily living compared to usual care.	1. NR. 2. Monthly home visit by nurses. 3. Assistance with self-care management; medication management and education on activities of daily living. Does not involve direct nursing care.	4. Medicare patients with difficulties or needing assistance in performance of six specified activities of daily living (n=499). 5. Patients needing or receiving help with ADL and recent significant healthcare use. 6. Community dwelling, 7. Specially trained nurses in aging, geriatric care, medicines management and health behavior modification	8. Difficulty in performing or needing assistance in 6 specified activities of daily living. Improvement in bathing but not in other ADLs (31.6% v 40.4%, p-0.01) at 22months. 9. NR.	10. NR. 11. NR. 12. NR.	13. Insufficient confidence in findings to make any recommendations except need for more research. 14. Research to investigate impact of interventions on individual ADLs and not just global ADL scores. May be possible to determine retrospectively on other recent other studies reporting global data. Need for more qualitative research on older person's perspective and to assess impact on ADLs of other interventions including goal setting, disease management and medication management using educational materials and physician-patient-family-nurse conferences.
Imhof et al. (2012). Switzerland. RCT. To evaluate the effectiveness of the in-home consultation programme by advanced nurse practitioners in terms of quality of life, health indicators and healthcare utilization of	1. NR. 2. Advanced nurse practitioners visited participants at home. 3. 4 visits over 9 months to ascertain participants health concerns, offer health promotion; used evidence based guidelines to manage prevalent health concerns (e.g. mobility, vision, hearing, pain,	4. Adults > 80 (n=461 of 1,182 potential participants). 5. No specific health problems. Inclusion on age and residence only. 6. Community dwelling adults in an urban area of German speaking Switzerland. 7. APNs with masters	8. No difference detected in quality of life measure. Significant difference in incidence of acute events e.g. number of 3-month periods with at least one acute event was lower in the intervention group (116 v 168 RR 0.70 NNT = 4.3). Significant reduction in number of 3 month periods with falls in the intervention group (74 v	10. Cost per participant of home visit programme $1,250 over 9 months which authors argue (without precise data) would be a net saving due to reduced healthcare utilization. 11. NR. 12. NR.	13. Home consultation programme by ANPs can be effective in reducing adverse health outcomes (acute events, falls, and hospitalizations) although no effect on quality of life was shown. 14. Recommends further research to confirm these findings with different doses of APN within different time frames using

individuals of 80 years and over.	nutrition, cognitive abilities, and bladder control. Action planning at end of each visit	degree in Nursing Science. Experienced in home care and gerontological nursing. Specifically trained to deliver intervention.	107 RR 0.71, NNT =7.1 p=0.003). Number of 3-month periods without hospitalizations was significantly lower in the intervention group (n=47, 23%) v control group (n=68, 33%, p=0.03, RR 0.70, NNT = 10.0). Lower use of pharmacist consultations but no difference in use of other health professionals. 9. NR.		objective outcome measures.
Ming Wen et al. (2012). Australia. RCT To assess the effectiveness of a home based early intervention on children's BMI.	1. NR. 2. A staged home based intervention for mothers of infants designed to improve infant feeding techniques, eating habits, active play, reduce TV viewing time as well as improve family behavioural risk factors for childhood obesity.encourage healthier behaviours. 3. 8 home visits from specially trained community nurses at 1-24 months' post birth.	4. Pregnant women aged 16+ (n=667). 5. Pregnant women attending antenatal clinics. 6. Primary Care. 7. Community Nurses.	8. Mean BMI was significantly lower in the intervention group than in the control group. 9. NR.	10. NR. 11. NR. 12. NR.	13. NR. 14. To prevent early onset of childhood obesity a range of potential risk behaviours needs to be tackled.
Paul et al. (2012). USA. RCT.	1. NR. 2. One home visit to well postnatal breastfeeding mothers.	4. Postpartum mothers intending to BF (34 wks) (n = 1154) 5. Unplanned health care	8. Unplanned health care utilization for mothers and newborns; proportion of women/newborns seen within 2 days after discharge,	10. Cost of one home visit by nurse. 11. NR.	13. Home nursing visits are a safe and effective alternative to Office Based Care for the initial outpatient encounter

To compare standard newborn care with a home nursing visit (HNV) as the initial encounter for "well" breastfeeding newborns and mothers.	3. Home nursing visit within 2 days of discharge;	utilisation and maternal wellbeing 6. US health care with standard care for postpartum women office based (OBC) 7. Nurses.	breastfeeding duration. Maternal mental health, parenting competence, satisfaction with care Assessed at 2 wks, 2 and 6 mts. Improved BF at 2 weeks (92.3% vs 88.6%) (P=.04) and 2 months (72.1% vs 66.4%) (P=.05) but not 6 months; more mothers and newborns seen within recommended 2 days of hospital discharge (85.9% vs 78.8%) (*P*=.002), Greater parenting sense of competence at 2 weeks (mean diff 1.43 [95% CI, 0.40-2.46] P=.007) and at 2 months (mean diff 1.44 [95% CI, 0.36-2.51] P=.009), No differences in maternal mental health, satisfaction with care or unplanned health care utilisation. 9. NR.	12. Lack of primary nursing care service.	14. In settings where post discharge follow-up is less optimal, a timely visit provided by HNVs could produce more positive effects than in the current study.
Sharps et al. (2013). USA. RCT To *"test the effectiveness of a structured Intimate Partner Violence (IPV) intervention integrated into health department perinatal home visiting (HV) programs"* (p134).	1. NR 2. Domestic Violence Enhanced Home Visitation Program (DOVE) vs usual care 3. DOVE: Based on an empowerment model, combining 2 evidence-based interventions: a 10-minute brochure-based IPV intervention and nurse home visitation- 3 DOVE	4. Abused pregnant women (n=239), randomised to DOVE (n=124), or usual care (n=115). 5. Pregnancy, intimate partner violence. 6. Home visiting. 7. Home visitors.- professional disipline unspecified.	8. Retention rates of abused pregnant women in perinatal HV programs. Retention of women in program: retention rates from baseline for DOVE women were 91% at delivery, 77% at 3 months, 75% at 6 months, and 70% of women at 12 months compared to UC 84% of women at delivery, 75% at 3 months, 72% at 6 months,	10. Training to deliver intervention (4-hour training included information about IPV, particularly in pregnancy, importance of screening and intervening + DOVE intervention 4-hour training including use of the screening and assessment instruments, delivering	13. Findings suggest that many abused pregnant women who are screened for IPV will disclose their abuse histories and will remain in perinatal HV programs and research programs that specifically address IPV. Results indicate that home visitors' confidence in screening for IPV increased with additional training and

	prenatal and 3 postnatal visits. Usual care: standard home visiting and IPV protocols.		and 70% retained at 12 months. 9. Screening for IPV appeared to promote a beneficial relationship with the home visitor.	the brochure-based DOVE intervention, developing individualized safety plan, strategies for revisiting and reinforcing safety plan at each home visit, and appropriate documentation). 11. Home visitors were persistent in maintaining contact with participants, and strategies to increase retentionrates included sending birthday and holiday cards to every participant, which also assisted with notification of address changes. 12. Telephone services with nurses was inconsistent due to financial restraint Barriers to screening for IPV: home visitors' fear of either being a victim of violence from the abusive partner or having the client withdraw from HV because discussing IPV would be too	opportunities to observe health care professionals screen women for IPV and educate women on IPV. 14. DOVE strategies for engaging and retaining abused pregnant women should be integrated into HV programs' federal government mandates for the appropriate identification and intervention of women and children exposed to IPV.

				sensitive and intrusive for participants.	
Tappenden et al. (2012) UK. Systematic Review. (n=14 – 11 RCTs and 3 economic evaluations). To evaluate the clinical and economic effectiveness of home-based, nurse-led health promotion programmes in the UK.	1. Nurse led health promotion activities described as a complex intervention. 2. Nurse led health promotion. 3. (a) health education, involving communication directed at individuals, families and communities to influence; (b) service improvement, involving quality and quantity of service; and (c) advocacy involving agenda-setting for healthy public policy.	4. Adults >65 (n=5850). 5. Long-term medical/social needs at risk of admission to hospital, residential or nursing care e.g. heart disease, Parkinson's disease, stroke, venous leg ulcers. 6. Home. 7. Trained nurses / health visitors with access to MDT.	8. Admission to hospital, residential or nursing care, mortality, morbidity including depression, falls, accidents, deteriorating health status, patient satisfaction. Outcomes measured and reported differently between studies preventing meta-analysis. 9. Mortality: reduced the risk of death [odds ratio (OR) = 0.80, 95% confidence interval (CI) 0.68 to 0.95]. Also statistically significant effects favouring the intervention on Leg ulcer recurrence, Nottingham Health Profile, Caregiver Strain Index, GHQ.	10. There is a dearth of good-quality economic studies available to inform decisions about the cost effectiveness of home-based, nurse-led health promotion. At best a weak suggestion that the cost-effectiveness may be dependent on the population at whom the programme is targeted. 11.NR. 12.NR.	13. Given the limitations of the current evidence base, it remains unclear whether home-based health promotion interventions offer good value for money. 14. Recommended appropriate training of nurses, and potentially other elements of a multidisciplinary team, but may have considerable implications in terms of costs and capacity. There may be a role for qualitative research in identifying which components of the intervention patients value or derive benefit from.
Wen et al. (2011). Australia. RCT *"To assess the effectiveness of a home-based early intervention on infant feeding practices and "tummy time" for infants in the first year of life"* (p.701).	1. NR. 2. Intervention (IG): A home based early intervention programme designed to improve family and behavioral risk factors for childhood obesity. Control group: One follow up home visit only. 3. Assessment and education on infant feeding practices, infant nutrition, active play, family physical	4. First-time pregnant women aged 16+ followed through to 12 months after birth (n= 527). 5. Infant feeding. 6. Home visits. 7. Community nurses (trained by health promotion practitioners to deliver programme).	8. IG vs CG - Improved feeding practices as follows: Breastfeeding rates higher in IG at 6/12 & 12/12; (42.2% vs 32.1% and 21.0% vs 14.9%, respectively). Median breastfeeding at 12/12 duration was 17 weeks (95% CI, 13.9-20.4 weeks) in IG compared with 13 weeks (95% CI, 10.1-15.6 weeks) in CG. Later introduction of solids in	10. Noted that the effects of the intervention on traditional service delivery models and comparisons of cost-effectiveness vs health benefits of a large-scale intervention are unknown and merit further investigation. 11. NR. 12. NR.	13. Early intervention programmes need to be family focused and commence in antenatal period. 14. See Q13 above.

	activity, nutrition and social support.		IG (P.001 for trend), reducing the proportion of mothers who introduced solids before 6/12 by 12% (95% CI, 4%-20%), from 74% to 62%. IG decreased the proportion of mothers using food for reward by 7% from 25% to 18% (P=.04) and increased the proportion of children drinking from a cup by 7% from 85% to 92% (P=.01), as well as reduced the proportion of children having a bottle to go to bed by 9% from 44% to 35% (P=.04). IG decreased the age at which infants started tummy time (P=.03 for trend) and increased daily practice of tummy time by 7% from 76% to 83% (P=.05). 9. NR.		
Curative					
Leiva et al. (2014). Spain. RCT. *"To evaluate the effectiveness of a multifactorial adherence-based intervention in a primary care setting in lowering BP"* (p. 1683)	1. NR. 2. Nurse-led motivational interviews. 3. Usual care not described. The multifactorial intervention consisted of five components delivered during three home visits: Nurse-led motivational interviews; simplification of dosing regimen by a pharmacist; reminder	4. Patients aged 18–80 years (n=221). 5. Uncontrolled essential hypertension. 6. Primary care centres. 7. 32 nurses in 28 centres.	8. Primary outcome of systolic BP at 12 months showed no significant difference between groups (151.3 mmHg versus 153.7 mmHg, P=0.294), as were the reductions from baseline (5 mmHg versus 2.1 mmHg). Secondary outcome in terms of Diastolic BP showed no significant difference between groups (83.4 mmHg versus 83.6 mmHg), as was the percentage in each group who achieved BP control according to ESC/ESH	10. NR. 11. NR. 12. Wide variability in adherence to medication (53.2%–94.5%) may have been due to the characteristics of nurses and overestimation of the intervention effects. This may have resulted	13. The main finding of the study was that a multifactorial intervention in a primary care setting based on enhancing treatment adherence did not lead to the expected improvement in BP. 14. NR.

	packaging; social and family support; and BP self-measurement.		guidelines (15.8% [18/114] versus 9.2% [10/109], P=0.098). 9. NR.	in the absence of statistically significant differences between intervention and control groups.	
Watson et al. (2011). UK. RCT *"To assess the clinical effectiveness of weekly delivery of low dose, high frequency therapeutic ultrasound in conjunction with standard care for hard to heal venous leg ulcers"* (p1).	1. NR. 2. Low dose, high frequency therapeutic ultrasound in conjunction with standard care. 3.Intervention:Weekly administration of low dose, high frequency ultrasound therapy of 5-10 mins, delivered at weekly dressing changes, for up to 12 weeks plus standard care, vs standard care alone. After 12 weeks of ultrasound, patients returned to usual care only.	4 Adults (n=337). 5.Venous leg ulcers. 6. Community and district nurse-led services, community leg ulcer clinics, hospital outpatient leg ulcer clinics. 7. Nurses.	8. Primary outcome: time to healing of the largest eligible leg ulcer. Secondary outcomes: proportion of patients healed by 12 months, percentage and absolute change in ulcer size, proportion of time participants were ulcer-free, health related quality of life, and adverse events. No significant differences detected regarding outcomes except that the number of non-serious adverse events was significantly associated with the treatment received, with more events in the ultrasound group than the standard care group (model estimate 0.35 (0.02 to 0.67), P=0.04). 9. NR.	10. NR. 11. NR. 12. NR.	13. No evidence to support ultrasound treatment for patients with leg ulcers. 14. Centres with highest staff recruitment rates had highest healing rates - further research into this correlation is recommended.
Weller et al (2013). Australia. Systematic review (n=2 RCTs). *"To assess the benefits and harms of interventions designed to help people adhere to venous leg ulcer*	1. NR. 2. Community-based Leg Club® clinic vs home based care. Community based nurse-led self-management programme (Lively Legs®) and usual care vs usual clinic care only. 3. Leg Club: peer-support,	4. Adults (n=67, Edwards, 2009; n=184, Heinen,2012). 5. Venous leg ulcers. 6. Community setting. 7. Nurses.	8. Primary outcomes: venous ulcer healing, time to complete healing, recurrence of venous ulcer, adherence to compression therapy (e.g. proportion reporting adherence to compression). Secondary outcomes: Quality of Life (QoL), adverse events, pain, economic outcomes.	10. The incremental cost per healed ulcer to the service provider, carers, clients and community of the Leg Club was reported as AUD 515 at six months (the cost of usual care was estimated as AUD 1546). However, the paper did not report	13. These trials did not reveal a benefit of community-based clinics over usual care in terms of healing rates, prevention of recurrence of venous leg ulcers, or quality of life. Not possible either to recommend or discourage nurse clinic care interventions over

compression therapy, and thus improve healing of venous leg ulcers and prevent their recurrence after healing" (p1).	assistance with goal setting and social interaction Lively Legs: six month programme promoting physical activity (walking and leg exercises) and adherence to compression therapy via counselling and behaviour modification.		9. Edwards (2009). Pain: Significantly decreased in Leg Club participants, compared with home care (MD -12.75 points on 100 point scale, 95% CI -24.79 to -0.71). Heinen (2012). No significant differences reported.	the effect estimate used in the analysis so could not be verified (Edwards, 2009). 11. NR. 12. NR.	standard care. 14. Need further innovation in treatment methods and a better understanding of strategies to improve adherence to intervention. Recommends improved methods for reporting in trials in this area.
Care management					
King et al. (2012). New Zealand. RCT. To evaluate the impact of a restorative home care service for community dwelling older people.	1. NR. 2. Care management with paid caregivers providing restorative home care co-ordinated by experienced registered nurse. 3. Initial assessment; goal setting (using TARGET tool) regular visits by paid caregiver (not nurses).	4. Older people (n=186. 93 in each arm). 5. In receipt of assistance from the home care agency. 6. New Zealand primary care. 7. Registered general nurses trained for the study.	8. Primary outcome – health related quality of life measured by SF36. Intervention showed a statistically significant improvement at 7 months (mean difference 3.8, 95% CI 0.0-7.7, p=0.05). Secondary outcomes were physical, mental and social wellbeing. No changes in these seen. There was a statistically significant difference in the number in the intervention group identified for reduced hours or discharge (29% v 0% p<0.001). A significantly higher number of intervention older people had care giver's hours reduced or were discharged from home care agency – 22 v 0 had hours reduced or were discharged 9. Greatest change in the mental health component of SF36 which were strongly influenced by social and emotional	10. NR 11. NR 12. NR	13. Restorative home care service may be of benefit to older people and improves home care efficacy. More likely that the paid caregivers' regular contact had a greater impact on the older people's mental health than the (nurse) co-ordinator. 14. NR.

			function elements of the mental health component.		
Marek et al. (2013). USA. RCT. To test the efficacy of nurse care coordination with or without medication dispensing technology in helping older adults self manage chronic illness.	1. NR. 2. Nurses acted as care co-ordinators for elderly patients who were having difficulty managing their medicines. 3. Three arm study. One arm was nurse care coordinator plus a medication dispensing system (MD.2); one arm was nurse care coordinator plus a simple medication organizer box; one control arm.	4. 414 patients over 60 in a Mid Western urban area (US). 5. Patients who were having difficulties managing their medicines (as detected on questionnaire instruments). 6. Patients discharged home health care from one of 3 home health care agencies in Milwaukee County. 7. APNs and RNs.	8. Missed medication doses. Clinical status measured on SF36 Physical Component and Mental Component, Geriatric Depression Scale, MMSE, functional status PPT. Average percent of correct doses per month was 98.8% (SD.30) in MD.2 and 97.4% (SD 5.19) in the medi-planner group . Comparison of MD.2 v medi-planner was non significant for all five clinical measures. 9. Components – nurse care coordination; aids to help with medication administration. Nurse care made a clear difference; aids did not.	10. NR. 11. NR. 12. NR.	13. Nurse care coordination has a beneficial effect on cognitive functioning, depressive symptoms, functional status and quality of life in both mental and physical functioning. 14. Investing in methods to assist older adults with medication and chronic disease management has the potential to improve the quality of life of older adults.
Marek et al. (2014). USA. RCT- further reporting on RCT by Marek et al (2013). To determine whether a home-based care coordination program focused on medication self-management would affect the cost of care to the Medicare program and whether the addition of technology, a medication-	1. NR. 2. Home-based nurse care coordination program (NCC). 3. Involved comprehensive admission assessments and plans of care by APN & RN's focused on supporting participants' and their families' self-management behaviors. Participants visited at least every 2 weeks to fill their pill organizer or medicine-	4. Older adults (n=414). 5. Older adults with problems self-managing their chronic illnesses. 6. Primary Care – home visits. 7. Advanced Practice Nurses (APNs) and Registered Nurses (RNs).	8. Cost: participant claims data from 2005 to 2011. 9. Nurse care coordination plus a pill organizer was a cost-effective intervention for frail elderly Medicare beneficiaries. The cost of the NCC plus pill organizer intervention, yielding a net savings of $3,552 per year. The cost of the NCC plus medication-dispensing machine intervention was higher per year.	10. During the 12-month study period, mean monthly Medicare expenditures were higher in the intervention groups than in the control group. 11. Working in participants' environments provided opportunities to observe barriers to self-management and to create interventions	13. The active ingredient in the NCC intervention was the home visit. 14. Given the cost of care for chronically ill individuals and the consequences of care mismanagement, investment in systems to support self-management is essential. Results are promising and support testing of the model in a larger, longer

dispensing machine, would further reduce cost.	dispensing machine and more frequently if their condition required additional visits. Two different devices (pill organizer and meds dispensing machine) were used to enhance medication self-management behaviors.			that were more viable for them to use in their self-management practices. 12. The machine group required additional visits related to the functioning of the machine, increasing the cost of the intervention.	study.
Poortaghi et al (2011) Iran RCT The focus of this study was to "*determine whether continuing cardiac rehabilitation programs at home has positive effects on psychological and general health of the participants' in comparison with the control group*" p.407	**1** Home based cardiac rehabilitation programme by community nurse for patients with cardiac diseases following uncomplicated heart attack as a model of care focused on rehabilitation resulting in increased client independence and improved general health CHD - coronary heart disease **2.** Home based cardiac rehabilitation conducted by community nurses focused on development of self efficacy **3.** Both groups provided with routine cardiac rehabilitation in the centre. Case group given additional education and training in conjunction with home	**4.** N=CHD patients referred to a rehabilitation centre (n=80) **5.** CHD patients receiving rehabilitation **6.** Rehabilitation centre staff and Community Nursing. **7.** Community Nurses	**8.** The main outcome variables = measurement of general health subscales including physical symptoms (p= 0.000) anxiety and insomnia, (p= 0.004) social function (p= 0.006) depression, (p= 0.000) showed statistically significant difference between the 2 groups indicating that the intervention improved patients overall general health in the subscales highlighted above. **9**. Home based rehabilitation has a positive effect on patient's general health. Appropriate and effective training of patients, continuity of care and home follow up can relieve the difficulties caused by patients not referred to ambulatory rehabilitations centers.	**10.** Educational preparation of community nurses to provide this programme **11**. The ongoing health educational and supportive preventative intervention of community nurses providing the cardiac rehabilitation programme at home had a positive outcome on patients' general health. **12.** NR	**13**. This study's key recommendations include The provision of ongoing home rehabilitation due to the positive affect this program has on patients quality of life and general health The provision of effective training of patients, continuity of care and follow on care provided by community nurses enhances patients general health . **14.** This study advocates the merits of this intervention linked with improved quality of life and general health linked with continuity of care and follow on care.

	visits by community nurse.		Community nurses play an important preventative role in the provision of continuing education, accompanying patients and performing follow up care at home.		
Poortaghi et al. (2013). Iran. RCT - further reporting on RCT by Poortaghi et al (2011) "*to evaluate the probable positive effects of continuing cardiac rehabilitation programs at home on self-efficacy of the patients with cardiac complications*" (p.1) .	**1**. NR. **2.** Home based cardiac rehabilitation model of care focused on self efficacy resulting in increased client independence. **3.** Patients referred to a rehabilitation centre. Randomly divided into case and control groups.	**4.** CHD patients referred to a rehabilitation centre (n=80). **5.** CHD patients receiving rehabilitation following uncomplicated heart attack. 6. Home **7.** Community Nurses.	**8.** Self-efficacy: Improved self-efficacy and better results in case group (P =0.003) **9**. NR.	**10.** Educational preparation of community nurses to provide this programme. **11**. NR. **12.** NR.	**13**. Community health nurses have an effective preventative role. Home-based rehabilitation program has a positive effect on patients'self-efficacy. 14. The input of community nurses are recommended as important as their professional input is with regards to having a preventative focus, providing home care services, offering continuing educational input and providing follow up care at home. Further studies required to reveal other effects of home-based cardiac rehabilitation such as well-being, return to work, further complications and other outcomes are recommended.

Case Management					
Aragones et al. (2012). Spain. RCT (n=338). *"To assess the effectiveness of a multi-component programme to improve the management of depression in primary care"* (P. 297)	1. NR. 2. The intervention consists of a multi-component programme based on he chronic care model adapted to primary care. 3. Components are of a training based organizational clinical and health related educational nature. Nurses act as case managers. Care guided by NICE 2008. Carefully scheduled contact with doctors and nurses. Primary Care psychiatry interface. Patient and family education by nurses	4. Adults 18 + Years. 5. Major depression . 6. Primary Health Care Service. 7. General Trained Primary Care Nurses.	8.The severity of depression (mean Patient Health Questionnaire -9 score) was 1.76 points lower in the intervention group [7.15 vs. 8.78, 95% CI=-3.53 to 0.02, p=0.053]. The treatment response rate was 15.4% higher in the intervention group than in the controls [66.9% vs 51.5%, odds ratio 1.8, 95% CI=1.2 to 3.1, p=0.011], and the remission rate was 13.4 per cent higher [48.8% vs 35.4%, odds ratio 1.8, 95% CI=1.1 to 2.9, p=0.026]. 9. The mental health component of quality of life evolved more satisfactorily in the intervention group in parallel to a clinical improvement in depressed mood.	10. Resource neutral. 11. NR. 12. NR.	13. The programme for managing depression in primary care was designed so that – if effective – it could be applied in habitual care and is straightforward to implement. 14. NR.
Wagg et al. (2014). Canada. Systematic Review (RCT's and quasi experimental studies). To create using evidence from a systematic review qualitative data and expert consensus an	1. NR. 2. Continence service design. 3. Case coordinator takes an advisory and facilitative role filling in gaps and coordinating care where available.	4. Community dwelling patients with either bladder or bowel incontinence (n= unspecified) 5. Incontinence. 6. Community. 7. Community Nursing.	8. A number of themes related to current and potential future organisation of continence care were identified from the data. A modular service specification with eight core components was created including case detection, initial assessment and treatment, care coordination, caregiver support, community based support, specialist assessment and	10. A recurring theme was the low priority of continence care in a time of restricted financial resources. 11. NR. 12. NR.	13. Ensure robust referral pathways, shift assessment for case coordination to nurses specializing in continence care, promote self-management and technology, use comprehensive assessment tools and service performance targets based on outcome and operational measures.

internationally applicable service specification for continence care.			treatment, use of containment products and use of technology. 9. NR		Services should be integrated across primary and secondary health care settings. 14. Specialists in continence care should focus on those with severe symptoms or who are unresponsive to conservative treatment strategies.
Mental Health					
Bruce et al. (2015). USA. Cluster RCT To determine whether improvements in depressive symptoms occurred in those randomized to a Care Path intervention by Home Health Care Nurses.	1. NR. 2. Depression Care path for patients at home - Guideline based treatment combined with care management. Delivered by home health care nurses trained to manage depression 3. Weekly assessment; Suicidal risk protocols; clinical protocols; short term goal setting; monitoring.	4. Adults 65+ (n=306). 5. Those screened positive for depression. 6. Primary Care. 7. All home health care nurses	8: Depression severity (adjusted HAM-D score), disability (ADL); medical burden (Chronic Disease Scale) in depression care path vs usual care over 3,6 and 12 months. 9. The 12-month HAM-D score difference reached statistical significance (8.7 vs 10.6 (P=.05). No intervention effect among patients with mild depression (HAM-D score, <10). Half of the sample were taking anti-depressants. Exploratory analyses found no difference in the effect of the intervention by whether or not patients were already taking antidepressants	10. NR. 11 Care path was designed to fit within routine nursing practice so depression management was integrated into scheduled visits Protocol was simple to integrate into commercial clinical software systems 12. NR.	13. Evidence that medical home care nurses can effectively integrate depression care into routine practice. 14. NR.
Chien et al. (2015) Hong Kong	**1.** A therapy to improve adherence to medication MI therapy involving	**4.** Adults 18+ years (n=114)	8. Participants reported significantly greater improvements in their insights	10. NR 11. The patients who	13. Evidence suggests that using AT which is a structures and self-

Randomized Controlled Trial To test and evaluate the effectiveness of an adherence therapy (AT) for outpatients with schizophrenia spectrum disorders, based on a motivational interviewing (MI) approach over a six-month follow-up period.	cognitive, motivational, insight inducing and behavioral training **2.** Eight two-hour sessions were held at participants homes every two weeks **3**. Phase 1 – goal and action setting for change Phase 2 – Education, identifying barriers and develop coping strategies Phase 3 – rationalize concerns and engage social supports.	**5.** Schizophrenia spectrum disorders 6. Community Psychiatric Nursing Service 7. Psychiatric Nurses	into illness and or treatment, psychosocial functioning, symptom severity, number of hospitalizations and medication adherence when compared to TAU 9. There was an effective reduction in symptom severity, re-hospitalizations, improved medications adherence, functioning, insight and treatment over a 6 month period.	volunteered to participate were mainly full or part-time employed, had a relatively shorter duration of illness and had satisfactory family support, consequently tey may have been highly motivate to engage in AT 12. NR	empowering model of psychosocial intervention used in conjunction with psycho-pharmacological and psychiatric treatments has explicit benefits to patients with schizophrenia and other psychotic disorders. 14. Further study on the effects of AT in people with psychotic disorders in terms of diverse sociodemographic and illness characteristics and longer term follow up period is recommended.
Toot et al. (2011). UK. Syst. Rev. (n=4) (Cohort studies (n=3) and descriptive (n=1)) To report on the effectiveness of Crisis Resolution/Home Treatment Teams (CRHTTs) for older people with mental health problems	1. NR. 2. Crisis resolution/home treatment teams. 3. Community oriented old age psychiatry service. Multidisciplinary Support team in a day hospital.	4. Adults >65 years (n=317). 5. Older people referred with mental health problems 6. Community / day care. 7. Multidisciplinary support team	8. Number of admissions to hospital, LOS, maintenance of community residence, use of services and cost. 9. 69% of referrals (n=70) were admitted in the intervention group compared to 100% (n=65) in the comparison group (statistically significant) (x 1 study). A higher percentage of people remained at home after two years follow up in the 24-h crisis service group (49%; n=69) compared to the overall comparison group (35%; n=42) (2 studies).	10. Cost per patient per month in an outreach support team was £823, which was lower than the £1814 cost per patient per month on an inpatient ward (1 study only). 11. NR. 12. NR.	13. Very little robust evidence (Level C) indicating that crisis resolution/home treatment services for older people with mental health problems reduce the number of admissions to hospital. For all other outcomes, including maintenance of community residence and length of hospital stay, the evidence is very weak 14. Further research into crisis resolution interventions for older people with mental health problems should be based on sound theory, so that a

					robust evidence base can be created to drive future policy development.
Ukawa et al (2011) Japan RCT To determine whether mini mental state examination (MMSE) scores improved in older participants of a Functioning Improvement Tool (FIT) home visit programe.	1. NR. 2. Use of the Functioning Improvement Tool (FIT) 3. During a Home visit Medical personnel help the person look back on the previous day's tasks Using a six step approach: Visualise activity and Describe feelings	4. Older People >65 (n=199). 5. Receiving preventive services or a community long term care prevention project. 6. At home. 7. Five nurses and one dental hygienist trained in the appropriate use of the FIT	8. MMSE scores Demographic information 9. MMSE scores in the intervention group at the end of follow-up were significantly improved compared with those at baseline (from 24.2 ± 4.3 to 25.0 ± 4.8, p = 0.004).	10. NR 11. A non-pharmacological intervention. Most effective in persons with mild cognitive decline. 12. NR	13. FIT home-visit program improved MMSE scores in older participants with mild cognitive decline 14. Results suggest the possibility of reducing long-term care expenses with the FIT home visit program; thus, future studies including Cost-effectiveness evaluation is needed.
Palliative Care					
Aydede et al. (2014). Canada. Systematic Review (n=17 studies i.e. 10 cohort, 4 non- compliance, 2 cross-sectional and 1 randomized). To identify studies examining home care intervention's among adult CKD patients incorporating all outcomes.	1. CKD was conceptualized as consisting of five stages following the Kidney Disease Outcomes Quality Initiatives definition. This suggests that CKD could be classified by treatment type: kidney transplant recipient, CKD independent of dialysis and CKD on dialysis. Home Care "is an array of services which enables clients, incapacitated in whole or part, to live at home, often with the affect of preventing, delaying or	4. Chronic Kidney Disease Patients (n=15058). 5. Chronic kidney disease. 6. Home Care Setting. 7. General Nurses working in homecare setting with people with kidney related conditions.	8. In peritoneal dialysis studies with comparators peritonitis and technique survival rates were similar across home care assisted patients and comparators. The risk of mortality however was higher for home care assisted PD patients 9. NR.	10. NR. 11. NR. 12. NR.	13. Home care may be helpful in providing a more efficient and higher quality care for CKD patients however a synthesis of evidence in this regard has not been undertaken. While this study presents a synthesis of the literature regarding home care in chronic kidney disease, specific gaps in the literature are identified and the true impact of providing home care for this population remains uncertain.

	substituting for long-term or acute care alternatives" (Pg. 2). 2. Most studies focused on nurse assisted home care with patients on dialysis. 3. NR.				14. There are significant gaps in the literature. In particular further research is needed in the areas of home support for activities of daily living, palliative care at home or respite care for the caregivers of CKD patients.
Gomez et al (2013). UK. Systematic Review N=23 studies i.e.16 RCTs, 6 of high quality), *"a. To quantify the effect of home palliative care services for adult patients with advanced illness and their family caregivers on patients' odds of dying at home; b. to examine the clinical effectiveness of home palliative care services on other outcomes for patients and their caregivers such as symptom control, quality of life, caregiver distress and satisfaction with care; c. to compare the resource use and costs associated with these services; d. to critically appraise and summarise the current evidence on cost-effectiveness".*	1. Home Palliative Care Services: A team delivering home palliative care with the following four elements. (i) Primarily for patients with a severe or advanced disease (malignant or non-malignant), no longer responding to curative/maintenance treatment or symptomatic (or both), or their family caregivers, or both. (ii) Aiming to support patients or family caregivers, or both, outside hospital and other institutional settings as far as possible and to enable patients to stay at home. (iii) Providing either specialist or intermediate palliative/hospice care, as defined in a previous systematic review and (iv) Providing comprehensive care and aiming at different	4. People living with advanced illness (n=37, 561) and/or their family caregivers (n=4042). 5. Mainly advanced cancer but also congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), HIV/AIDS and multiple sclerosis (MS), among other conditions. 6. Home. 7. Nurses. To be considered specialist one or more nurses must have undergone higher specialist training,	8. Primary outcome - Death at home. Meta-analysis showed increased odds of dying at home (odds ratio (OR) 2.21, 95% CI 1.31 to 3.71; Z = 2.98, P value = 0.003; Chi2 = 20.57, degrees of freedom (df) = 6, P value = 0.002; I2 = 71%; NNTB 5, 95% CI 3 to 14 (seven trials with 1222 participants, three of high quality)). Secondary outcomes included: time the patient spent at home, satisfaction with care, pain, other symptoms, physical function, quality of life, caregiver pre- and post-bereavement outcomes. Narrative synthesis showed evidence of small but statistically significant beneficial effects of home palliative care services compared to usual care on reducing symptom burden for	10. NR 11. NR 12. NR	13. Results provide clear and reliable evidence that home palliative care increases the chance of dying at home and reduces symptom burden in particular for patients with cancer, without impacting on caregiver grief. This justifies providing home palliative care for patients who wish to die at home. New home palliative care interventions must respond to the challenges ahead, posed by rapidly ageing populations with increased complexity and growing need for home palliative care. 14. More work is needed to study cost-effectiveness especially for people with non-malignant conditions, assessing place of death and appropriate outcomes that are sensitive to change

	physical and psychosocial components of palliative care. 2. Palliative Home Care serices. 3. As above (Q1).		patients (three trials, two of high quality, and one CBA with 2107 participants) and of no effect on caregiver grief (three RCTs, two of high quality, and one CBA with 2113 caregivers). Economic data included: hospital costs, other institutional care costs, community care costs, informal care costs, equipment and medication prescribed. Evidence on cost-effectiveness (six studies) is inconclusive. 9. NR		and valid in these populations, and to compare different models of home palliative care, in powered studies. Although the findings on cost-effectiveness were inconclusive, even evidence of no effect onother outcomes with slightly higher costs would be enough to justify the existence of home palliative care services as they exist to fulfill the desire of many people to live at home in the last days of their life. Policy makers and service planners can now calculate the extent to which current home palliative care services may need expansion locally on the basis of current and target home death rates, applying NNTB from this meta-analysis to current and projected local need. Further meta-analyses on symptom burden and caregiver grief would produce more robust data Future studies need to harmonise measurement and reporting practices.

Hudson et al. (2013). Australia. Phase III parallel group (three-armed)RCT To *"prepare caregivers for the role of supporting a patient with advanced cancer receiving home-based palliative care by offering a one-to-one psycho-educational intervention".*	1. NR. 2. Intervention based on transactional model of stress and coping. Two variations based on whether the person received 1 or 2 visits. Control group – usual palliative care support. 3. Intervention delivered over 4 weeks and involved phone calls with family, a family caregiver guidebook, written information about the intervention, assessment of caregiver needs, development of a care plan with caregiver, patient and team, home visits, education resources, strategies to promote wellbeing, preparation for death and information about bereavement and evaluation.	4. Primary family caregivers >18 years (n=298). 5. Caregivers of patients with advanced cancer receiving home-based palliative care. 6. Home. 7. Family Caregiver Support Nurse (FCSN) who assisted the local palliative care service to assess caregiver needs, establish a care plan and provide additional caregiver support.	8. Relative to participants in the control group; the psychological well-being of participants in the intervention condition improved by a small, non-significant amount. No significant reduction in unmet needs or improvements in positive aspects of caregiving amongst the intervention group were identified. 9. The intervention demonstrated significant improvements in participants' levels of preparedness and competence when the intervention consisted of 2 visits (as opposed to 1). Effect sizes of the one visit, two visits and both groups combined relative to the control group were 0.08, 0.28 and 0.18	10. Training of FCSN. 11.NR 12. NR	13. Relatively short psycho-educational interventions can enable family caregivers to feel more prepared and competent in the role of supporting a dying relative. 14. Further investigation is required to determine the longer term outcomes of such interventions. Constructs such as preparedness and competence may be linked to overall psychological wellbeing. Further empirical work is required to explore this. Future research is needed to identify the levels and criteria by which caregivers' coping responses might be considered maladaptive and therefore potentially amenable to intervention.
Luckett et al. (2013) Australia. Syst rev and meta-analysis (n=10 articles reporting 9 studies – 2 RCTs, 1 NRS and 6 retrospective record reviews). *"To establish whether*	1. Nursing care can be independent in nature (e.g., nurse practitioner-based models where nurses diagnose and prescribe care) or dependent (i.e. based on delegation). Other models include substitution (e.g. physician assistants) and enhancement, such as in nurse-coordinated	4. People with life limiting illness. 5. Cancer and other life limiting illnesses. 6. Home. 7. NR.	8. Meta-analysis indicated a significant effect for SPCSs with home nursing (odds ratio 4.45, 95% CI 3.24e 6.11; P < 0.001). However, the high-quality studies found no effect (odds ratio 1.40, 95% CI 0.97e 2.02; P <0.071). Bias was minimal. 9. NR	10. The resource requirements of providing community palliative care through generalist services (e.g. primary care providers and community nurses in partnership with domiciliary carers) should not be underestimated.	13. Caregivers have highlighted home nursing as the most important service component, but it is also likely to be the most resource intensive. Evidence inconclusive that community SPCSs offering home nursing increase home deaths without compromising symptoms

community specialist palliative care services (SPCS) offering home nursing increase rates of home death compared with other models". P. 279	models 2. Community-based SPCS providing home nursing for people with life-limiting illnesses. 3. NR			11. Preferences for place of care and/or death are only true choices where they occur in the context of best-practice services in all settings. 12. When services are scarce, home deaths may occur simply because inpatient services are not available as an alternative. Patients who lack a home caregiver and who are socioeconomically disadvantaged are less likely to have access to community A better understanding of the barriers and facilitators for remaining at home is needed, including detailed exploration of known drivers of hospital admission near the time of death, such as problems with symptom management.	or increasing costs. 14. Future trials should compare the relative efficacy of different models and intensities of SPCSs. The role of the SPCS nurse vis-a-vis other community service providers is of special interest. Research needed to guide optimal specialist-generalist communication and coordination. Future evaluations should provide detailed cost-effectiveness data to inform the optimal combination of specialist and generalist provision, the role of nurses vs. other health professionals, and the necessary scope of practice and expertise in different service contexts. A better understanding also is needed of who will benefit most from community-based SPCSs and the configuration of nursing services required to meet patient and caregiver needs. Health professionals

					assessing the suitability of individual patients for home care would be assisted by validated tools for evaluating the viability of home death. Tools for assessing prognosis (with the aim of avoiding acute care admissions for people who are dying and prefer to die at home) also are required. Improved targeting of services will become increasingly important as Western populations age and informal caregivers diminish in availability and capacity. Even where evidence-based support for home care is available, patients and family caregivers should remain at liberty to choose the place of care and death. Need to support families better in making an informed decision between home vs. institutional care, acknowledging that preferences may change over time and may differ for patients vs. caregivers and place of care vs. place of death.

Parker et al. (2012). UK Systematic Rev.iew (n= 37 papers on 26 studies of which 11= RCTs & 15 = health economic studies)	1. Care closer to Home: "any model of care that acted to prevent immediate inpatient admission and/or enable a reduced length of stay for children (up to the age of 18 years) with acute, chronic, complex or palliative care needs" (p. 3). 2. Most common model is generic community children's nursing teams & condition specific services, nurse led only or multidisciplinary teams. 3. NR.	4. Children care. Samples in studies ranged from 15 to 210. 5. Long-term conditions/ short term health needs/in need of palliative care. 6. Home care. 7. NR for some studies reviewed. Nurses/primary care provider/case manager where reported.	8. Paediatric home care has equivalent clinical outcome results to in-patient hospital treatments e.g. Weight gain in premature infants; HBA1C for diabetes care; Adaptation to school 7 work re mental health problems; Readmissions to hospital; Adverse events from chemotherapy. Costs: Savings associated with paediatric home care. 9. NR.	10. Care closer to home offers potential for reduced health service costs, but this is sensitive to case mix, skill mix and change in the local health economy. 11. NR. 12. NR.	13. See Q14 14. Research: Areas for further investigation on care closer to home (CCTH) in minority communities or socio-economically deprived groups and in rural areas. Consider factors influencing whether families feel able to use CCTH services, the views of children about service and and the impact of CCTH on primary and community care services.
Uitdehaag et al. (2014) Netherlands RCT *"To compare nurse-led follow-up at home with conventional medical follow-up in the outpatient clinic for patients with incurable primary or recurrent esophageal, pancreatic, or hepatobiliary cancer". P518.*	1. NR 2. Conventional medical follow-up at the OPD clinic or nurse led follow-up at home. 3. Nurse-Led Follow-Up: Performed by home visits of a specialist nurse, Follow-up at 14 days and then monthly after randomization, up to 13 months or death. If necessary, telephone contact was possible between visits. The nurse-led care focused	4. Consecutive patients (n=138) 5. Unresectable or recurrent upper GI cancer 6. At home 7. Specialist nurse, with more than 10 years' experience in oncology nursing care. The nurse worked under the guidance of the attending medical specialist(s) and had regular contact with both the attending physician and the patient's general	8. Outcome measures were based on structured questionnaires assessing patient (and relative) satisfaction, health-related QoL (HRQoL), and health care consumption (use of GP and hospital admission). Patients in the nurse-led follow-up group were significantly more satisfied with the visits, whereas QoL and health care consumption within the first four months were comparable between the two groups. Nurse-led follow-up was less expensive than conventional medical follow-up. However,	10. NR 11. NR 12. NR	13. Results suggest that conventional medical follow-up is interchangeable with nurse-led follow-up. A cost utility study is necessary to determine the preferred frequency and duration of the home visits. Palliative care for patients with upper GI cancer can be provided at home by specialized oncology nurses with high patient and relative satisfaction. Findings also document that this strategy is less

	primarily on relief of suffering and complaints Conventional Medical Follow-Up: Appointments At the OPD clinic. Follow-up after one month and then every two months after randomization, up to 13 months or death. If patients were unable to come to the hospital, appointments could be done by telephone.	practitioner.	the total costs for the first four months of follow-up in this study were higher in the nurse-led follow-up group because of a higher frequency of visits. 9. NR		costly per visit than the conventional medical follow-up. The higher level of satisfaction is largely determined by the fact that the home visits were perceived as less burdensome compared with the visits to the outpatient clinic. This is probably related to the burden of travel to the hospital, delays in physicians' schedules, and the fact that most patients prefer to receive palliative care at home and prefer to die at home. 14. Further research on the frequency and the duration of visits is necessary in a cost utility study. Because the costs are largely determined by travel time and travel expenses, a study also should investigate if the home-based follow-up can be performed by nurses with less travel time and costs (e.g., community nurses) or by innovative interventions such as tele-health.

Nurse-Family Partnerships/ VoorZorg nurses					
Mejdoubi et al. (2013). Netherlands. RCT To assess the effect of VoorZorg, the Dutch Nurse-Family Partnership (NFP)on addressing self-reported Intimate Partner Violence (IVP) victimization and perpetration among young, low-educated pregnant women and mothers compared with young mothers receiving the usual care in the Netherlands.	1. NR. 2. Intervention group received usual care and home visits from nurse throughout pregnancy, and until child turned 2. Control group received usual care. 3. Usual care includes physical examination, monitoring development of foetus, health education, postnatal advice, and monitoring of infant's health. Home visit intervention offered up to 50 structured standardized home visits (10 in pregnancy, 20 first year, 20 second year). Included raising awareness of IPV, identifying abusive relationships, communication, negotiation and emotional regulation strategies, reducing stress, aiming to increase women's financial independence, and housing assistance.	4. Disadvantaged pregnant women <26 years, with no previous live births. (n= 460). Randomised to intervention (n=237) or control (n=223). 5. Intimate partner violence, pregnancy. 6 Home care. 7. Home visits : VoorZorg nurses. Usual care: midwives/ obstetricians.	8. Primary outcome: self-reported psychological, physical or sexual violence, and injury towards the participant (victim) as well as towards her partner (perpetrator). Secondary outcomes were a summation of forms of violence, and both experiencing and perpetrating IPV. 9. Home visit program was effective in reducing victimization by IPV. Improvement greater in intervention group than control group at 32 weeks of pregnancy in relation to level 2 psychological aggression (C: 56% vs. I: 39%), physical assault level 1 (C:58% vs. I: 40%) and level 2 (C: 31% vs. I: 20%), and level 1 sexual coercion (C: 16% vs. I: 8%). Reduced perpetration of IPV, with greater reduction in intervention group, in relation to level 2 psychological aggression (C: 60% vs.I: 46%), level 1 physical assault (C: 65% vs. I: 52%), and level 1 injury (C: 27% vs. I: 17%). At 24 months after birth, IPV victimization was significantly lower in the intervention group for level 1 physical assault (C:	10. NR. 11. Open and non-judgemental dialogue between nurse and patient; trusting and professional relationships with HCP 12 NR.	13. Home visiting interventions shown to be successful in reaching high risk young pregnant women and identifying at risk individuals. Suggests the need for healthcare professionals to focus on this group due to their vulnerability. 14. Need to screen at risk individuals/ groups and address IPV risk factors e.g. alcohol, financial dependency. Need for open dialogue and non-judgemental therapeutic relationship with nurse. Need to reduce impact of IPV where it is already present. Must address violent and controlling behavior among perpetrators, as this can lead partner to also use violence. Further research should examine how to decrease loss of follow-up in low income pregnant women. Future interventions should address perpetration of IPV by women.

			44% vs. I: 26%), and IPV perpetration was significantly lower for level 1 sexual assault (C: 18% vs. I: 3%). Intervention appears to improve outcomes as it addressed risk factors for IPV (stress), and specific factors (identifying abusive relationships).		
Mejdoubi et al 2014. Netherlands RCT – further reporting on RCT by Mejdoubi et al (2013) To assess whether Voor Zorg programme is effective in reducing smoking in young high risk pregnant women, also effect on pregnancy outcomes and breastfeeding at 6 mths.	1. NR. 2. VoorZorp programme (NFP/USA) to address risk factors and prevent child abuse. 3. 40–60 home visits from pregnancy until two yrs after birth	4. 460 Pregnant women with low SES: < 25 yrs, low education, 28/40, nullips, + risk factors (no social support, hx domestic violence, psychosocial symptoms, unwanted/unplanned pregnancy, financial/housing problems, unemployment, drug/alcohol use) 5. Cigarette smoking, birth outcomes, BF at 6 mts. 6. Youth health care organisation (ambulatory and well-baby services for monitoring child health and development and promoting positive parenthood). 7. Nurses trained in the programme.	8. Cigarette smoking status, infant wt and gest, BF at 6mts assessed at 16, 28, 32 wks preg + 2 and 6 mts postnatal. 9. Reduced smoking and prolonged BF in intervention group.	10. Funding for programme. 11. NR. 12. NR.	13. Programme effective at reducing cigarette smoking and increasing BF duration. No effect of pregnancy outcomes. 14. NR.

Robling et al. (2015). UK. RCT To *"assess the effectiveness of giving the programme to teenage first-time mothers on infant and maternal outcomes up to 24 months after birth"* (p.1)	1. NR. 2. Family Nurse Partnership (FNP) intervention. Control group: Usual care only. 3. Usual care consisted of screening, immunisations, health education, and support until the child turned two. FNP: Up to 64 home visits by nurse (average 39).	4. Nulliparous pregnant teenagers aged ≤19 years, at <25 weeks gestation (n=1,645). Randomised to intervention group (n=823) and control group (n=822). 5. Pregnancy 6. Community midwifery partnerships (local authorities, primary and secondary care organisations) 7. Trained family nurses	8. Primary: tobacco use in late pregnancy, birthweight, emergency attendance and hospital admission of infant within 24 months of birth, and proportion of women with second pregnancy within 24 months. Secondary: measures of pregnancy and birth, child health and development, and parental lifecourse between birth and 24 months postpartum. 9. Tobacco use: no difference between groups in number of women smoking in late pregnancy (56%). No difference in number of cigarettes per day for women classified at baseline as smokers. Hospital visits for child: 81% in FNP, 77% in controls. Second pregnancy within 24 months: No difference between groups (66%). Secondary outcomes suggested small positive effects of FNP: intention to breastfeed, maternally reported cognitive and language development, levels of social support, quality of relationship with partner, and self-efficacy. Greater	10. Incremental cost for FNP £ 1993 per participant. Individual types of resource use were similar across trial groups, intervention delivery costs (FNP calls and visits) accounted for the substantial incremental cost of FNP. Sensitivity analysis of only complete cases o (217 in FNP group *vs* 186 in usual care group) suggested the incremental cost of the FNP was £ 4670 (95% CI 3322–6017). Not cost-effective for main outcomes – smoking cessation, and second pregnancies. 11. NR. 12. NR	13. Substantial additional cost, without benefit for main outcomes, and only slight advantage for some secondary outcomes after adding FNP to existing services 14. Longer term follow up may provide evidence for greater child development benefits.

			documentation of child safe-guarding concerns in FNP group.		

Miscellaneous					
Alicea-Planas et al (2013) Randomised experimental (pretest/posttest intervention) trial. USA To investigate whether self efficacy and self-rated health would improve following a goal setting intervention by nurses during primary care visits , for Spanish speaking patients	1 NR 2 Goal setting intervention Chronic care model (CCM) used as theoretical framework- focuses on empowerment and support to self manage health 3 'Healthy changes' action plan - identified small health goal, and identifie3d barriers and facilitators to this goal. Rated confidence in ability to achieve same. Follow up appointment at one month with reminder telephone call 1-2 days before.	4 Spanish speaking adult patients (n=184) divided between intervention (n=91) and control (n=93). 5 Chronic diseases 6 Community health centre 7 Staff nurses	8. Self rated health scores: no significant difference between pretest to posttest by study group F(2, 156)=0.13, p=.72 Mean scores decreased from pretest to post test in control group (M=3.79, SD=0.82 vs M=3.55, SD= 0.94), and intervention group (M=3.68, SD 0.86 vs M=3.38, SD= 0.86) Self efficacy: not statistically significant from pretest to posttest by study group, F(2, 156)= 1.88, p=.17. Self efficacy of usual care group changed from M=5.89, SD=2.41 , to M=6.05, SD=2.69. Self efficacy of interention group changed from M=6.62 SD=2.41, to M=7.29 SD=1.94). 9 NR	10 Intervention required no extra money or staff. Intervention was implemented into practices of the community health centre easily. 11 NR 12 Social desirability may have been a factor in patients' reporting of whether they reached their goal.	13 Self efficacy appears to be related to ability to manage chronic disease. Although not statistically significant, the intervention group did demonstrate a a larger increase in self efficacy than the usual care group did. 14 Likert scales presented difficulties for Latino patients with low levels of literacy - verbal responses or other methods may be more appropriate in future research with this patient group. Ongoing follow up, a reminder phone call and greater encouragement may help patients stay motivated , when implementing this type of intervention in future. Assessment of system constraints e.g. Waiting time, may help improve this patient group's engagement and retention in such interventions. Future studies should examine resource availability, culturally appropriate methods of delivering interventions, and translation of materials.

Appendix 1c: Transitional Care

Source and type of evidence Country **Aim**	**1. Definitions** **2. Overview of Models** **3. Main components**	**4. Population Group and Size** **5. Health Condition / Problem** **6. Healthcare context / setting addressed** **7. Nursing disciplines involved**	**8. Outcomes assessed and effects on outcomes** **9. Components associated with improved outcomes**	**10. Resource Implications** **11. Enablers** **12. Barriers**	**13. Key conclusions** **14. Recommendations for Practice, Policy, Education, Research**
Parsons et al (2012) New Zealand. Meta-analysis of 3 RCT's To establish the impact of intermediate care on institutional free survival in frail older people referred for needs assessment in New Zealand (NZ).	1. NR. 2. Intermediate care initiatives X3. 3. Intervention A: a home care service. B. Slow stream rehabilitation service delivered within a residential facility. C. Team of health professional care managers working at an advanced level of practice, located in the community	4. Older people >65 (n=348). 5. Older people assessed at risk of institutionalization. 6. Community & residential care. 7. Team of health professionals: the regional geriatric assessment service and/or hospital clinical team.	8. Death or permanent residential care placement. ADL, IADL, Cognitive performance, Depression. 9. The combined primary outcome of institutional-free survival is 31% lower (95% CI: 9, 47) for the care-managed service models (combined) compared with usual care Only the IADL involvement scale demonstrated a significant treatment effect for the intervention group at 0.31 (95% CI: 0.04–0.58) points lower than usual care.	10. NR. 11. Key staff work in defined geographical boundaries. A strong care management focus. A well-coordinated home-based package of care Services coordinated and configured appropriately. 12. NR.	13. The three intermediate care models, each following a strong care management approach designed to facilitate independent living, tested in a pre-planned meta-analysis, increased institutional-free survival. 14. When well-developed intermediate care services are utilized, public concern around the potential risks faced by older people when remaining at home does not appear to be supported
Nurse as Coordinator					
Feltner et al. (2014). America. Systematic Review and Meta-Analysis (n=47 RCTs).	1. Transitional care interventions: Designed to prevent readmissions among populations transitioning between care settings.	4. Adults (18+ years). 5. Heart Failure (Mainly moderate – severe). 6. Recruited during or after	8 & 9. Home visiting programmes and Multidisciplinary Heart Failure clinics reduced all-cause readmission and mortality (low SOE) at 30	10. NR. 11. NR. 12. NR.	13. Home-visiting programs and MDS-HF clinic interventions currently have the best evidence for reducing all cause readmissions and

To assess the efficacy, comparative effectiveness and harms of transitional care interventions to reduce readmission and mortality rates for adults hospitalized with heart failure.	2. Aim to avoid poor outcomes caused by uncoordinated care. 3. Categorised and defined by (a) Home Visiting Programmes; (b) Structured Telephone Support; (c) Telemonitoring; (d) Outpatient clinic based; (e) Primarily educational or (f) Other (e.g. Peer Support).	inpatient admission. 7. Home or OPD clinic depending on intervention.	days. Over 3 to 6 months, home-visiting programs and multidisciplinary heart failure (MDS-HF) clinic interventions reduced all-cause readmission (high SOE). Home-visiting programs reduced HF-specific readmission (moderate SOE). Structured telephone support (STS) interventions reduced HF-specific readmission (high SOE) but not all-cause readmissions (moderate SOE). Home-visiting programs, MDS-HF clinics, and STS interventions produced a mortality benefit. Neither telemonitoring nor primarily educational interventions reduced readmission or mortality rates.		mortality up to 6 months after an index hospitalization for persons with HF. These interventions should receive the greatest consideration by systems or providers seeking to implement transitional care interventions for persons with HF. 14. Future studies should evaluate whether interventions that reduce readmission rates over 3 to 6 months also reduce 30-day readmission rates and could directly compare 1 intervention with another e.g. home-visiting program vs. multidisciplinary clinic). Given that many patients do not have access to specialty care (e.g. in rural settings) or may prefer care based in primary care clinics, future studies should evaluate the efficacy of transitional care interventions in primary care clinics.

Assisted Discharge					
Utens et al. (2013). Netherlands RCT Investigates preference and satisfaction in hospital-at-home & usual care.	1 NR. 2 NR. 3 Hospital-at-home involves early discharge from hospital at day 4 of admission, + 1 home nurse visit on that day & for next 3 days + telephone access to hospital ward to day 7.	4 COPD n=139, 69 UC, 70 HaH. 5.COPD. 6 Hospital care for 7 days followed by UC or discharge day 4 and follow up nurse care at home until day 7 with phone access to hosp. 7 Comm Nurse.	8 Regarding patient satisfaction 49% (n=34)UC and 41% (29) HaH a score was obtained thus from those numbers, 70% were satisfied in UC group & 71% HaH group. Only significant difference was the group at home felt more unsafe at night than UC group (p<0.029) and less ability to resume activities (p, 0.018). 9 Negative comments mostly related to medical care, around medication. Intervention group were very satisfied to be at home as environment more familiar, clean, quiet, provided privacy, and ability have own regular routines.	10. NR. 11. NR 12. Visiting arrangements for home visits agreed and arranged prior to discharge; expectations of and content of home care visits need to be made explicit.	13 Preference for home treatment from both groups 42% (UC) and 86% HaH group. 14. Patient preference should be considered an option for these patients given the similar outcomes fro hospital and home care health outcomes and satisfaction is greater with home care.
9. Utens et al. (2015). Netherlands. RCT-further reporting on RCT by Utens et al (2013) To determine the effectiveness of early assisted discharge for chronic obstructive pulmonary disease (COPD) exacerbations, with home care provided by generic	1. NR. 2. NR. 3 Hospital-at-home involves early discharge from hospital at day 4 of admission, + 1 home nurse visit on that day & for next 3 days + telephone access to hospital ward to day 7.	4. COPD n=139, 69 UC, 70 HaH. 5. COPD. 6. Hospital care for 7 days followed by UC or discharge day 4 and follow up nurse care at home until day 7 with phone access to hosp. 7. Comm generic Nurses	8. No difference between groups was found in change in CCQ score at day 7 (difference in mean change 0.29 (95% CI −0.03 to 0.61)) or at 3 months (difference in mean change 0.04 (95% CI −0.40 to 0.49)). No difference was found in secondary outcomes. At day 7 there was a significant difference in change in generic HRQL, favouring usual hospital	10. NR. 11. NR. 12 Barriers refer to the challenges researcher met in trying to recruit and maintain sample; no blinding possible, treatment at home is not allowed if patients require nebuilsers or oxygen if this was not part of their prior tx prior to admission. This	13 'Early assisted discharge with home visits by community nurses is a feasible and an alternative to usual hospital care for selected patients with an acute exacerbation of their COPD' (p. 7) 14. This intervention needs to be further investigated as there are no differences of outcomes for these patients and if it is patient

community nurses, compared with usual hospital care.			care. 9. NR.	extension of sending patients with higher levels of care would reqire community nurses to have more specialist training.	preference should be facilitated.

Outreach Nursing					
Blair et al. (2011). Scotland. Systematic review To examine the evidence for home versus hospital cardiac rehabilitation	1. Inconsistency in terms of what was being provided as 'home' or 'community based' cardiac rehabilitation (CR). 2. Home' or 'community based' cardiac rehabilitation. 3. Nurse led models had a variety to components e.g. home visits, phone calls, education, support, coordination.	4. 17 studies met the inclusion criteria. Not possible to combine studies but sample sizes ranged from 30 to 1376 adults. 5. Cardiac patients. 6. In a patients' home or in a local, non-hospital location. 7. There were six studies in which nurses provided the intervention	8. Outcomes of SR related to home based CR: - A relative reduction in mortality of approx. 25%. - a reduction in re-hospitalisation - a greater reduction in serum cholesterol - A significant reduction in angina frequency - little or no difference in physical activity outcomes - Reduction in anxiety and depression. 9. Nursing component not extracted or described.	10. There was no significant difference in healthcare costs between the two patient groups over a 9 month period. 11. NR. 12. For patients living in remote and rural areas, the most prominent barriers are accessibility and distance.	13 There is no consistent difference in outcomes between home and hospital-based CR. 14. More work is needed on the long-term safety and effectiveness of different modes of home service delivery. This includes home CR and also for more modern approaches such as 'tele-rehab'
Fischer et al. (2012). USA. RCT. The focus of this study was to determine whether algorithm-driven telephone care by nurses improves lipid control in patients with diabetes attending a federally funded	1. NR. 2. Nurse led outreach programme of care. 3. Community nursing using telephone based care to target lipid control in diabetic patients.	4. Adults with diabetes (n=762). 5. Diabetes- lipid control. 6. Community Family Health Centre. 7. Community Nurses.	8. Primary outcome: Proportion of patients with a low-density lipoprotein (LDL) less than 100 mg/dL following the intervention. Secondary outcomes: numbers of hospital admissions, hospital charges per patient, the proportion of patients meeting other lipid, glycemic, and blood pressure guideline.	10. Average cost per patient to the healthcare system was less for the intervention group ($6600 vs $9033, P = .03). Telephone-based outreach may decrease resource utilization especially inpatient and emergency department usage. 11. NR. 12. NR.	13. Nurse-led, telephone-based case management program served a vulnerable, underinsured population and was associated with improved lipid control and a decrease in overall healthcare utilization. 14. Nurses can improve lipid control in patients with diabetes in a primarily indigent population

community health centre in the USA.			The percentage of patients achieving the LDL goal of less than 100 mg/dL increased in the intervention group and decreased in the usual-care group. The intervention group performed significantly better than the usual-care group on our primary outcome, the percent of patients with an LDL less than 100 mg/dL in the preceding year (increased from 52.0% to 58.5% vs decreased from 55.6% to 46.7%, P <.01). The percent of patients with an LDL <100 mg/dL increased from 52.0% to 58.5% in the intervention group and decreased from 55.6% to 46.7% in the control group (P <.01). Intervention patients trended toward fewer hospital admissions (P = .06). The intervention did not affect glycemic and blood pressure outcomes. 9. An "on-intervention" analysis compared lipid outcomes for the control group versus intervention patients with 3 or more		through telephone care using moderately complex algorithms, but a more targeted approach is warranted. Telephone-based outreach may decrease resource utilization, but more study is needed.

			contacts by the nurses during the study period. A higher percentage of the patients in this intervention subgroup were at goal at study end for the primary lipid outcome of LDL less than 100 mg/dL (69.1% vs 46.7%, P <.01). Among those patients with cardiovascular disease, only the "on-intervention" patients achieved the goal of LDL less than 70 mg/dL more than the control patients (50.0% vs 30.4%, P = .02). The intervention did not impact glycemic and blood pressure outcomes.		
Stewart et al. (2014B). Australia. RCT. This study compared the longer-term impact of the two most commonly applied forms of post-discharge Management, outpatient hospital clinic care and home based management, designed to minimize recurrent hospitalization and prolong survival in typically older patients with chronic heart failure	1. NR. 2. Focused on forms of post-discharge management designed to minimize recurrent hospitalization and prolong survival in typically older patients with chronic heart failure (CHF). 3. Patients allocated to home-based or specialized CHF clinic-based intervention.	4. Older adults (n=280) 5. Older patients with CHF. 6. Hospital Clinic and Home Setting. 7. CHF nurse specialist home intervention managed via an out-reach program of home visits with multidisciplinary team.	8. No difference was found in the primary endpoint; 20 (14.0%) home-based versus 13 (7.4%) clinic-based patients remained event-free (adjusted HR 0.89, 95% CI 0.70 to 1.15; p= 0.378). Significantly fewer home-based (51/143, 35.7%) than clinic-based intervention (71/137, 51.8%) patients died (adjusted HR 0.62, 95% CI 0.42 to 0.90: p = 0.012). Hospitalisation lengths	10. NR 11. Favorable outcomes in the home-based intervention group are consistent with some of the observed benefits of home visits to develop a more therapeutic relationship with older individuals to empower them to feel more in control and proactively manage their condition(s); focusing less on the syndrome of CHF and more on the affected individual overall. 12. NR.	13. A home based management approach to the post-discharge management of typically older patients with CHF provides a potentially cost-effective (pending a formal health economic analysis) means to both prolong CHF-related survival and limit recurrent hospital stay. Home-based intervention was, however, associated with significantly fewer all-cause deaths and significantly fewer days of hospital stay in the longer-term but not associated with prolonged

(CHF).			indicated- Home-based versus clinic-based intervention patients accumulated 592 and 547 all-cause hospitalizations (p = 0.087) associated with 3067 (median 4.0, IQR 2.0 to 6.8) versus 4410 (6.0, IQR 3.0 to 12.0) days of hospital stay (p b 0.01 for rate and duration of hospital stay). 9. NR.		event-free survival. 14. Urgent need to undertake more head-to-head trials to determine the most cost-effective form(s) of CHF management.
Stewart et al. (2012). Australia. RCT - further reporting on RCT by Stewart et al (2012). Comparison of home based intervention and a specialised clinic based intervention for people with CHF. Hypothesised that a home-based approach would be more effective in optimizing health outcomes due to a better overall understanding of the patient and their environment.	1. NR. 2. CHF nurse specialist home intervention managed via an out-reach program of home visits Nurse led chronic heart failure management programs [CHF-MPs] in specialist hospital clinic 3. NR.	4.Older adults (n=280) 5. Older Patients hospitalized with CHF. 6. Specialist Hospital Clinic and Home Setting. 7. Nurse led chronic heart failure management programs [CHF-MPs] in hospital clinic with multidisciplinary team CHF nurse specialist home intervention managed via an out-reach program of home visits with multidisciplinary team	8. Minimal difference with respect to the primary endpoint of (all-cause) death or unplanned readmission during 12 to 18 months of follow-up. HBI had a better survival profile (6% absolute difference), this did not reach statistical significance. HBI patients accumulated significantly fewer days of total all-cause (35% days fewer) and cardiovascular-related hospitalization (37% days fewer), with a consistent (borderline) trend with respect to less unplanned hospitalization (30% days fewer).	10. Reduced cost of care with Home Based Intervention. Significantly more prolonged days out of hospital alive in favor of HBI reflect decreased total healthcare costs. Costs were nearly one-third less within the HBI group 11. Study highlights patients prefer and respond better to a health intervention that appears to be more flexible to their needs. 12. NR	13. The combination of greater uptake of HBI overall, a more favourable profile free from hospitalization and death, and more favorable cost dynamics (largely mediated through a reater reduction in non-CHF–related hospitalization) are of clinical and public health significance. HBI facilitates individualised care for a cohort of patients with complex needs. 14. NR

			HBI was also associated with a non significant reduction in CHF stay. 9. NR.		
Verhaegh et al. (2014). Netherlands. Systematic Review & meta-analysis (n= 26 RCTs) Examine if transitional care interventions associated with reduction of readmission rates in short (30 days or <), intermediate (31-180) and long term (181-365 days).	1. Transitional Care Model (Naylor et al 2011 Health Affairs). 2. A bundle of discharge interventions. 3. 26 studies reviews. :54% included comp t assessment at admission, 81% self manage education during admission, 54% involved caregiver as secondary recipients of intervention. 69% had care coordination by nurse.	4. 7932 (3992 in control grps) age 18 or > (p 1536) 5. Variety of conditions ex: heart failure, COPD, asthma, general surgery 6. "Hospital to home" continuum setting. 7. NR.	8. Transitional care associated with risk reduction of 5% in intermediate-term readmissions (OR: 0.77; 95% CI: 0.62, 0.96) and 13% in long-term readmissions (OR: 0.58, 95% CI:0.46, 0.75) (Exhibit 1–3; not effective in reducing short-term readmissions (OR:0.76; 95% CI: 0.52, 1.10). High-intensity interventions associated with reduced short-term readmissions (OR: 0.59; 95% CI: 0.38, 0.92), intermediate term (OR: 0.69; 95% CI: 0.51 0.92), and longterm readmissions (OR: 0.57; 95% CI: 0.35,0.92) Low-intensity interventions sig. associated with reduced long-term readmission (OR: 0.62; 95% CI: 0.46, 0.82). Transitional care associated with a 5% lower	10. Different approaches may be needed to prevent readmits in short, intermediate, and long terms. To reduce hosp readmission, high intensity interventions might be needed such as home visit within 3 days. Interventions for effect on intermediate and long term readmit lasted >30 days. 11. NR. 12. NR.	13. Transitional care effective in reducing all-cause intermediate-term and long-term readmissions. Only high-intensity interventions effective in reducing short-term readmissions. To reduce short-term readmissions, transitional care should consist of high-intensity interventions that include care coordination by a nurse, communication between the primary care provider and the hospital, and a home visit within three days after discharge. Transitional care effective for pts >60 yrs. Ideal content of transitional care programs and target gps are still unclear. 14. Transitional interventions important where countries have a target to reduce 30 day readmissions.

			rate of intermediate-term readmission(OR: 0.74; 95% CI: 0.59, 0.93) and 8%lower rate of long-term readmission (OR:0.71; 95% CI: 0.56, 0.91) in patients > 60 yrs. No evidence transitional care associated w/ reduction short-term readmissions. Care coordination by a nurse (OR: 0.60; 95% CI: 0.37, 0.98; p ¼ 0:04), communication between the hospital and the primary care provider (OR: 0.33; 95% CI: 0.12, 0.87;p ¼ 0:03), and a home visit within three days of discharge (OR: 0.44; 95% CI: 0.26, 0.76; p < 0:001) significantly associated with reduced rates of short-term readmission. 9. Home visit within 3 days, care coordination by a nurse (nurse or ANP), communication between hospital and primary care provider components of transitional care significantly associated with reduced short-term readmission rates.		

Wong et al. (2011). Cochrane SR (N= 9 RCTs). Australia. *"To evaluate the effectiveness of outreach respiratory health care worker programmes for COPD patients in terms of improving lung function, exercise tolerance and health related quality of life (HRQL) of patient and carer, and reducing mortality and medical service utilisation.'* (p.1)	1. NR. 2. NR. 3. Outreach nurse visiting patients homes, providing support, education, monitoring health and liaising with physicians.	4. 9 RCTs with 1498 patients with moderate-severe COPD. 5. COPD. 6. home visits by a respiratory nurse or respiratory health worker, to facilitate health care, provide education, provide social support, identify respiratory deteriorations promptly and reinforce correct technique with inhaler therapy. Eligible control groups were patients who received routine care, without respiratory nurse/health worker input. 7. NR.	8. 8 studies found a non-sig. reduction in mortality at 12 months (OR 0.72, 95% CI 0.45 to, 1.15). 4 studies that assessed disease-specific heath-related quality of life (HRQL) found a sig. improvement in HRQL (mean difference -2.61, 95% CI -4.82 to -0.40). 5 studies found no statistically significant difference in the number of hospitalisations (OR 1.01, 95% CI 0.71 to 1.44), there was significant heterogeneity. 9. NR.	10. One study assessed cost, indicated that home care was an expensive form of care. 11. NR. 12. NR.	13. Home care resulted in an improvement in people's quality of life, but has an unpredictable effect on the risk of being admitted to hospital. 15. More research needed to confirm usefulness of home visits for COPD regarding costs.
Care Planning					
Wong et al. (2014). China. RCT. *To explore effects of transitional care programme among group of discharged patients with chronic diseases.*	1. Transitional care model of care 2. Pre hospital discharge (d/c) assessment (Omaha system); post discharge application of Omaha system to assess, intervene and implement transitional care programme constructed with same design for home and call groups. Post d/c follow up	4. Adults (n=610). 5. Discharged with various conditions. 6. Post hospital discharge follow up in community. 7. Nurse case manager (NCM), assisted by trained nursing students.	8 Service outcomes: home visit (HV) group significantly lower readmission (17.6%) OR=0.541, p=0.041 rate than control (17%) but no difference in call group ((11.8%, OR = 0.624, P = 0.102 at 4 weeks. Self efficacy among groups over time improved (F=6.15, P=0.002) but interaction effect between	10. Use of nursing students to support Nurse Case Manager allows NCM to focus on work requiring skill set of RN (assessment, prescription of intervention plan and case management). 11. NR. 12. NR.	13. Affirmed the effects of transitional discharge care. Telephone calls alone may not be sufficient to bring about significant reductions in readmissions. Bundled interventions of home visits and calls are more beneficial for patients after discharge, 14. In systems facing resource constraints skill

	two home visits week 1 and 3, two phone calls week 2 and 4 . 3. 3 groups – intervention group two arms: home visits w/ tele call, other tele call only. Control gp usual care – basic health advise, med instructions and arrangements for out pt follow up. detail lacking on the actual components of the calls and home visits.		group and time not significant. Intervention groups significantly higher satisfaction scores than control ((F=76.99, p<0.001)). 9. Combination of home visit and call had a significant effect.		mix using support workers to assist qualified health professionals is advocated.

Appendix 1d: Telehealth

Source and type of evidence **Country** **Aim**	**1. Definitions** **2. Overview of Models** **3. Main components**	**4. Population Group and Size** **5. Health Condition / Problem** **6. Healthcare context / setting addressed** **7. Nursing disciplines involved**	**8. Outcomes assessed and effects on outcomes** **9. Components associated with improved outcomes**	**10. Resource Implications** **11. Enablers** **12. Barriers**	**13. Key conclusions** **14. Recommendations for Practice, Policy, Education, Research**
Telephone support					
Fischer et al (2015). US. RCT. To evaluate the ability of an additional nurse directed telephone intervention to reduce primary medication non-adherence.	1. NR. 2. Nurse reminder to patient to pick up medicines not collected at the pharmacy. 3. Up to three attempts over 2 days to call the patient on the phone at different times of day. Message left on patient's phone if not contacted.	4. Patients identified as PMN (primary medication non-adherent) i.e. who had not collected their newly prescribed medicines after 14 days and three automated and one live call from the pharmacy (n=290). 5. Patients who were on medicines for hypertension, hyperlipidaemia, asthma and type 2 diabetes. 6. Geisinger Health System – network of over 40 community based clinics in Pennsylvania. 7. Nurses working with the patient's healthcare provider who prescribed the eligible medication.	8. Primary outcome was pick up of prescription within 30 days. 25% of intervention patients and 24% of control patients picked up their prescriptions within 30 days. Difference non significant Multivariate analysis OR 1.08 (95% CI 0.62-1.89, p=0.79). 9. Antihypertensives showed the highest rate of pick up (47%), hyperlipidaeamia meds lowest (5.3%).	10. NR 11. NR. 12. Delay before contact by nurses initiated was identified as a possible factor in apparent ineffectiveness of intervention. Low level of primary medication nonadherence (6% - much lower than found in previous studies) was also a factor in the lack of effectiveness of the intervention	13. Nurse reminder calls for patients who were primary medication non-adherent for newly prescribed medicines for certain chronic diseases did not prove to be effective. 14. More research needed on current rate of primary medication non-adherence (which may have changed from when first researched). Intervention may need to be changed to include re-engagement with the primary care provider who prescribed the medicine.

Fortney et al. (2013). USA RCT. Pragmatic trial (n=364) 'To compare the process outcomes and clinical outcomes of patients randomized to Telemedicine Based Collaborative Care (TBCC) TBCC versus *Practice Based Collaborative Care (PBC)C* in small remote primary care clinics lacking on-site mental specialists', (Pg 3)	1 NR 2. Intervention Telemedicine Based Collaborative Care (TBCC) an off-site team of MH specialists collaborating with on-site PC providers, using telephones, interactive video and electronic health records. Control received Practice Based Collaborative Care (PBCC) 3. Telemedicine-Based Collaborative Care (TBCC) five types of providers: on-site PC providers, and off-site DCM (RN), pharmacist (PharmD), psychologist (PhD) and psychiatrist (MD). All interactions were delivered by telephone and via interactive video, following a protocol .There were weekly team meeting who made treatment, recommendations of treatment were delivered via the DCM . Patients not responding to treatment were reviewed by a telephone pharmacist who identified medication changes as needed. A psychiatry consultation was also available via interactive accessed cognitive behavioral therapy (CBT) via interactive video,	4&5 Patients (n=364) with depression screened using the PHQ9 5. Depression 6 5 Federally Qualified Health Centers in areas with poor medical services . Small remote PC clinics associated with the largest publically-funded healthcare system in the country 7 Registered nurses with no Mental health background	8 Blinded telephone interview using following instruments Depression Outcomes Module, Mini International Neuropsychiatric Interview, Duke Social Support and Stress Scale, Quality Improvement for Depression Treatment Acceptability scale, and the Depression Health Beliefs Inventory MH service utilization, (Hopkins Symptom Checklist SCL-20), treatment response and remission. 9 Compared to patients randomized to PBCC, TBCC group had significantly and substantially greater treatment response rates, remission rates, reductions in depression severity and increases in mental health status and quality of life. Improved outcomes were achieved in the TBCC group without increasing the number of PC visits. 'The greater fidelity to the care manager protocol did not translate into improvements in the quality of pharmacotherapy in the TBCC group. The majority of patients in both groups initiated antidepressant treatment at therapeutic	10NR 11 'Improved outcomes appear to be due to higher fidelity to the care manager protocol in the TBCC model, despite the fact that off-site and on-site DCMs had similar levels of clinical experience at baseline and underwent identical training'. (Pg 8) 12 a high degree of treatment resistance may have contributed to low response/ remission rates among the PBCC group	13 & 14 results clearly indicate that contracting with an off-site depression care team yields better depression outcomes than implementing collaborative care with staff available on-site. 'Future research should examine whether having on-site nurse care managers supported by off-site tele-psychiatrists, tele-psychologists and tele-pharmacists is an effective organizational approach to delivering collaborative care.'(Pg 8)

			dosages and adherence was high. Likewise, the psychotherapy available to patients in the TBCC group via interactive video was not highly utilized, and was not likely to have contributed substantially to improved outcomes'. (Pg 7)		
Krum et al. (2013). Australia. RCT. To test the effect of a telephone support strategy, as an addition to usual care (CHAT) UC+1, in reducing major events in rural and remote Australians with chronic health failure (HF) who have limited access to healthcare.	1. NR. 2. Telephone support in disease management. 3. CHAT (UC+1) was Telephone support comprised an interactive Telecommunication software tool (TeleWatch) with follow-up to 12 months by trained cardiac nurses.	4. Adult Patients (n=405). 5. Chronic heart failure. 6. Primary care - managed in general practice. 7. Nurses with specialist Cardiovascular experience.	8. The primary endpoint was the Packer clinical composite score (relating to 1. Death. 2. Hospital admission for HF. 3 worsening heart failure. 4. Seven-point overall well-being). Found no difference between the two groups (P = 0.98). In terms of secondary endpoints there were fewer patients hospitalized for any cause (74 vs. 114, adjusted HR 0.67 [95% CI 0.50–0.89], P = 0.006) and who died or were hospitalized (89 vs. 124, adjusted HR 0.70 [95% CI 0.53–0.92], P = 0.011), in the UC+I vs. UC group. 9. NR.	10. Patients in the UC group visited their general practitioner more frequently compared with those in UC + I (12.55 GP visits/patient [UC] vs. 5.85 GP visits/patient [UC + I]). Overall, more than 65% of patients in the intervention made an average of 24 unscheduled calls/patient to the TeleWatchTM system. 11. NR. 12 Participants were required to possess and use a keypad phone at least on a monthly basis.	13 The intervention significantly reduced the number of HF patients hospitalized in the rural and remote groups. 14. Based on the beneficial impact on hospitalization in patients with chronic HF, automated telephone support should be considered for other chronic disease requiring ongoing management and multidisciplinary approaches for patients living in rural and remote regions. These diseases may include chronic arthritis, COPD, diabetes mellitus, and osteoporosis. Findings support further research to analyse the cost-effectiveness and feasibility with other chronic disease states.
Mohammadi et al. (2013). Iran.	1 NR. 2. The model is termed	4. Patients (n=106) at stage 2 or 3 COPD based on GOLD criteria (2009)	8. Home-based nursing pulmonary rehabilitation had a significant effect on	10. NR. 11. Willing and suitable	13. Home-based nursing pulmonary rehabilitation *could reduce fatigue and*

RCT The aim of the study was to assess the effect of home-based nursing pulmonary rehabilitation on fatigue, ADL and QOL in patients referred to a subspecialty training hospital	home based nursing pulmonary rehabilitation …however the only nursing discipline input is in-hospital training and follow up by a research nurses while the patient is home in the community. 3. The home-based rehabilitation programme consisted of 3 x 1hr sessions of face-to-face, individual training in the intervention group on education of COPD symptoms, correct methods of walking and pursed lip breathing and a pictorial booklet followed by practical sessions and follow-ups by nurses at the patients' home by telephone. Control group usual care consisting of drug tx. Patients were telephone contacted daily by research nurse.	5. COPD. *6.* Initial training in-hospital and follow up at home after 7 weeks. 7. In-hospital nurse training of patients in intervention and research nurses follow up with telephone calls.	fatigue (p<0.001); ADL (p<0.001). and QOL (p<0.001). 9. Nursing input was remote but deemed significant in motivating and providing feedback to patients.	patients. 12. Need for training of patients on the HM systems that are person-centred and followed up by nurses.	*improve ADL and QOL in patients with stage 2 or 3 COPD offering an alternative to institution based rehabilitation.* 14. Research suggests that although home-based nursing rehabilitation has been shown to be effective, there is still a need to design an applied model in order to present it. It seems that home-based rehabilitation programmes should be moderated based on patients' needs and contextual conditions.
Walters et al. (2013). RCT. Australia. '*This study investigated the hypothesis that telephone-delivered health mentoring by nurses in community-*	1. NR. 2. The intervention was a telephone home monitoring service delivered by trained community health nurses as health mentors. 3. Intervention training of	4. Adults aged 68 +/-8yrs (n=182). 62% moderate COPD, 53% men). 5. COPD + hx >10 yrs smoking; FEVI forced vital capacity ratio <0.7 and FEVI 30-80%. 6. At home in the	8. There was no difference in quality of life between groups, but self-management capacity increased in the HM group (PIH overall 0.15, 95% CI 0.03 to 0.29; knowledge domain 0.25, 95% CI 0.00 to 0.50). Anxiety decreased in both groups (HADS A	10. NR. 11. Patients willing to engage in telephone assessment and management. Nurses were trained in HM underpinned by theory and also focused on prevention and measured adherence to	13. Health mentoring delivered by community health nurses increased the self-management capacity of people with COPD in the community but did not change QOL. A short empathetic phone call had some positive effects and should be further assessed.

recruited patients with stable moderate or severe COPD would increase self-management capacity and improve QOL and psychological well-being' (p. 2).	community nurses was underpinned by cognitive behaviour theory with ultimate goal of patient self-management using five core components: Psycho education; self-management skills; cognitive coping skills; communication skills; promoting self-efficacy.	community. 7. Community nurses trained in health mentoring.	0.35; 95% CI −0.65 to −0.04) and coping capacity improved (PIH coping 0.15; 95% CI 0.04 to 0.26). 9. It is thought that the nursing component enhanced the findings relating to self-management and knowledge. However as the UC group also received calls but it is unknown who made those calls (/ research person or a qualified nurse) and they also had positive clinical outcomes e.g. self-management coping capacity.	delivery of a behavioural intervention. 12. High withdrawal rates from HM group	14. Optimising training and supporting HMs skill development in routine community nursing and/ general practice will be an important area for future research.
Telemonitoring					
Cruz et al. (2014). Portugal. Systematic Review (N= 17 articles include 12 studies i.e. 5 RCT; 4 pre-posttest; 3 quasi). To describe the methodologies used in home tele monitoring (HM) interventions for COPD and to explore patient's adherence and satisfaction with use of tele monitoring systems	1. Home tele monitoring facilitate self-care management of COPD. It is defined as 'the use of telecommunication technologies to transmit data on patients' health status (e.g. oxygen saturation, vital signs) from home to a healthcare center'. 2. HM for COPD can include a number of physical symptom assessments which can be recorded electronically; uploaded	4 Patients with COPD. 5. COPD. 6. Patients using HM from home to a healthcare centre. 7. One study included an in-home nurse visit. Remainder of studies included nurses assessing clinical data at healthcare centre as member of clinical teams or 'usual care' (unclear definition).	8. No clinical outcomes measured. Patients were generally satisfied and found HM useful to help them manage their disease, some difficulties is their use were related to lower compliance. Compliance was higher if data transmitted once a day and lower if more frequent,(98% vs 79% for oxygen saturation and 83% vs 60% for Resp rate). 9. As nurse visit was included in only one study	10. NR. 11. Active role that nurses can have as members of the community-based rehabilitation team. 12. Need for HM systems to suit the patient and more patient training for HM.	13 HM can be beneficial for COPD patients in supporting their self-management and knowledge of their condition. HM systems and methodologies need to be specific to needs of patients (touch screen, resp belts etc. may not suit all patients; poor dexterity). 14. Use of HM can be cost effective as opposed to hospital rehabilitation, however there is a need for more training for

	onto data centre and assessed remotely by clinicians/nurses or electronically to determine any abnormalities or exacerbation of condition 3. NR.		no nursing outcomes were reported		patients/person-centred systems/easy to use technology for people with disabilities/flexibility of data collection and transmission use of robust questionnaires to measure satisfaction.
Gellis et al. 2012/14 USA A Randomized Controlled Trial (n=115) **Aim** 'examining the impact of a multifaceted telehealth intervention(Telehealth for Heart Education Activation Rehabilitation and Treatment (teleHEART) on health, mental health, and service utilization outcomes among homebound medically ill older adults diagnosed with HF or COPD' (Pg 541) receiving home health skilled nursing care	1. NR 2 . Builds on the model of an empowering- person centered care approach 3 Intervention " HomMed " Health Monitoring System consisting of home monitor unit which provides Audio prompts instructed and transmits patient data to to a Central home health care agency. Daily monitoring of weight, noninvasive blood pressure, pulse, oxygen saturation, and temperature at preset scheduled time guided by patient preference. Text prompts present on monitor cueing patients until the task completed. Patient's data reviewed daily by telehealth Nurse who contact Patients having abnormal readings for further evaluation and where necessary referred to wider Community care team . *Usual Care* Participants assigned to the usual care plus education control group	4. Adults 65 years or older, (n=115). Homebound, frequent health care encounters Willing to learn how to use system 5. Heart Failure or COPD 6. Large hospital-based Medicare-certified home care programs. Participants recruited from hospital discharge planners physicians, surgeons, and community health centers 7. Homecare Nurse	8. Depression Center for Epidemiologic Studies Depression (CES-D) Scale and the Patient Health Questionnaire (PHQ). Medical Outcomes SF-36.—Patient Satisfaction Survey 9. 89% of patients (51/57) randomized to the telethealth services. At 3 months, depression improved significantly in the tele-HEART intervention group PHQ-9 ($F = 6.47$, $p < .008$) and the CES-D (7.81, $p < .004$) Telehealth patients reported more interest in daily activities, less sadness, and increased energy than controls. They also experienced significantly higher increases in two of SF-36 scales: general health ($F = 3.91$, $p < .016$) and social functioning ($F = 3.64$, $p < .014$) but not bodily pain. Both groups were generally satisfied with their care with no observed significant	10. NR 11. These positive outcomes for intervention patients a reduction in the number of emergency department visits and a trend, toward a reduction in days in hospital and home visits needed during hospital readmissions. 11 With assistance from the telehealth nurse, were empowered the client to become more active in ther health monitoring and management 'an empowering-centered care approach ,where the patient is coached to fi nd their strengths and be self-directed in problem solving and management of the chronic illness with a telehealth nurse as a coach'(pg 547). 12 What constitutes Tele-HEART intervention requires further clarity as it	13. 'Telehealth may be an efficient and effective method of systematically delivering integrated care in the home health sector. The use of telehealth technology may benefit homebound older adults who have difficulty accessing care due to disability, transportation, or isolation Findings from this randomized study may be generalizable to other Medicare-certified home health care agencies public or private because they all utilize a uniform centralized system to support the delivery of home-based nursing skilled care' (Pg 550). 14 A deconstruction study was recommended. Further investigation into understand the variable ant their relationship to patient motivation for behavioral change. an economic analysis would

	received standard home care services provided by registered nurses in the role of case managers		differences. Control group had significantly more visits to the emergency department. The telehealth group had fewer hospital days but was not significant at 12 months. No significant group differences in number of home health care visits over 12 - months .	may be difficult to work out which components have the effects on the study outcomes	be important
Konstam et al. (2011). USA. RCT. To examine the additive value of automated home monitoring (AHM) to a previously described nurse-directed Heart Failure (HF) management program (SPAN-CHF), with attention to Health related QOL.	1. NR. 2. Automated home monitoring. 3. SPAN-CHF =Specialised Primary and Networked Care in Heart Failure containing a) specialized nurse managers, b) pharmacologic guidelines; c) visit by nurse and/or telephonic weight and symptom monitoring; and 4) compliance education AHM is a technological component designed to convey weight and vital signs information and a text message component addressing symptoms, functional status, and medical regimen compliance.	4. Adult patients (n=188). 5. Recent history of decompensated HF. 6. Home. 7. Specialised nurse managers.	8. SPAN-CHF with and without AHM improved HRQL at 45 and 90 days compared with baseline with respect to Physical, Emotional, and Total domain scales but no significant difference emerged between with and without AHM groups. 9. Researchers acknowledge that it is not possible of assess the relative contribution of each component	10. NR. 11. NR. 12. NR.	13 The study did not support the added benefit of a technological intervention over a non-technological intervention. 14. AHM has the potential to allow for greater nursing workloads which should be further researched.

Steventon et al (2013) UK Cluster Randomised trial (n=2426) Telecare was compared with 'usual care'	1. NR 2. Telecare using functional monitoring 3'Functional monitoring, including the 'Lifeline' base units and pendants, bed and chair occupancy sensors, enuresis sensors, epilepsy sensors, fall detectors and medication dispensers. • Security monitoring, including bogus caller buttons, infrared movement sensors and property exit sensors. • Environmental monitoring, including gas, monoxide and smoke detectors, heat sensors, temperature extremes sensors and flood detectors • Standalone devices not linked to a monitoring centre, such as big button phones, key safes for careers and memo minders. Data from the peripheral devices were sent to a monitoring centre via a telephone line and alerts were monitored continuously' (Pg 502). Compared to usual care	4. People with social care needs, aged over 18 5 people with social care needs e.g. minimum level of social care service , mobility difficulties; At risk of falling; cognitive impairment 6. All general practices in Cornwall, Kent and Newham with 238 practices allocated to control or intervention groups, of which 217 ultimately supplied participants for the trial 7 practice nurse	8. Followed up for 12 months proportion admitted to care Secondary endpoints included: mortality Health care utilization: number of weeks receiving domiciliary care , inpatient hospital bed days, emergency admissions, elective admissions, admissions for falls, outpatient attendances and accident and emergency visits. 9 Of intervention group 46.8% were admitted to hospital compared with 49.2% of controls. This difference was not statistically significant There were also no significant differences in the number of weeks receiving domiciliary social care between groups General practitioner contacts were significantly higher among intervention than controls (incidence rate ratio: 1.18, 95% CI: 1.01–1.38, P = 0.033), There were no significant differences between groups in the cost associated with hospital care and social care; Mortality rates were not significantly different between groups. There were no significant differences in lengths of	10. NR 11 Decision-making should wait until results relation to the quality of life, carer outcomes and experience are available 12NR	13. Telecare as implemented in the Whole Systems Demonstrator trial did not indicate any significant reductions in service use assessed over 12 months 14. No major recommendations

			hospital stays		
Vuorinen et al (2014) Finland Randomized controlled trial (two-arm Stepwise Matched pair design) (n=94) **objective** ‘to investigate whether the multidisciplinary care of Heart failure patients could be improved with telemonitoring at the Cardiology Outpatient Clinic of Helsinki University Central Hospital (HUCH), primarily in terms of reducing HF-related hospitalizations’.(pg2)	1. NR 2. A Telemonitoring-Assisted Self-Care Model 3. Intervention patient regularly reported relevant health parameters to the nurse using a mobile phone app Patient provide home care pack which including: Weighing scale, BP Monitor a mobile phone with a pre-installed software app Self-care instructions which advise when to carry out and report the results together with the assessment of symptoms once a week. On submission of results, they receive automatic machine-based feedback if parameter are within the Individualized targets set by the nurse. The nurse reviews status and weekly or more frequently if necessary **Usual Care** multidisciplinary care approach including patient guidance and support for self-care .	4. 18-90 year old heart failure 5 Heart failure (HF) patients whose left ventricular ejection fraction was lower than 35%, NYHA functional class ≥2, requiring regular follow-up. 6. Outpatient Clinic of Helsinki University Central Hospital (HUCH), 7. Heart failure nurse	8. Follow-up at 6 months The primary outcome was number of HF-related hospital days Secondary outcomes: Use of health care resources, (medication. ED and Outpatient visits, nursing & physian time), user experience Self-care behavior (European Heart Failure Self-Care Behaviour Scale) 9. No difference was found in the number of HF-related hospital days (incidence rate ratio [IRR]=0.812, P=.351), which was the primary outcome. The intervention group used more health care resources: they paid an increased number of visits to the nurse (IRR=1.73, P<.001 spent more time at the nurse reception (mean difference of 48.7 minutes, P<.001 and there was a greater number of telephone contacts between the nurse and intervention patients (IRR=3.82, P<.001 for nurse-induced contacts and IRR=1.63, P=.049 for patient-induced contacts). There were no statistically significant differences in patients’ clinical health status	10 NR 11 Patients of the telemonitoring group took self-measurements more regularly and had internalized the importance of regular self-monitoring. Reception visits were more efficient, no time was wasted on irrelevant issues. Greater adherence to taken drugs more precisely. Data provided important support for physicians in decisions about the patient’s treatment 12 A potential disadvantage nurse identified issues with the patient inputting results and there was a possibility that some users sometimes inputted false data. The usage of the nurse’s time was somewhat appeared to have intensified as part of delivery of telemonitoring technology	13 ‘The telemonitoring increased significantly the nurse’s workload by increasing the number of reception visits and the number of telephone contacts. Extra work is required on top of the multidisciplinary care approach. To lessen the increased workload of health care professionals, the potential of active assistance technology is worthy of further consideration to respond to patients’ queries and to keep them motivated’ (pg8). 14. The increased workload should be carefully considered when implementing telemonitoring in the care of HF patients

			or in their self-care behavior. The technology received excellent feedback from the patient and professional side with a high adherence rate throughout the study telemonitoring-assisted care approach led to increased use of health care resources while showing no quantified improvement in the patients' condition		
Wakefield et al (2013) RCT USA 'To evaluate the efficacy of a nurse managed home tele-health intervention to improve outcomes in veterans with co-morbid diabetes and HTN' (p254).	1 NR 2 Home tele-health intervention involving nurse led remote monitoring. High and low intensity interventions compared 3 High intensity: daily BP, blood glucose as directed. Branching disease management algorithm focusing on diet, exercise, smoking cessation, foot care, medications, weight management, preventative care and behaviour modification and lifestyle modifications. Prompts, questions and education received each day. Low intensity intervention: daily BP, blood glucose as directed. Smaller subset of questions used, without the branching algorithm. Usual care: usual follow up	4 Adults (n=302) divided between high intensity (n=93), low intensity (n=102) and usual care (n=107). 5 Comorbid diabetes and hypertension 6 Home 7 Tele Nurses (n=unspecified)	8 HbA1C: reduced in intervention group during the 6 months of the intervention (P= 0.0003 - 0.0001) but comparable with control group by 6 months after intervention. Systolic Blood Pressure (SBP): significant reduction for high internsity group at 6 and 12 months (p=0.01) Adherence: Improved in all groups, with no differences between groups. 9 NR	10 NR 11 Nurse monitoring and collaboration with a primary care physician 12 NR	13 Home telehealth increases contact with patients and enables earlier detection of problems. Home telehealth can improve outcomes in patients with comorbid chronic illness in the community. 14 Further research neeeded to establish optimal frequency and intensity for these types of interventions Home telehealth is a viable intervention for patients with chronic conditions in the community setting.

	appointments in primary care clinic.				
Algorithim driven					
Finkelstein et al. (2013). USA. RCT To determine the relative performance of a computer-based Bayesian triage algorithm compared with a manual nurse-based triage system in terms of patient health and health-related quality of life (QOL) in lung transplant recipients participating in the Home Spirometry Research Program (HSRP).	1. NR. 2. Home monitoring (HM) of pulmonary function by patients and assessment and interpretation either by specialist nurse or by using the algorithm. 3. Control arm: patients' Home Monitoring reports assessed by nurse and determined if physician follow up necessary. Intervention: HM reports assessed by the algorithm and determined if need for physician follow up.	4. Lung transplant patients (n=65) >14 years and discharged from hospital to home stratified and randomised by age >/=50 and </=50 and functional capacity. 5. Lung transplant patients. 6. Home. 7. Research nurses.	8. Primary clinical was Pulmonary Function Tests (PFT) i.e. Forced Expiratory Volume FEV) % decline from baseline to 1 year and secondary outcome was after 2 years. QOL secondary outcome measured using the SF-36 9. There were no significant differences between groups in FEV1 and SF-36 scores at baseline, indicating the groups were comparable. A comparison of annual pulmonary function (FEV1) changes from baseline within each arm showed no significant differences in percentage FEV1 decline between groups after year 1 and year 2.	10. NR. 11. Use of computerized systems as good as nurse assessment once nurses are educated on such procedures. 12. Quality and safety need to be established with further research .	13. Could be cost effective if safety is established. 14. NR.
SMS					
Blank et al. (2011). USA. RCT. *"The objective of this study was to test the effectiveness of a community nursing*	1. NR. 2. Preventing AIDS Through Health (PATH)where an ANP collaborated other health/mental health care providers to help improve adherence and self-care. 3. Minimum of one visit per	4. Adults 18+ years (n=238) 5. HIV + with Serious Mental Illness. 6. Community based. 7. Community based advanced nurse	8. The intervention group exhibited a significantly greater reduction in lg viral load at 12 months (d=-.361 log 10 copies per milliliter p<.001). Differences in CD4 counts from baseline to 12 months were not statistically significant.	10. NR. 11. NR. 12. ANPs in this study were university based and trained in research so it may be difficult to replicate the findings of this study with community based	13. A tailored intervention based on the PATH Model and provided by an ANP in the community can improve outcomes for individuals with HIV and co-occurring serious mental illnesses. People with these conditions can be treated successfully with

based APN intervention (PATH) to promote adherence to HIV and psychiatric treatment regimens" (P. 1318)	week for a year. Cascading approach building intensity. Activation of social networks, use of beepers with alphanumeric displays then prepaid phones to encourage particiapnts to follow regimen. Final step was directly observed therapy	practitioner.	9. Reduction in Viral Load within intervention group.	nurses.	the right range of supports and their viral loads can be reduced. 14. Consider redesigning the health service provision for this vulnerable group to include the use of ANP's and the PATH model.
Web based					
Stasiak et al (2014) Netherlands A cluster RCT 'This study evaluated the effect of E-health4Uth and E-health4Uth and consultation on well-being (ie, mental health status and health-related quality of life) and health behaviors' Pg 2	1. NR 2. Web based intervention 3. Web-based tailored messages (E-health4Uth and E-health4Uth and consultation) The tailored messages focused on topics related to health-risk behaviors preventive youth health care setting. Both interventions used the same Web-based but in the consultation group, adolescents who were at risk of mental health problems were also referred to a school nurse for a consultation. Adolescents in the control group received no messages following the initial assessment.	4. Adolescents average 15-16 years of age (n=1702) 5. NR 6. Two youth health care organizations 12 secondary schools 7 School nurse	8. 4-month follow-up assessing alcohol consumption, smoking, drug use, condom use, mental health via the Strengths and Difficulties Questionnaire , Health related quality of life using Child Health Questionnaire-Child Form 9. Adolescents in the *E-health4Uth group* used condoms significantly more often compared to the control group (52.1% vs 40.6%; OR 2.09). Health-related quality of life in the E-health4Uth group was significantly better compared to the control group (mean 75.34, SD 16.56 vs mean 73.73, SD 18.17) Both intervention groups reported a significantly better mental health status compared to adolescents in the control group (SDQ: mean 8.42, SD 5.05 vs 9.07, SD 5.38). No improved	10 NR 11 NR 12NR	13 'Findings from this study support the use of the E-health4Uth and consultation intervention in promoting the well-being of adolescents at risk of mental health problems'.Pg13 14. 'Future research is needed to further evaluate the effects of the consultation as a standalone intervention, and the dual approach of further tailored eHealth messages and a consultation'. (Pg 13)

			effects found on health behaviors from the intervention. Adolescents in the E-health4Uth and consultation group, who were at risk of mental health problems and referred for consultation with the nurse, had significantly better mental health status (SDQ: mean 12.79, SD 5.63 vs 14.57, SD 5.03) and a better health-related quality of life (mean 69.56, SD 18.37 vs 62.53, SD 20.08) at follow-up than those in the E-health4Uth group and the control		
Finkelstein et al 2011 RCT USA 'To evaluate the perception, satisfaction and utilisation of a home telehealth service for frail elderly people living independently in their home communities' (p288)	1 NR 2 Virtual Assisted Living Umbrella for the Elderly (VALUE) Home telehealth service 3 Web portal which allowed videoconferencing and electronic messaging between nurses and clients. This provided access to health information, ordering health and home care services, e.g. Medication refills and appointments, and general internet access. Physiological monitoring deices were used appropriate to patients' health conditions.	4 Older adults (n=99) 5 Frail 6 Home 7 Nurses (n=unspecified)	8 Perception of telehealth service: intervention group significantly more positive towards technology at 60 days compared with their baseline scores , and compared with the control group at 60 days (P<0.001) Satisfaction: Intervention group reported that the system met their overall expectations (mean+ 9 out of 10), and would recommend it to others (Mean= 9.5 out of 10). Utilisation: All able to use portal effectively after a demonstration by the nurse.	10 Telehealth intervention was reported by some patients as saving them money. 11 Simple system and basic instructions from nurses necessary for participants to learn to use system. 12 Lack of Broadband availability in some areas	13 Frail older people were able to utilise a home telehealth system easily and this was associated with a decrease in healthcare utilisation. The system also appeared to have high levels of patient satisfaction. 14 Web portal home telehealth system was effective and had high rates of patient satisfaction and so could be implemented in other settings.

			5% of videoconferencing calls disconnected due to technical difficulties Reduced rates of ED visits and home care use among intervention group following intervention, compared with control group. Higher rates of visits to eye care doctor among intervention group (P=0.008). Lower use of transportation services among intervention group than controls following intervention (P=0.017). 9 NR		

Appendix 1e: Nursing in Community with Non-Professional CHWs

Miscellaneous					
Filene et al. (2013). Meta-analysis. (n=51 studies. Type of studies NR other than noting that effect sizes could be calculated from studies). "*to determine which individual home visiting program components have the most power to predict key parent and child outcomes*" (p. S101).	1. NR 2. NR other than home visiting 3. Typical child development information, child care & routines, focus on home, environment – safety & cleanliness, attending to child's emotional needs, promoting cognitive & socio-emotional development, instrumental assistance, Selecting alternative caregivers, parental relationships & health, parenting practices, family planning, self-, stress & anger management, support & social networks, adult literacy & academic achievements, problem solving, goal setting, case management, rehearsal or role-playing, matching home visitor to client e.g. race, ethnicity, standardized curriculum.	4. Pregnant women and families with children from birth to 3 years in U (n=unspecified) 5. Early childhood development (typically developing). 6. Children's family homes and clinics 7. Professional (e.g. nurse, psychologist, social worker) & non-professional home visitors.	8. Clinical/Health outcomes: (6 in total) Maternal life course, child cognitive outcomes & parenting behavior & skills: significant positive average effect sizes. Birth outcomes, child physical health, & child. Maltreatment: no significant differences in effect sizes. 9. Non-professionals, matching of home visitors to clients & problem solving associated improved birth outcomes (e.g. birthweight, absence of complications). Parent education on developmental norms, behavioural management & discipline techniques, responsive associated with improved parent behaviours & skills outcomes. Parenting practices associated with better parenting behaviours & skills and with cognitive outcomes in children. Professional home visitor predicted better child physical health,	10. NR. 11. NR. 12 NR.	13. NR. 14. NR.

			Parent support groups associated with small effect sizes for child physical health, Selecting alternative caregivers & problem solving associated with better outcomes for child maltreatment. Note: Based on sensitivity analysis effects of problem solving on birth outcomes no longer significant.		
Tafts et al (2015). Australia. RCT "*To test whether a theory-informed, maternal and child health (MCH) nurse-designed model increased and sustained DV screening, disclosure, safety planning and referrals compared with usual care"* (p1).	1. NR. 2 MOVE model (Intervention informed by Normalisation Process Theory, a nurse-designed good practice model). 3. Intervention: nurse mentors, strengthened relationships with DV services, nurse safety, a self-completion maternal health screening checklist at three or four month consultations and DV clinical guidelines. Usual care: government mandated face-to-face DV screening at four weeks postpartum and follow-up as required.	4. Community based maternal and child health teams (n=8). 5. Maternal and child health. 6. Community. 7. Nurses (n=163), and domestic violence liaison workers.	8. Primary: women screened for DV; Women's disclosure and nurse safety planning; Referrals. Secondary: Prevalence of any DV in the previous 12 months; DV during pregnancy and maternal reporting of abuse as a child; difference in proportions of women reporting harm. MCH team screening: No significant differences between groups at 4 months but increased proportion of screening (36.5% in intervention vs 23.5% in controls). Maternal heath checklists at 3 months show average screening rate of 63.1%. Safety planning rates: Increased for intervention group, 3 to 4 times higher than control	10. NR. 11. Longer screening time focused on the mother and her needs. 12 MOVE process evaluation identified implementation barriers, such as lack of nurse reflective practice and the coinciding introduction of a new practice framework. Using survey data online may reduce response rate.	13. Safety planning rates may be improved by nurse designed model of screening and care. The involvement of staff is critical both for effectiveness and sustainability of DV interventions in health care settings 14. Greater attention should be given to how screening is implemented in primary care and further research should be undertaken on intermediate outcomes such as safety planning and its benefits.

			group, at 2 year follow up ((RR 2.95, CI 1.11–7.82) to four times those of CG (RR 4.22 CI 1.64–10.9). 9. Self-completion DV screening was welcomed by nurses and women and contributed to sustainability.		
Community Health Workers					
Allen et al. (2011). USA. RCT. To evaluate the clinical effectiveness of a comprehensive program (COACH) of CVD risk reduction delivered by teams of nurse practitioner(NP)/ Community health Worker (CHW). HM	1. NR. 2. Risk reduction based on a theoretical framework using community-based participatory research (CBPR). 3. EUC = Enhanced usual care by primary provider containing feedback regarding CVD risk factors to the patient and their provider. COACH = Community Outreach and Cardio-vascular Health which focused on behavioural interventions to bring about therapeutic lifestyle changes (TLC), medication adherence , attendance at appointments as well as prescription and titration of medications. The NP functioned as a case coordinator for each	4. Adults (n=525) > 21yrs old. 5. Documented cardio-vascular disease (CVD), type 2 diabetes. 6. Community health clinics. 7. Nurse practitioner (NP).	8. Patients in COACH compared to EUC group had significantly greater improvement in total cholesterol(difference,19.7mg/dL), LDL cholesterol (difference,15.9 mg/dL), triglycerides (difference, 16.3 mg/dL), diastolic blood pressure (difference, 3.1 mm Hg), systolic blood pressure (difference, 6.2 mm Hg), HbA1c (difference, 0.5%), and perceptions of care quality of their chronic illness (difference,1.2 points) at one year. 9. It was considered that it was the combination of NP/CHW in the intervention that achieved significant improvement in CVD risk profiles.	10. NR. 11. Using CHWs was considered an enabler as the trust between them and the patient was considered to enhance the intervention delivery. 12. Authors suggested that the higher dropout rate in the intervention group may have been due to the increased commitment to participate in more visits to the clinic resulting in higher costs to participants.	13. An intervention delivered by a team of NP/CHWs using customised treatment regimens based on treat-to-target algorithms can be an effective approach to improve risk factor status and perceptions of chronic illness care in hard to reach high-risk patients. 14. Further analyses will evaluate the cost effectiveness of NP/CHW model. Further study is needed to determine if this type of intervention translates into improved morbidity and mortality from CVD.

	participant and was delivered by home visit and telephone.				
Allen et al. (2014). USA RCT further reporting on RCT by Allen et al 2011. To analyse the cost-effectiveness of a comprehensive program (COACH) of CVD risk reduction delivered by teams of nurse practitioner(NP)/ Community health Worker (CHW) *"to improve lipids, blood pressure, and HbA1c levels in patients in federally-qualified metropolitan community health centers"* (p.1)	1, 2 &3 as above in Allen et al 2011	4. Adults (n=525) > 21yrs old. Costs collected on a sample of 30% of intervention patients for one year compared costs calculated on a chart review with a sample of UC patients. 5. Documented cardio-vascular disease (CVD), type 2 diabetes. 6. Community health clinics. 7. Nurse practitioner (NP).	8. 70% of participants had at least four in-person visits with the nurse. The NP averaged 17 (CI 16, 19) minutes per direct encounter time with the patient and another 16 (CI 14, 17) minutes for non-encounter activities. The highest percentage of time with the patient was spent in counselling regarding medications (43%). In terms of cost-effectiveness over 1 year: $157 for every % drop in systolic blood pressure and $190 for every % drop in diastolic blood pressure; $149 per % drop in HbA1c; and $40 per % drop in LDL-C. Exceptionally for HbA1c, $1255 for a drop of one unit (i.e. from 8% to 7%). 9. The total cost of intervention from the NP/CHW team exceeded the cost for Medical Doctor (MD) care; however, the average per patient incremental total cost (NP/CHW –without MD) was only $627.	10. NP and CHW time spent delivering the intervention – number of visits' time and the types of activities; time for preparation and follow-up activities; consultation with other health care providers, contacting the pharmacy or insurance agency. Hourly salary including benefits for the NP ($51.14) and the CHW ($25.78). Other provided, lab and drug costs were calculated and analysed. 11. Using CHWs was considered an enabler as the trust between them and the patient was considered to enhance the intervention delivery. 12. NR.	13. A nurse-led team which includes CHWs is a clinically and cost-effective model of care. 14. Evidence-based treatment algorithms should be used as they are a successful, cost-effective, strategy to implement national guidelines to manage of, hypertension, hyperlipidaemia and diabetes in high risk vulnerable populations.
Hamid et al (2014). USA. RCT	1. NR. 2. Nurse- community health worker intervention focused on diabetic control	4. Samoan adults with type 2 diabetes (n=unspecified) 5. Diabetes type 2.	8. Healthcare utilization, including ED visits, hospitalizations, primary care physician (PCP) visits, association of utilization with	10. Nurse- CHW diabetes intervention increases primary care utilization by 71% in the CHW group	13. This study reports the positive input of CHW and PCP visits with regards to diabetic control, self - management behaviours

The focus of this study was "*to examine the impact of a successful 12 month behavioral intervention to improve diabetes control on healthcare utilization in American Samoa*" (p.1).	over a 12 month period in comparison to usual diabetic care 3. 12 month nurse-community health worker (CHW) team intervention, compared to usual care.	6. Community primary health care centre. 7. Nurse case manager (NCM) and nurse-community health worker (CHW)	change in HbA1c. With regard to ED visits, hospitalisation and PCP visits at 12 month follow up this study reports a statistically significant increase in PCP visits in the CHW group during the intervention year. 9. The CHW intervention had a greater effect in reducing ED visits in those who had more ED visits before study enrollment; each additional ED visit before enrollment was associated with a 20% (95% CI: 12%, 26%) reduction in the relative risk of ED visits during the intervention year. The 12-month CHW diabetes intervention increased primary care utilization by 71% in the CHW group compared to the usual care group,	compared to the usual care group. This increased utilisation results in improved diabetic control, self-management and monitoring. 11. NR. 12. NR.	and overall monitoring of the condition. 14. This study makes recommendations for further research linked with conducting a cost effectiveness analysis of healthcare utilization, and use of longer follow up periods for evaluation of long-term impacts of CHW interventions on utilization.
Meghea et al. (2012). USA. RCT To evaluate *'the advantage of an enhanced prenatal and postnatal services (EPPS) programme using nurse–*	1. 'Home visitors are usually nurses who assess and manage health problems, co-ordinate care, provide health education and other activities to improve maternal and child health and development' (p.27).	4. Medicaid-insured pregnant women (n=530). 5. Pre-natal & post natal infant health care. 6. Home visits. 7. Community Care nurses (IG & CG groups) &	8. Outcomes Assessed: (IG vs CG) Fewer incidences of mother-reported asthma/wheezing/croup among babies whose mothers have low psychosocial resources (13% vs. 27%, P = 0.01) & whose mothers have low psychosocial resources and	10. NR. 11. Targeting such team interventions at common health problems of infancy and childhood or at managing diagnosed chronic conditions may prove more successful.	13. There is no strong evidence that infant health in low-income families was improved by the addition of CHWs to a programme of enhanced prenatal/postnatal services that included nurse-only home visitation.

CHW home visitation in improving infant health in low-income families, when compared with usual community care (CC) including nurse home visitation' (p.28).	2. Home visitation programme, state sponsored through Medicaid enhanced prenatal & postnatal services (ESSP) with the addition of nurse-CHW home visits. 3. Standard Medicaid ESSP during pregnancy & 1st 12 months of life: Risk screening, transportation, psychosocial counselling, nutritional guidance and pregnancy and parenting education, primarily through home visitation by a nurse during pregnancy. Additional components for IG were CHW phone contacts & home visits with specific activity modules: self-esteem; positive health behaviors; self-awareness of stressors, causes of stressors and active problem solving; self-determination through development of personal life goals; and community resources.	community health workers (CHW – IG only).	high stress (17% vs. 29%, P = 0.08). No other statistically significant infant health effects of the nurse–CHW team home visitation programme compared with CG. in the subgroups defined by low psychosocial resources and high stress. No improvements in recurrent ear infections or feeding problems. No differences in immunizations, hospitalisations or ear infections. 9. No applicable since IG Nurse–CHW team intervention did not improve general infant health compared with standard CC including nurse home visiting.	12. NR.	14. Cost effectiveness research on home visiting programmes needed.
Volunteer					
Kemp et al. (2011). Australia. RCT	1. NR. 2. MECSH: Structured nurse home visiting and parenting education and	4. At-risk mothers living in a socioeconomically disadvantaged area (n=208).	8. Primary Outcomes: Quality of the home environment for child development (12–24 months): parent child interaction during free play; Child mental,	10. NR. 11. NR. 12. The number of	13. The MECSH programme showed that in many outcome areas there were no differences in outcomes for first-time

"To investigate the impact of a long-term nurse home visiting programme, embedded within a universal child health system, on the health, development and well-being of the child, mother and family" (p1).	support programme vs usual universal care. 3. Structured home visits, post natal child development education, access to secondary and tertiary early childhood health services, volunteer home visiting services and family support services within the local area, group activities and community links.	5. Child and maternal health. 6. Home care, socioeconomically disadvantaged area. 7. Child and family health nurses.	psychomotor and behavioural development at 18 months. Perinatal outcomes: low birth weight and preterm birth, extracted from hospital clinical records. Child respiratory and gastrointestinal illness and immunization status, measured by maternal self-report, being fully immunized or not at child-age 24 months. Maternal and household smoking during pregnancy and over the first 2 years of life. Breastfeeding over the first 2 years of life, Maternal health (SF-12), depression (EDS) and social support, the number of stressful life events in the previous year and family functioning, and experience of being a mother. Parent–child interaction: No significant difference in parent–child interaction between the intervention and comparison groups Mothers receiving the intervention were more emotionally and verbally responsive than comparison	participating nurses, and hence mothers, was limited by the funding, infrastructure and management capacity within the service.	and multiparous mothers. This challenges the assumptions of many nurse home visiting programmes that their benefits are confined to first-time mothers. 14. The MECSH trial showed some significant results and some trends that require replication in larger samples of mothers drawn from a similarly widely defined at-risk group, including older, multiparous mothers, and mothers with higher levels of education.

			group mothers (mean difference 0.5; 95% CI 0.1 to 0.9). Duration of breastfeeding was longer for intervention mothers than comparison mothers (mean difference 7.9 weeks; 95% CI 2.9 to 12.9). Child mental, psychomotor and behavioural development at 18 months: no significant overall group differences in child mental, psychomotor or behavioural development. Birth weight: No significant difference between groups. Mothers assessed antenatally as having psychosocial distress benefitted from the intervention across a number of areas. 9. NR		
Lay personnel					
Dennis and Dowswell. (2013). Cochrane Systematic Review To assess the effect of psychosocial and psychological interventions to reduce the risk of developing postpartum depression.	1. NR. 2. Postpartum home visits provided by public health nurses or midwives/ lay (peer)-based telephone support/ interpersonal psychotherapy 3. Psychosocial and psychological interventions vs usual AN/,PN care to reduce risk PND. Also to	4. 28 trials, N= 16912/ almost 17,000 pregnant women and new mothers including adolescents and younger mothers. 5. Primary care. 6. Postnatal depression-EPDS used most frequently to assess but other tools also used.	8. Less prevalence of PND: outcome assessments varied considerably between studies, ranging from three to 28 weeks. 9. Psychosocial interventions: antenatal/postnatal classes/groups, home visits/ telephone support/, early postpartum support/ continuity of care models. Psychological interventions:	10. NR. 11. Midwifery-based flexible postpartum care and lay telephone support interventions incorporated screening with the Edinburgh Postnatal Depression Scale (EPDS) for the early identification of depressive symptomatology	13. Psychosocial and psychological interventions significantly reduce the number of women who develop postpartum depression. No evidence that a specific health professional providing an intervention increased the likelihood of a preventative effect. 14. Interventions that are

	examine (1) effectiveness types interventions, (2) effectiveness of professional versus lay interventions, (3) effectiveness individual vs group interventions, (4) effects of intervention onset and duration, (5) whether interventions more effective in women selected with specific risk factors.	7. Nurses, midwives and others (physicians, mental health specialists, therapists, lay (peer) individuals.	debriefing, CBT, interpersonal psychotherapy. There was beneficial effect on the prevention of depressive symptomatology in the meta-analysis of all types of psychosocial and psychological interventions. Intervention group significantly less likely to develop PND (ave RR 0.78, 95% CI 0.66 to 0.93; 20 trials, 14,727 women). Promising interventions: (1) intensive, home visits by PHNs or midwives (RR 0.56, 95% CI 0.43 to 0.73; two trials, 1262 women); (2) lay (peer)-based telephone support (RR 0.54, 95% CI 0.38 to 0.77; one trial, 612 women); (3) interpersonal psychotherapy (st m diff -0.27, 95%CI -0.52 to -0.01; five trials, 366 women). Professional- and lay-based interventions were both effective in reducing the risk to develop depressive symptomatology. Individually-based interventions reduced depressive symptomatology at final assessment (RR 0.75, 95% CI 0.61 to 0.92; 14 trials, 12,914 women) as did multiple contact	12. NR.	individually based and initiated postnatally may be beneficial. Interventions targeting 'at-risk' mothers may be more beneficial and feasible than those including a general maternal population.

			interventions (RR 0.78, 95% CI 0.66 to 0.93; 16 trials, 11,850 women). Interventions that were initiated in the postpartum period also significantly reduced the risk to develop depressive symptomatology (RR 0.73, 95% CI 0.59 to 0.90; 12 trials, 12,786 women). Identifying mothers 'at-risk' assisted the prevention of postpartum depression (RR 0.66, 95% CI 0.50 to 0.88; eight trials, 1853 women).		
Radcliffe et al. (2013). USA. RCT *"To demonstrate whether participation in this home visiting program led to differential changes in referral to early intervention and receipt of early intervention services"* (p.S154).	1. Home visiting is a programme designed *"to improve the physical and mental health of mothers, such as increasing time to subsequent pregnancies and improving parenting skills"* (S154). Noted: that such programmes usually run in parallel to child health programmes but can be in collaboration with paediatric services. 2. IG: the MOM Programme which is *"an innovative home visiting program designed to serve urban, low-income mothers and children'* (p. S154). Focuses on both parents and child health i.e. home visits and well child clinics. Delivered over 3 years CFG: no home visits.	4. Mothers from areas with high poverty rates and had to have given birth to a singleton healthy infant (weight 2500 g; no identified genetic or developmental disorders). 302 recruited. 89% retained (n=271). 5. NR. 6. Home visits and scheduled well child clinics. 7. Home visitors included both lay workers and pediatric nurse practitioners.	8. Outcomes Assessed: Time staff spent with each family per month: no statistically significant differences between groups. Likelihood of recurring health visits: Home-visited mothers in the IG were 10.77 times as likely to keep pediatric appointments, compared with those not visited (OR: 10.77 [95% confidence interval (CI): 6.05–19.17]; P<.0001.). 9. The number of home visits (completion of at least 7 out of 9 visits).	10. NR. 11. NR. 12. Staff at child clinics often discouraged mothers from these visits or refused to makeappointments unless child was ill.	13. Home visiting programs can provide important partnerships with pediatric health care providers. Integrating home visiting services with pediatric care can enhance child health, and warrant expansion. 14. Schedule home visits just before scheduled clinic visits.

	3. Home visits (HV) pre clinic visits (CV); use of a team of home visitors rather than a single visitor per family; weekly supervision meetings to monitor the progress of all children enrolled; structured, model-driven checklists for each visit; use of regular reminder calls before HV & before/ after CVs.				
Segal et al. (2012). Systematic Review (Nonrandomised controlled studies n=14; cohort studies n=2; RCTS n=36). *"to gain a new understanding of the home visiting literature for the prevention of child maltreatment by taking a program logic approach that incorporated a theory of change"* (p55).	1. NR. 2 Home visiting programs. 3. Mean number of visits ranged from 2-41, and the length of visit varied from 20 mins – 4 hours. home-visiting programs were, in order of frequency: education/ training/information (*n* = 46), emotional support (*n* = 43), referral and linking to services/advocacy (*n* = 38), modeling/role model (*n* = 19), problem solving (*n* = 16), counseling/therapy (*n* = 16), case management (*n* = 5), provision of goods and services (*n* = 5), responsive clinical services (*n* = 2), and provision of child care (*n* = 2).	4. Teenage/adolescent parent (n=7); high-risk families (n=4); parents using illicit drugs (n=2). Population of many programs overlapped two or three risk categories. Most programs targeted people at elevated risk e.g. abuse, current drug or alcohol problems, or several risk characteristics (*n* = 23). 5. Child abuse and maltreatment. 6. Home. 7. Nurses most often involved in home visiting (*n* = 19), but also social workers (*n* = 15), "paraprofessionals" (*n* = 9) or laypersons (*n* = 6).	8. *Overall Success of the Program/Intervention Arm:* 25 (48%) of programs were defined as successful and 27 (52%) not successful *Relationship between Match and Program Success:* For the 7 programs for which a complete match was observed *between Theory, Population, Program Components, and Child Abuse Prevention Objective* , all were defined as successful For the 15 programs for which a clear mismatch was observed, none was defined as successful; that is, the home-visiting group did no better than the control in any of these programs. 9. Studies failed to find any	10. Need for adequate resources, appropriately skilled team, access to training and quality assurance processes. 11. Appropriately skilled team; access to training and quality assurance processes, understanding of population, their needs and strengths, and underlying theory regarding mechanisms of change. 12. NR.	13. A match between the underpinning theory and program components together with a match between the theory and target population predicted program success. 14. Results suggest that a way to maximize success is through fidelity to a program logic model with clear objectives to ensure understanding of population's needs , associated theory or mechanisms of change. Adopting "off-the-shelf £program models" is no guarantee of success, particularly if they are not designed for the target population and their

		Formal multidisciplinary team (n=3).	single program component e.g. type of professional, timing of intervention, or target population to predict the success of home visiting.		specific circumstances.
Turnbull et al. (2012). Australia. Systematic Review (n=7 random or quasi-randomised trials). *"To determine the effects of home visits during pregnancy and/or after birth for women with a drug or alcohol problem*" (p1).	1. NR. 2. Home visits mostly after birth vs no home visits. 3. Home visits that commenced during pregnancy and/or after birth by teams or individuals consisting of doctors (obstetricians, general practitioners or paediatricians), nurses (midwives, drug and alcohol workers or early childhood nurses), social workers, counselors or trained lay people.	4. Pregnant or postpartum women (n=unspecified) 5.Pregnant or postpartum women with a drug or alcohol problem. 6. Home visiting. 7. Community health nurses, paediatric nurses, trained counsellors, paraprofessional advocates, midwives.	8. A very large number of outcomes associated with drug / alcohol; Pregnancy/ Postpartum; Infant/child; psychosocial and economic outcomes were considered. 9.There was no significant difference in main outcomes i.e. continued illicit drug use (three studies, 384 women; risk ratio (RR) 1.05, 95% confidence interval (CI) 0.89 to 1.24), continued alcohol use (three studies, 379 women; RR 1.18, 95% CI 0.96 to 1.46), failure to enrol in a drug treatment program (two studies, 211 women; RR 0.45, 95% CI 0.10 to 1.94), not breastfeeding at six months (two studies, 260 infants; RR 0.95, 95% CI 0.83 to 1.10), incomplete six-month infant vaccination schedule (two studies, 260 infants; RR 1.09, 95% CI 0.91 to 1.32), the Bayley Mental Development Index (three studies, 199 infants; mean difference 2.89, 95% CI -1.17 to 6.95) or Psychomotor Index (MD 3.14, 95% CI -0.03 to 6.32), child behavioural problems (RR 0.46, 95% CI 0.21	10. NR. 11. Well trained nurse; frequent visits; trusting relationships; short term intense interventions by trained counselors. 12. Home violence; lay home visitors.	13. Insufficient evidence to recommend the routine use of home visits for pregnant or postpartum women with a drug or alcohol problem. 14. Further large, high-quality trials are needed particularly those incorporating antenatal home visits with encouraging pregnant women with a drug or alcohol problem to access early and frequent antenatal care, stabilise drug use, reduce or eliminate alcohol use in pregnancy and remain engaged with services during their child's first years of life. Trials also need to include dynamic models incorporating case management.

			to 1.01), infants not in care of biological mother (two studies, 254 infants; RR 0.83, 95% CI 0.50 to 1.39), non-accidental injury and non-voluntary foster care (two studies, 254 infants; RR 0.16, 95% CI 0.02 to 1.23) or infant death (three studies, 288 infants; RR 0.70, 95% CI 0.12 to 4.16). Individual studies reported a significant reduction in involvement with child protective services (RR 0.38, 95% CI 0.20 to 0.74) and failure to use postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82).		

Appendix 1f: Preventative Focus

Miscellaneous					
Fahs et al (2012). USA. Multisite RCT *"To compare 2 strategies, stage-matched nursing and community intervention (SMN+CI) and community intervention (CI) alone in changing cardiovascular risk factors in up to 3 behavioral areas: diet, physical activity, and/or smoking among rural women". P248*	1. NR. 2. Transtheoretical model included assessment of stage of change (SOC) at 5 levels. The Moos model addressed environmental system limitations associated with rural lifestyle. 3. CI – invite to attend a community visioning meeting to discuss ways to increase awareness of female CVD and local resources available to improve heart health. Included websites and a Church based health fair. SMN+CI – developed using Transtheoretical Model (TM) across multiple behaviors. Interventions were team developed, designed according to the 10 processes of change, and consideration of Moos model.	4. 274 Rural Women age 35-65 years (n=117). 5. Framingham score ≤20 points with no history of coronary heart disease (CHD) or diabetes. 6. 2 rural counties in US to enable ethnic mix. 7. 12 Registered Nurses delivered interventions using protocols developed by a TM consultant.	8. SMN+CI group had higher fruit intake by meal (P = .005) and showed greater pre-post change in total fruit and vegetable intake (P = .03). There was no significant difference on Framingham by group after the intervention (t (115) = 1.07, P = .28), yet, Framingham scores decreased significantly for the entire sample (t (116) = 6.01, P = .000). Impact on other outcomes e.g. physical activity and reducing lipids were not significant between group 9. Targeted nursing intervention had the largest effect on fruit and vegetable intake.	10. 2 day workshop to train nurses. 11. NR. 12. 21% attrition usual for such studies.	13. More work needs to be done to reduce CVD risks to promote heart health among rural women. 14. Nursing interventions focused on lowering cholesterol through behaviour modification should receive consideration. A design focusing on intervention fidelity, a larger sample size, and ways of preventing contamination across interventions in small rural areas is needed. Further work needs to be done among rural women on the most effective means of reducing CVD risks, including anthropometric measures. Rural women and particularly black rural women are often underrepresented in CVD research.

Child Welfare /Child health					
Kempe et al. (2014). USA. RCT *"To assess effectiveness and feasibility of public–private collaboration in delivering influenza immunization to children"* (p110).	1. NR. 2. Joint community clinics and Public Health Department nurses aiding in delivery at practices vs usual care (without Public Health Dept. Nurses). 3. NR.	4. Children attending paediatric/ family medicine practices (n= unspecified). 5. Influenza (vaccine). 6. Pediatric and family medicine private practices with a single common public health department (n= 7 sites) . 7 Public Health Department nurses.	8. Primary outcome: receipt of one influenza vaccine Secondary outcome: receipt of at least one vaccine within: different age groups and children with a high-risk medical condition. 9. Receipt of at least one influenza vaccination at end of each study year for each eligible child: Overall rates increased from baseline to Y2 by 9.2% in intervention and 3.2% in control (p b .0001). Secondary outcomes: Receipt of at least one vaccine within different age groups (6 months to 5 years, 6–12 years, and 13–18 years): largest increases seen among school-aged and adolescent children. Differences for 6-month-old to 5-year-old children did not reach significance. Comparison of missed opportunities (yes/no) for each eligible child during the second intervention year between intervention and control practices: 51.3% (n= 5490) of children in the control practices missed an opportunity for influenza vaccines, compared to 40.8% in intervention group (n= 7078) (p b .0001).	10. Regarding collaboration in vaccine supply, there is potential for financial loss if quantity needed is misjudged. 11. Further collaboration between public and private; pooling of vaccine supplies between collaborators 12.Barriers to collaboration included uncertainty regarding the delivery of vaccine supplies, concerns about using up all purchased vaccine by practices, and concerns about documentation of vaccination if collaboration occurred.	13. Public–private collaboration resulted in significantly higher influenza immunization rates, particularly for older, healthy children who visit providers less frequently. 14. A coordinated community-wide approach is required, involving all potential vaccinators, schools, pre-schools, and pharmacies, is needed to enable universal yearly vaccination to be achieved.

Kokkvoll et al. (2013). Norway. RCT To compare a new comprehensive lifestyle programme performed in groups of families with overweight (included obese) children with a more conventional single family programme.	1. NR. 2. Family based intervention. 3. Multiple family intervention (MUFI) compromised of a 3 day inpatient programme at the hospital with other family and interdisciplinary team. Single family intervention (SIFI) comprised of individual counselling by pediatric nurse consultant and nutritionist at the hospital. Both interventions had community based follow-up.	4. Children aged 6-12 years (n=97). 5. Cut off point was children with a BMI of ≥27.5. 6. Community Health. 7. Pediatric Nurse.	8. BMI increased by 0.37units in the MUFI compared to 0.77units in the SIFI (P=0.18). BMI SDS decreased by 0.16 units in the MUFI group compared to 0.07 units in the SIFI group (P=0.07). 9. Interim analysis after 12 months showed no between group difference in terms of BMI or BMI SDS. The MUFI group had a significant decrease in waist circumference compared to the SIFI group.	10. NR. 11. NR. 12. NR.	13. The modest difference between the two treatment groups after 2 years raises the question whether the cost of the MUFI approach can be justified. 14. Obesity interventions in children and adolescents should examine health and evaluate mental health and wellbeing in addition to other health outcomes.
School Nurses					
Ahmad et al. (2011) Systematic Review (n=9 studies) USA To evaluate 'the effects of asthma self-management education for schoolage children on number of school days missed, emergency department visits and hospital admissions' (p 282).	1 School based asthma education programmes: 'teach self-management knowledge and skills to children and adolescents with a diagnosis of asthma' (p282). Aims to improve quality of life and reduce morbidity and mortality related to asthma. 2 School based asthma self-management education programme Refers to Health Promotion Model for use as a functional tool to examine relationships between variables in the	4 Children and adolescents (n= 4163 in total) 5 Asthma 6 School 7 School nurses and school staff (n=unspecified)	8. Missed school days: Decrease in absenteeism in all studies. Statistically significant decrease in school days missed in 6 studies However. authors state it is unknown whether this effect persists beyond 1 year after intervention. Number of ED visits: 4 studies reported decrease in number of ED visits following the intervention. Hospitalisations within 1st year of completion: 2 studies reported statistically significant decrease in asthma-related hospitalisations.	10 NR 11 Convenient location needed. 12 NR	13 Asthma self management education is important and can be effective. Provision of this through schools and using school nurses can improve access to such programmes. 14 School based asthma self management education programmes should be widely implemented. Programmes should include repetition and reinforcement of information. School nurses are in an excellent position to implement such programmes

	delivery of health education. Health Promotion Model includes focus on self-efficacy. 3 Several studies reported on the Open Airways for Students programme.		9 Repetition and reinforcement of knowledge is needed.		as they can see students on a regular basis. More detailed research is needed regarding the effect of self management education for children on the child's ability to take their medication properly
Bannink et al. (2014). The Netherlands. Cluster RCT To *"evaluate the appreciation, application and effects of an intervention (Your Health), in which adolescents received a consultation with the school nurse"* (p.773).	1. NR. 2. "Your Health" Intervention. 3. Consultation with the school nurse utilising structured assessment tools (Self Sufficiency Matrix -SSM-D). The nurses role included support; health promotion; referral to HCP.	4. Adolescents (n=418). 5. Behavioral problems. 6. School. 7. School nurse.	8. Primary outcomes: adolescents' mental health (i.e. mental health status and depressive symptoms); school absenteeism; debts. Secondary outcomes: quality of life; alcohol consumption; and soft drug use. 9. No statistically significant effects were seen within the "Your Health" intervention at 6-month post-intervention assessment compared with the control group (all P>0.05) in relation to mental health status; depressive symptoms; school absenteeism; debts. No statistically significant differences were identified in relation to quality of life; alcohol consumption; soft drug use either (all P>0.05).	10. NR. 11. NR. 12. NR.	13. Your Health" may have potential to be an important intervention for vulnerable adolescents at the beginning of "vocational education. 14. Further studies should assess the suitability and effects of referrals and the subsequent help that adolescent participants attained during consultation; this intervention can be simply embedded into existing practice. "Your Health" could be enhanced by strengthening collaboration between the school nurses and the other school health professionals.
Borawski et al. (2014). USA. Group-randomized	1. NR. 2. The BPBR curriculum consists of 6 teaching modules (50 minutes each).	4. High schools (n=10), participants (n=1576). 5. Sexually transmitted infections.	8. Knowledge; Intentions; Efficacy; Beliefs; Perceived peer beliefs; Curriculum fidelity; Descriptive characteristics; Facilitator performance; and	10. NR. 11. NR. 12. NR.	13. Both classroom teachers and school nurses are effective in conveying reproductive health information to high school

intervention study To *"examine whether the effectiveness (i.e. improved knowledge, self-efficacy, intentions, compared to a control group) of a well-established HIV/STI prevention curricula (Be Proud! Be Responsible! [BPBR]) would vary based on facilitator type (health education classroom teacher vs school nurse)"* (p.190)	3. Teaching methods i.e. group discussions; role model stories depicted in videos; interactive exercises; and role-playing.	6. High Schools (n=10). 7. School Nurses.	student assessment. 9. Students gave higher ratings to the classroom teacher facilitators than to the school nurse in relation to: how comfortable the facilitator was with materials (p<.006); extent to which the curriculum challenged how students thought about their health (p<.02); classroom environment being more orderly (p<.07). A significant increase was noted in students HIV/STI and condom use knowledge immediately post-intervention and at 4 months (p<0.5). A change in student intentions when taught by school nurses was reported in relation to the use of a condom. A significant increase was noted in technical skills and condom negotiation skills. Intervention students taught by school nurses reported significant increases in their condom use beliefs at 4 months.		students; however, teaching the technical (e.g., condom use) and interpersonal (e.g., negotiation) skills needed to reduce high-risk sexual behavior may require a unique set of skills and experiences that health education teachers may not typically have. 14. Utilising school nurse resources may improve reproductive health teaching as students may be more comfortable and familiar with healthcare professionals. For this intervention to be effective in influencing risk behaviors, schools should utilise school nurses in teaching the technical and interpersonal skills needed for self-protection.
Brackney et al. (2015). USA. Systematic Review (n=35). To "*determine effective nonpharmacological interventions for prevention of T2 DM in youth*" (p.6)	1. NR. 2. Non-pharmocological interventions. 3. Included: Daily activity; decreasing caloric intake; increasing muscle mass; psychological and social support	4. Adolescents (15- 19 years). 5. Type two diabetes. 6. School; Family; Community; and Clinic. 7. School Nurse.	8. School based interventions (n=9); Family based interventions (n=4); Community based interventions (n=7); Clinic Interventions (n=15). 9. Components for effective intervention strategies include; different types of physical	10. NR. 11. Follow-up or "continued opportunity" for participants was identified as most effective. Implementing the intervention in a school setting- easily	13. The school nurse has the potential to influence future health prevention of T2 DM. 14. More research evaluating the effectiveness of interventions between boys and girls; high school students; and among youth

			activity; nutrition education; behavior therapy; cultural sensitivity; and ongoing support i.e. telephone sessions, newsletters, periodic meetings. Less common, components comprised of peer leadership opportunities; CST; and motivational interviewing. School Based Interventions: Positive results were mainly noted in relation to BMI, weight, fitness levels, cardiac blood profiles and health behavior changes, Family based Interventions: Decreased BMI, increased walking lower fat and cholesterol intake, higher fiber intake; improved systolic blood pressure, and improved cardiac blood profile. Community Based Interventions: Positive results mainly included improved BMI, waist circumference to height ratio; decreased prevalence of metabolic syndrome; improved cardiac blood profiles; diastolic blood pressure; improved diet and increased physical activity; self-esteem, depression, and anxiety; increased health knowledge.	accessible; support from peers an teachers. 12. Transportation to after-school community centers; poor school attendance; funding and training; environmental.	at risk of developing T2 DM is needed.

			Clinic Based Interventions: Improvement was noted mainly in dietary intake; BMI; improved insulin sensitivity, glucose control, and adiposity measurement; improved strength, waist circumference, cardiac blood profiles; strength; blood pressure		
Halterman et al. (2011). USA. RCT. To *"evaluate the impact of the School-Based Asthma Therapy trial on asthma symptoms among urban children with persistent asthma"* (p. 262).	1. NR. 2. School-Based Asthma Therapy intervention. 3. Direct observation therapy with preventive asthma medication reduces asthma symptoms in school settings.	4. Children (aged 3 to 10 years, n=530). 5. Asthma. 6. School. 7. School nurses.	8. i)The average number of symptom free days every 2 weeks during winter months-assessed by blinded interviews. ii) Number of nights with asthma symptoms, days with activity limitation, days needing rescue medications, and days of missed school. 9. Participants receiving preventive medications in the school setting had significantly more; symptom-free days (adjusted difference=0.92 days per 2 weeks; 95% CI, 0.50-1.33); fewer nighttime symptoms; less rescue medication use; fewer days with limited activity (all P.01); exacerbation requiring treatment with prednisone (12% vs 18%, respectively; relative risk=0.64; 95% CI, 0.41-1.00) than that of the children in the control group. Positive intervention effects seen in participants with smoke exposure (n=285; mean	10. NR 11. NR 12. Family stress; poverty; poor access to care; difficulties in communication	13. This School-Based Asthma Therapy program has proven to significantly improve persistent asthma symptoms and decrease exacerbations amongst urban children than that of the children in the control group. 14. Further efforts are now needed to estimate the costs of this intervention and to progress forward with dissemination.

			symptom-free days per 2 weeks: 11.6 for children in the treatment group vs 10.9 for those in the control group; difference=0.96 days per 2 weeks; 95% CI, 0.39-1.52).		
Kinter et al. (2014). USA. RCT. To "*evaluate the effectiveness of Staying Healthy–Asthma Responsible & Prepared, an academic asthma health education and counseling program, on fostering the use of effective asthma self-care behaviors"* (p.62)	1. NR. 2. Staying Healthy–Asthma Responsible & Prepared (SHARP). 3. Addresses psychosocial, behavioral, and quality of life in asthma patients.	4. Caregivers of diagnosed asthma students; Students (dyads, n=216). 5.Asthma. 6. Schools. 7. School nurses.	8. Episode management; risk reduction/prevention; health promotion. 9. SHARP- the SHARP main effect was significant compared to the control group (t[151] = 2.77, p = .006) i.e. SHARP participants showed increased use of symptom management techniques; use of pillow (t[115] = 5.34, p < .001) and mattress (t[121] = 2.24, p = .027) protectors showed statistical significance i.e. SHARP participants increased use of protectors at posttest An increase was noted from pre- to post intervention for all participants in relation to 7-9 hours undisturbed sleep, which continued to increase over time (t[148] = 2.12, p < .036).	10. NR 11. NR 12. NR	13. Collaborative work with school teachers and nurses may increase the use of asthma self-care behaviors. 14. The use of SHARP in school and community setting can be led by pediatric nurse specialist's utilsing interdisciplinary teams. This may in turn increase the use of: effective episode management; risk reduction/prevention; and health promotion self-care behaviors that impact asthma control.
Pbert et al. (2013). USA. RCT. To *"evaluate the feasibility and efficacy of a school*	1. NR. 2. "Lookin' Good Feelin' Good"- School nurse-delivered counseling intervention. 3. Involves 6 one-on-one	4. Adolescents (n=82; mean age 15.8 years). 5.Overweight/ Obesity. 6. School. 7. School Nurse.	8. Continuous outcomes - physiological measures, physical activity, diet, and psychosocial measures; Dichotomous outcomes- diet, activity behaviors. 9. Physiological- Small	10. Nurses reported: no extra hours were needed in their work schedule to deliver this intervention; two nurses reported hiring additional cover staff; no issue with lack of	13. Findings from this study showed that it is feasible for a school nurse to provide this counseling intervention for overweight and obese adolescents; students encouraged the intervention being

nurse-delivered intervention in improving diet and activity and reducing BMI among overweight and obese adolescents" (p.1)	counseling sessions conducted over 2 months; 5-3-2-1-0 approach involving five key behavior changes.		favorable effect in waist circumference (Adjusted mean change; 95% CI ;(−1.10 (−4.34, 2.13).; systolic BP (Adjusted mean change; 95% CI ;(−2.93 (−8.14, 2.29) at 6 months only Physical activity- No effect Diet- A significantly lower amount of total sugar (difference = −45.79g/day; 95% CI −88.34, −3.24) and added sugar (difference = −51.35g/day; 95% CI −92.45, −10.26) was consumed by the intervention group at 2 months. Psychosocial Statistical significance was seen in students who were in involved in the intervention as identified the school nurse as helpful in the understanding of "how to eat healthy" and be "physically active", (98% vs. 71% of visits, respectively; p = .003); those in the counselling intervention felt more comfortable in discussing with the nurse their weight-related behaviours (88% vs. 62% of visits in intervention vs. control schools respectively; p = .01).	time; not difficult to incorporate in to daily schedule. 11. School nurses are in a greater position to provide weight management interventions. 12. NR.	provided by a school nurses; and it has shown to improve selected self-reported obesogenic behaviors, but not BMI. 14. Future research should be conducted on expanding the counseling intervention in a school setting so that it includes; additional visits extended over a longer period of time; opportunities to engage in physical activity The need for a "feasible, cost-effective behavioral interventions" has been well documented and the school nurse is in a positive position to provide this intervention to adolescents in an easily accessible location.
Cicutto et al. (2013). USA. RCT.	1. NR. 2. School based asthma management program. Both control and	4. Children from grades 1 to 5 and their families (n=1316 children + family members n= unspecified).	8. The reported use of urgent care or unscheduled visits to the emergency department, physician office, walk-in clinics, or community clinics related to	10. NR. 11. Parental involvement. Resource kit requires	13. The Public Health School Asthma Project resulted in significant improvements for the school and the individual

"*To evaluate a school-based, multifaceted asthma program that targets students with asthma, and the broader school community*" (p 876).	intervention group received their usual asthma care from clinics and doctors. 3. Intervention involved: a) Roaring Adventures of Puff (RAP) interactive asthma self-management education programme for children. Delivered by PHNs and certified asthma instructors. Included education on self-monitoring, inhaler technique, triggers, medications, symptom recognition, asthma action plan, lifestyle and exercise, and managing asthma attacks. b) Creating Asthma Friendly Schools Resource Kit for broader community.	5. Asthma. 6. Elementary school. 7. Public Health Nurses trained as RAP instructors.	asthma for the 1-year period following study enrolment; School absenteeism; Days of interrupted activity: Quality of life. 9. Fewer children in the intervention group had a school absence (50% vs 60%; p<.01), required urgent care for asthma (41% vs 51%; p<.0001), or reported a day of interrupted activity (51% vs 63%; p<.01), and had improved quality of life (5.8Å}1.2 vs 5.4Å}1.4; p<.0001). Schools in the intervention group were more likely to have practices supporting an asthma-friendly environment. Inhaler training was associated with improved inhaler technique in the intervention group.	support for implementation, by public health nurses. Use of Kit increased by meetings with principals/ assistant principals, in-service training workshops about asthma, asthma education folder for staff, hard copies of Resource Kit accessible, school assembly about asthma, review and guidance of school policy. 12. Scheduling of activities within school, engaging parents, shifting school practices regarding medications in school, environmental and trigger management strategies were costly. Difficulty obtaining parent's signatures on document for child to carry medication at school.	with asthma. Benefits derived extend from improving the school environment to reducing the personal morbidity imposed by asthma. This project demonstrates significant improvements in asthma inhaler skills, quality of life, health services use, asthma-free days, and school absenteeism". 14. School based asthma education programme can lead to improved self-management of asthma, reduced absenteeism and reduced health service use. Continued assessment and coaching is required to achieve and sustain accurate inhaler technique.
Pbert et al. (2011). USA. Cluster-randomized controlled trial.	1. NR. 2. "5 A's" model for adolescents. 3.The model includes	4. Adolescents (n=35 schools, n=1,068 participants). 5. Smokers.	8. Primary outcomes: Students reporting not smoking in the past 30 days- assessed at 3 and 12 months; cotinine validated and imputed abstinence when cotinine was missing.	10. Accessibility of school nurses reduces cost. 11. School settings were identified as a	13. The school nurse–delivered smoking-cessation intervention demonstrated its efficiency and feasibility in improving abstinence in adolescent

To *"evaluate the effectiveness of a school nurse– delivered smoking-cessation intervention in increasing abstinence among adolescent smokers"* (p.926)	asking about tobacco use; advise users to quit; assess willingness to make a quit attempt; assist in their cessation attempt; and arrange follow-up to support their efforts. Two 30-minute sessions were completed before the quit date; a further two 15-minute sessions were completed after the quit date.	6. School. 7. School nurse.	Secondary outcomes: outcome expectations, adjuncts to quit, helpfulness of nurse, helpfulness of written materials, pharmacotherapy, and nicotine use 9. Compared with the control group participants were almost twice as likely to be abstinent when self-report at three months (odds ratio: 1.90 [95% CI: 1.12–3.24]; P .017)- this difference was determined by quit rates in the male students (15.0% [intervention] vs 4.9% [control]; odds ratio: 3.23 [95% CI: 1.63– 6.43]; P.001); no intervention effect in female students (6.6% vs 7.0% at 3 months and 16.6% vs 15.5% at 12 months); no intervention effect in male students at 12 months (13.9% vs 13.2%). A significant decrease in the amount smoked and frequency was noted in the intervention group compared with control schools (only at 3; not 12 months)	characteristic of successful programme implementation. 12. NR.	boys (short-term) and reducing frequency and amount in both genders (short term). 14. Additional research is required to improve adolescents stopping and abstaining from smoking.
Wright et al. (2013). USA. RCT. To *"evaluate the impact of a*	1. NR. 2. Intervention: Kids N Fitness© 3. Intervention: A 6-week program for parents and	4. Students (n = 251; aged 8-12 years). 5. Enhance physical activity behavior/reduce BMI. 6. School.	8. Anthropometric measures; Health behaviors/knowledge 9. Anthropometric measures: Female students (KNF group; BMI (p = 0.047) and BMI z-score (p = 0.05) decreased from	10. Authors state that the delivery of school based programs can be provided as low cost/minimal cost to families; low-income; urban children (p3).	13. Nurses are pivotal to the implementation of such interventions due to their knowledgeable nature and expertise in identifying the needs of overweight and obese children; male and

nurse directed, coordinated, culturally sensitive, school-based, family-centered lifestyle program on activity behaviors and body mass index" (p.1)	children which includes: 45 min of structured physical activity; 45 min nutrition education class; plus environmental activities.	7. School Nurse.	baseline to 4 months; sustained till 12 months). Health behaviors/knowledge: Significant differences between the KNF and control group for both genders were seen in three distinct areas: daily physical activity; PE class; attendance; TV viewing; Both genders had increased participation in 60 min of activity per day (from baseline to 4 months)-effects remained constant (at 12 months) for males (p = 0.002) and females (p = 0.005); Both genders had increased attendance in PE class (from baseline to 4 months)-effect were sustained for males (p = 0.003) and females (p = 0.002); A significant decrease in males and females was noted in relation to viewing TV (from baseline to 4 months)- effects remained constant at 12 months for males only (p = 0.030).	Furthermore utilising nurses is a cost effective opportunity in low income school based programmes. 11. Involve stakeholders across school, home, and environmental contexts; formation of a community advisory board and school-health advisory council i.e. school and community partners. 12. NR.	female students can improve their physical activity by becoming involved in culturally appropriate school-based interventions. 14. There is a need for gender-focused activities to assist in reducing incidences of overweight adolescents and chronic disease management. Nurses play a key collaborative role in implementing such interventions in school settings.
Pregnancy/ Postnatal					
Brugha et al. (2011). UK Cluster RCT To test if receiving care from a HV trained in identification and psychological	1 NR 2. Systematic assessment of depressive symptoms in women by trained Health Visitors who established warm, therapeutic relationships using a cognitive behavioural approach or person centred	4. Postnatal women. (n= 2241). 5. PN mental health/ prevention of depression. 6. Primary care teams. 7. Health visitors trained in requirements for this study.	8. EPDS, CORE-OM, SF-12, State anxiety at 6 mths, 12 mt, 18 mt. 9. Identification and psychological intervention prevents depression 6–18 months postnatally in women who are not depressed	10. 8 days training for HVs. 11. Intervention by trained HVs provides a universal, enduring preventive effect for depression in women who screen negative for depression	13. Potential benefits for increased visits and focus on maternal psychological wellbeing rather than physical welfare of child. Cost effective intervention/ 14. The study provides some evidence of the impact of a depression

intervention methods prevents depression 6–18 months postnatally in women who are not depressed 6 weeks postnatal women scoring <12 on the postal EPDS at 6 weeks postnatally	approach. 3. 1 hr visit a week for max 8 weeks commencing around 8 weeks postnatally. Control – usual care.		OR for EPDS >12 at 6 months was 0.71 [95% CI 0.53–0.97, p=0.031] for intervention group (IG) compared with control (CAU) group. Two subgroups compared for 6-week EPDS score of 6–11 (n=999) and a ' lowest severity ' subgroup with a 6-week score of 0–5 (n=1242). No difference in psychological effectiveness by subgroup (interaction term: z=x0.28, p=0.782).	postnatally. 12. Differences in practice environment and culture reported.	prevention programme to provide clinically significant, useful and persistent reductions in the prevalence of depression in postpartum women. This requires further independent evaluation.
Cooper et al. (2015). UK. RCT. To investigate if an intervention enhancing the mother-infant relationship would prevent PND (postnatal depression), impairments in parenting and adverse effects on child development.	1. NR. 2. Supportive home visits (2 antenatal + 9 postnatal). 3. Measures to enhance maternal sensitivity to infant communicative signals, including items from the Neonatal Behavioral Assessment Scale.	4. Pregnant women at risk PND. (n=190: IG 91, CG 99) 5. PND, maternal attachment and infant development. 6. Primary care. 7. Health Visitors	8. Maternal mood, maternal sensitivity in mother–infant engagement, and infant behaviour problems, attachment and cognition at 8 wks, 18 wks, 12 and 18 mts postpartum. 9. No impact on maternal mood, quality of maternal parenting behaviours, infant outcome. Some measures indicated that those with a lower level of antenatal risk experienced benefit but results not consistent or strong. None of the results were statistically significant	10. Training of HVs on intervention and resource cost of additional visits. 11. Mothers reported intervention to be of considerable emotional and practical support and help in enhancing their appreciation of their infant's abilities and their ability to communicate with their infants. 12. NR.	13. Objective findings conflicted with mothers' report that intervention provided considerable emotional and practical support including ability to communicate with their infants. 14. This approach to preventing PND and its associated problems not recommended.
Cristie & Bunting (2011) UK NI Cluster RCT	1. NR 2. Postnatal home visits by HVs	4. Low risk first-time postnatal women (n=295) 5. Parenting, maternal wellbeing and service use	8. 'Maternal wellbeing' (EPDS) Parenting stress index (role restriction) Maternal physical health 'Baby nurture' –	10. Extra visits have resource implications 11. NR	13. Increasing the number of home visits increased satisfaction and reduced use of emergency medical services, but had no effect on

To determine the effect of frequency of HV's home visits on 'low-risk' first-time mothers outcomes at 8 weeks and 7 months postpartum. (195 intervention 159 control) ROC	3. Weekly home visits by HVs to 8 weeks postpartum or usual care of one PN visit at 8-10 days. 80 HVs in intervention group	6. Primary health care setting 7. Health visitors – 39 delivered intervention of weekly visits no of visits m = 6, control m = 2	'Coping/adapting resources' Self-efficacy (PES) Assessed at recruitment (8-10 days) and 8 weeks and 7 months 9. Variable effects – increased service satisfaction and decreased use of emergency medical services. EPDS higher in intervention group than control at 8 wks but not 7 mths.	12. Variation among HVs noted, also trial did not alter the content of care provided.	parenting outcomes. More intervention mothers had raised EPDS at 8 weeks but no difference at 7 months. 14. Main outcome measure was depression and this study did not demonstrate a clear benefit for women from the increased visits by HVs related to their EPDS score
Dodge et al. (2013). USA. RCT. Evaluation of home nursing programme effectiveness at reducing infant emergency care (birth to 12 months).	1. NR. 2. Preventive system of care model 3 to 7 contacts home/ community/ phone using scripted intervention between 3- 12 wks, brief intervention on targeted areas. 3. Nurse engages parents and provides brief educational interventions organized as 20 "teaching moments" and assesses and scores health and psychosocial risk in each of 12 domains.	4. 531 families. 5. Emergency medical care of infant and overnight hospital stays. 6. Community service. 7. Nurses trained in programme.	8. Infant emergency medical care and overnight hospital stays in first 12 months. 9. Identification of family needs and linking with community resources.	10. $700 cost per family offset by savings in hospital medical care costs before the infant's first birthday. 11. Identifying needs and linking families to appropriate community resources. 12. Not identified.	13. Preventive impact occurs through the nurse home visitor's success in identifying individual family needs, intervening briefly to address those needs when risk was moderate, and connecting the family with targeted community resources to meet those needs for families having higher risk. 14. Universal/population based community intervention affective in linking families with appropriate community services and reduces emergency medical care.
Dodge et al 2014 USA RCT- further reporting on RCT by Dodge et al (2013)	1 Nurses trained in intervention 2 Preventive system of care model 4 to 7 contacts home/ community/ phone using scripted intervention	4. Evaluation study 531 families/births In n =269 Cnt n = 280 5. Emergency medical care, and family wellbeing	8. Infant emergency care episodes, community connections, positive parenting (Mother-Child Neglect Scale, Parent-Child Conflict Tactics Scales, Knowledge of Infant Development Inventory,	10. $700 cost per family offset by savings in medical care costs 11. Emergency medical care, overnight hospital stays, access to	13. Structured home visits provides a feasible, and effective public health policy for families of newborn infants including effective triage to community services

Evaluation of a postnatal home nursing programme on access to emergency health care (birth to 6 months) and other family wellbeing outcomes	between 3- 12 wks, brief intervention on targeted areas 3. brief interventions (20 "teaching moments,"), assessment health and psychosocial risk 12 domains	6. Community service 7. Nurses trained in programme	Parenting Sense of Competence Scale, Survey of New Parents, Duke Endowment Child Abuse Prevention Initiative Neighborhood Survey behaviors, EPDS, Generalized Anxiety Disorder questionnaire, CAGE and CAGE-AID questionnaires, participation in quality out-of-home child care 9. Universal structured home visiting programme tailored to individual needs benefits families and is cost effective.	community services, positive parenting behaviours, home environment quality, maternal mental health 12. Not identified	14. Universal service which is effective in assisting families access community services
Lopez et al. (2015) USA Cochrane Systematic Review To assess the effectiveness of postpartum educational interventions on contraceptive use.	1. NR. 2. Nurses, midwives (and physicians) postpartum educational interventions on contraceptive use. 3. Included individual or group counselling, written materials, video or audio recordings	4. 12 trials, 4145 women – USA, Australia, Nepal, Pakistan, and Syria. 5. Unplanned pregnancy and contraceptive use. 6. Postpartum hospital or 2-3 wks later (home/clinic/ phone). 7. Nurses, midwives.	8. 2nd birth (by 24 mts). Contraception use at 6mts, effective contraception at 6mths. Adolescents, with homebased mentoring had fewer 2nd births within 2 years compared to the control group (OR 0.41, 95% CI 0.17 to 1.00). The other five interventions had no effect. Of trials with lower quality evidence, two showed some effectiveness. In Nepal, women with an educational session immediately postpartum were more likely to use contraception at six months than those with a later or no session (OR 1.62, 95% CI 1.06 to 2.50). In an Australian study, teenagers in a structured home-visiting program were more likely to have effective	10. Given the associated costs and logistics, some programs would not be feasible in many settings. 11. NR. 12. NR.	13. Insufficient evidence to recommend any particular educational interventions on contraceptive use. 14. Although half of the interventions were effective in reducing repeat pregnancies or births and increasing contraceptive use, the overall evidence of effectiveness was of low to moderate quality. Two trials of counselling providing one or two sessions were effective but were limited by self-reported outcomes and short term outcome assessment. Three trials of multifaceted programmes involving multiple contacts were effective but their applicability in other

			contraception use at six months than those with standard home visits (OR 3.24; 95% CI 1.35 to 7.79). Meta analysis not done due to varying study designs 9. NR		locations is uncertain and health care providers would need to consider which intervention might be appropriate for their setting and level of resources. Valid and reliable outcome measures are needed to obtain meaningful results.
Mirmolaei et al (2014) Iran RCT To compare effect of two midwife home visits to usual care on healthy behaviours of low‑risk mothers	1. NR 2. Attendance at primary care facilities compared with home visits by midwives. 3. First visit at health centre (3-5 days) followed by two postnatal home visits at 10-15 days and 2nd within 42-60 days	4. Postpartum women (n= 200) 5. Maternal health behaviours assessed at 60 days (2 months) 6. Home visits in designated geographical region of Iran 7. Midwives	8. Impact of two postnatal home visits on the healthy behaviors of low risk mothers: included maternal behaviors in relation to nutrition, physical activity, smoking, alcohol, breastfeeding, FP, personal and mental health, and ability to taking care of newborn. Intervention group more likely to receive postpartum care (P < 0.001). Mean score of maternal healthy behaviors increased from 120.5 (SE = 0.76) to 148.9 (SE = 1.02) (P < 0.001) with control group 119.9 (SE = 1.06) to 140.9 (SE = 1.08) (P < 0.001). Mean score of maternal healthy behaviors in the intervention group had significant differences with that in the control group (P < 0.001). 9. Poor uptake for standard	10. Additional cost of home visits a factor for developing countries. 11. NR 12. Cost of setting up home visiting service for low risk mothers in developing countries when health centre available.	13. Postpartum care at home is effective in improving maternal healthy behaviors such as breastfeeding and family planning. 14. Costs of home‑visits and low rates of receiving routine care in developing countries such as Iran, the cost effectiveness assessments of other methods forpostpartum care can enable health policymakers.

			care		

Appendix 2 – Letters and data collection templates

23/11/15

Dear Colleague,

A research consortium from UCC, UCD and NUIG led by Drs. Patricia Leahy- Warren and Helen Mulcahy from the School of Nursing and Midwifery in UCC successfully competed for funding from the Department of Health. The aim is to conduct an evidence review on current models of registered nursing and midwifery practice in the community to inform policy development.

This large scale scoping review to be completed within a 10-week timeframe is a very systematic analysis of national and international empirical and grey literature. To ensure that this review is as comprehensive as possible, we are eliciting information on Irish based models of community nursing practice. This includes new interventions/models/care delivery approaches which are community nursing or midwifery based. As you are on the frontline of service delivery, we consider that you may have knowledge of such interventions/models/care that may not have been published in peer reviewed journals, or indexed in the databases that we are examining. Therefore, we are giving you the opportunity the attached table below in order to inform the report. The content of this table will be screened using Consortium-agreed criteria which will govern inclusion in the final report. Please return the table by Friday November 27th to ensure availability for screening to me at Amanda.phelan@ucd.ie

Kind regards,

Dr. Amanda Phelan
Project Lead- UCD.
Tel: 01 7166482
Email: Amanda.phelan@ucd.ie

Evidence review on current modules of registered nursing and midwifery practice in the community to inform policy development

Table for completion by Practice Nurses

Practice Nurse Name	
Practice address	
Title of practice model	
An abstract describing the practice model of not more than 200 words	
Nurse delivering project model	
Has project been audited or evaluated? Please describe in not more than 200 words	
Has project been published?	
Peer review Publication (Yes/No)	
If published, please include publication(s) reference	


19/11/15

Dear Director of Public Health Nursing,

A research consortium from UCC, UCD and NUIG led by Drs. Patricia Leahy- Warren and Helen Mulcahy from the School of Nursing and Midwifery in UCC successfully competed for funding from the Department of Health. The aim is to conduct an evidence review on current models of registered nursing and midwifery practice in the community to inform policy development.

This large scale scoping review to be completed within a 10-week timeframe is a very systematic analysis of national and international empirical and grey literature. To ensure that this review is as comprehensive as possible, we are eliciting information on Irish based models of community nursing practice. This includes new interventions/models/care delivery approaches which are community nursing or midwifery based. As you are on the frontline of service delivery, we consider that you may have knowledge of such interventions/models/care that may not have been published in peer reviewed journals, or indexed in the databases that we are examining. Therefore, we are giving you the opportunity the attached table below in order to inform the report. The content of this table will be screened using Consortium-agreed criteria which will govern inclusion in the final report. Please return the table by Friday November 27th to ensure availability for screening to me at Amanda.phelan@ucd.ie

Kind regards,

Dr. Amanda Phelan
Project Lead- UCD.
Tel: 01 7166482
Email: Amanda.phelan@ucd.ie

Evidence review on current modules of registered nursing and midwifery practice in the community to inform policy development

Table for completion by Director of Public Health Nursing

Director's Name	
Community Health Organization	
Title of practice model	
An abstract describing the practice model of not more than 200 words	
Nurse delivering project model (E.g. community RGN/PHN/State other)	
Has project been audited or evaluated? Please describe in not more than 200 words	
Has project been published?	
Peer review Publication (Yes/No)	
If published, please include publication(s) reference	

Appendix 3: CINAHL Search Strategy

S1 TI (Nurs* N3 (communit* or "public health" or "primary care" or district or school* or "home health*" or "home care" or homecare or domicil* or rural or liaison or outreach or ambulatory)) OR AB (Nurs* N3 (communit* or "public health" or "primary care" or district or school* or "home health" or "home care" or homecare or domicil* or rural or liaison or outreach or ambulatory))

S2 TI (Midwi* N3 (communit* or "public health" or "primary care" or district or "home health*" or "home care" or homecare or domicil* or rural or liaison or outreach or ambulatory or "home birth*" or homebirth*)) OR AB (Midwi* N3 (communit* or "public health" or "primary care" or district or "home health" or "home care" or homecare or domicil* or rural or liaison or outreach or ambulatory or "home birth*" or homebirth*))

S3 TI "health visit*" OR AB "health visit*"

S4 (MM "Community Mental Health Nursing") OR (MM "Community Health Nursing")

S5 (MM "Home Nursing, Professional") OR (MM "Nurses, Public Health") OR (MM "Home Health Nursing")

S6 (MM "Nurse Liaison")

S7 (MM "Rural Health Personnel") OR (MM "Rural Health Centers") OR (MM "Rural Health Services") OR (MM "Rural Health Nursing") OR (MM "Parish Nursing")

S8 TI (model* or approach* or framework* or intervention* or strateg* or polic* or role* or "case manag*" or caseload* or service*) OR AB (model* or approach* or framework* or intervention* or strateg* or polic* or role* or "case manag*" or caseload* or service*)

S9 TI ("randomised controlled trial" or "randomized controlled trial" or meta-analysis or "meta analysis" or "systematic review" or metasynthesis or meta-synthesis or "meta synthesis" or meta-review or "meta review" or metareview or "integrated review") OR AB ("randomised controlled trial" or "randomized controlled trial" or meta-analysis or "meta analysis" or "systematic review" or metasynthesis or meta-synthesis or "meta synthesis" or meta-review or "meta review" or metareview or "integrated review")

S10 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7

S11 S8 AND S10
Limits: Published Date: 20051101-20151031; Publication Type: Meta Analysis, Meta Synthesis, Nursing Interventions, Randomized Controlled Trial, Systematic Review; Language: English

S12 S8 AND S9 AND S10

Limits Published Date: 20051101-20151031; Language: English

S13 S12 OR S11

Appendix 4: Medline Search Strategy

S1 AB,TI (Mother* OR Infant* OR Child* OR Matern* OR Post* OR Disab* OR Old* OR Elder* OR Aged OR Chronic* OR comorbid* OR Mental* OR Psychiatric* OR Palliative OR Terminal* OR "End of Life" OR "End-of-life" OR Dying OR Travell* OR Gyps* OR Romany OR Migrant* OR Transient* OR Discharge* N/3 Hospital OR Adolescen* OR School* OR Abuse* OR "Domestic violence" OR Immigrant* OR "Ethnic Group*" OR Minorit* OR Marginal* OR Vulnerabl*)

S2 MJMESH.EXACT("Pregnant Women") OR MJMESH.EXACT("Mothers) OR MJMESH.EXACT("Infant") OR MJMESH.EXACT("Child") OR MJMESH.EXACT("Disabled Children") OR MJMESH.EXACT("Disabled Persons") OR MJMESH.EXACT("Intellectual Disability") OR MJMESH.EXACT("Mentally Disabled Persons") OR MJMESH.EXACT("Mental Disorders") OR MJMESH.EXACT("Ages") OR MJMESH.EXACT("Frail Elderly") OR MJMESH.EXACT("Chronic Disease") OR MJMESH.EXACT("Terminally Ill") OR MJMESH.EXACT("Gypsies") OR MJMESH.EXACT("Transients and Migrants") OR MJMESH.EXACT("Adolescent") OR MJMESH.EXACT("Adolescent Health Services") OR MJMESH.EXACT("Schools") OR MJMESH.EXACT("Battered Women") OR MJMESH.EXACT("Elder Abuse") OR MJMESH.EXACT("Domestic Violence") OR MJMESH.EXACT("Emigrants and Immigrants") OR MJMESH.EXACT("Ethnic Groups") OR MJMESH.EXACT("Minority Groups") OR MJMESH.EXACT("Vulnerable Populations")

S3 AB,TI(Home* OR public N/3 health OR Communit* N/3 health OR Communit* N/3 Car* OR Communit* N/3 Treat* OR Domicil* OR Primary N/3 Care OR Rehabilit* N/3 Home OR Rehabilit* N/3 Communi* OR visit* OR practice* OR (clinic* NOT hospital*))

S4 MJMESH.EXACT("Home Health Nursing") OR MJMESH.EXACT("Community Health Services") OR MJMESH.EXACT("Community Mental Health Services") OR MJMESH.EXACT("Primary Health Care") OR MJMESH.EXACT("Home Childbirth") OR MJMESH.EXACT("Pediatrics") OR MJMESH.EXACT("Health Services for Persons with Disabilities") OR MJMESH.EXACT("Child Health Services") OR MJMESH.EXACT("Health Services for the Aged") OR MJMESH.EXACT("Community Health Nursing") OR MJMESH.EXACT("Hospice and Palliative Care Nursing") OR MJMESH.EXACT("Palliative Care") OR MJMESH.EXACT("Terminal Care")

S5 AB,TI(Nurs* OR Midwi*)

S6 MJMESH.EXACT("Midwifery") OR MJMESH.EXACT("Specialties, Nursing") OR MJMESH.EXACT("Family Nurse Practitioners") OR MJMESH.EXACT("Nurse Practitioners")

S7 AB,TI(outcome* N/3 health OR outcome* N/3 process* OR outcome* N/3 service* OR manag* OR satisf* OR govern* OR model* OR effectiv* OR ineffectiv* OR efficien* OR economic* OR cost* OR interdisciplin* OR multidisciplin* OR integrat* OR "care pathway" OR team OR compli* OR standard* OR adhere* OR empower* OR enabl* OR autonomy OR safe* OR risk* OR quality OR "person centred*" OR assurance* OR access* OR educat* N/3 patient* OR staff* or manpower OR workforce OR experience*

OR “acute exacerbat*” OR admi* OR readmi* OR re-admi* OR wellbeing OR well-being OR fund* OR health N/3 prom* OR account* OR benefit* OR morbid* OR mortal*)

S8 MJMESH.EXACT("Outcome Assessment (Health Care)") OR MJMESH.EXACT("Patient Satisfaction") OR MJMESH.EXACT("Clinical Governance") OR MJMESH.EXACT("Nursing Care") OR MJMESH.EXACT("Treatment Outcome") OR MJMESH.EXACT("Cost-Benefit Analysis") OR MJMESH.EXACT("Efficiency, Organizational") OR MJMESH.EXACT("Efficiency") OR MJMESH.EXACT("Analysis of Variance") OR MJMESH.EXACT("Reimbursement, Incentive") OR MJMESH.EXACT("Nursing Informatics") OR MJMESH.EXACT("Costs and Cost Analysis") OR MJMESH.EXACT("Health Care Costs") OR MJMESH.EXACT("Cost Control") OR MJMESH.EXACT("Cost Savings") OR MJMESH.EXACT("Economics") OR MJMESH.EXACT("Case Management") OR MJMESH.EXACT("Systems Integration") OR MJMESH.EXACT("Delivery of Health Care, Integrated") OR MJMESH.EXACT("Critical Pathways") MJMESH.EXACT("Nursing, Team") OR MJMESH.EXACT("Medication Adherence") OR MJMESH.EXACT("Patient Compliance") OR MJMESH.EXACT("Quality of Health Care") OR MJMESH.EXACT("Quality Improvement") OR MJMESH.EXACT("Quality Assurance, Health Care") OR MJMESH.EXACT("Guideline Adherence") OR MJMESH.EXACT("Professional Autonomy") OR MJMESH.EXACT("Risk Assessment") OR MJMESH.EXACT("Health Manpower") OR MJMESH.EXACT("Disease Progression") OR MJMESH.EXACT("Patient Admission") OR MJMESH.EXACT("Patient Readmission") OR MJMESH.EXACT("Health Promotion") OR MJMESH.EXACT("Morbidity") OR MJMESH.EXACT("Mortality") OR MJMESH.EXACT("Child Mortality") OR MJMESH.EXACT("Infant Mortality")

S9 S1 OR S2

S10 S3 OR S4

S11 S5 OR S6

S12 S7 OR S8

S13 (S7 OR S8) AND (S9 AND S10 AND S11 AND S12)

S14 (S7 OR S8) AND (S9 AND S10 AND S11 AND S12) Limits - Date of Publication: 20051101-20151031; Language: English

S15 (S7 OR S8) AND (S9 AND S10 AND S11 AND S12) Limits - Date of Publication: 20051101-20151031; Publication Type: Clinical Trial, Clinical Trial, Phase I, Clinical Trial, Phase II, Clinical Trial, Phase III, Clinical Trial, Phase IV; Language: English

S16 (S7 OR S8) AND (S9 AND S10 AND S11 AND S12) Limits - Date of Publication: 20051101-20151031; Publication Type: Controlled Clinical Trial; Language: English

S17 (S7 OR S8) AND (S9 AND S10 AND S11 AND S12) Limits - Date of Publication: 20051101-20151031; Publication Type: Meta-Analysis; Language: English

S18 (S7 OR S8) AND (S9 AND S10 AND S11 AND S12) Limits - Date of Publication: 20051101-20151031;Publication Type: Randomized Controlled Trial; Language: English

S19 (S7 OR S8) AND (S9 AND S10 AND S11 AND S12) Limits - Date of Publication: 20051101-20151031; Publication Type: Review; Language: English

S20 S15 OR S16 OR S17 OR S18 OR S19

Appendix 5: SocIndex Search Strategy

S1 TI (Nurs* N3 (communit* or "public health" or "primary care" or district or school* or "home health*" or "home care" or homecare or domicil* or rural or liaison or outreach or ambulatory)) OR AB (Nurs* N3 (communit* or "public health" or "primary care" or district or school* or "home health*" or "home care" or homecare or domicil* or rural or liaison or outreach or ambulatory))

S2 TI (Midwi* N3 (communit* or "public health" or "primary care" or district or "home health*" or "home care" or homecare or domicil* or rural or liaison or outreach or ambulatory or "home birth*" or homebirth*)) OR AB (midwi* N3(communit* or "public health" or "primary care" or district or "home health" or "home care" or domicil* or rural or liaison or outreach or ambulatory or "home birth*" or homebirth*))

S3 TI "health visit*" OR AB "health visit*"

S4 TI (model* or approach* or framework* or intervention* or strateg* or polic* or role* or "case manag*" or "care manag*" or caseload*) OR AB (model* or approach* or framework* or intervention* or strateg* or polic* or role* or "case manag*" or "care manag*" or caseload*)

S5 S1 OR S2 OR S3

S6 S4 AND S5 Limits - Scholarly (Peer Reviewed) Journals; Date of Publication: 20051101-20151031

S8 TI ("randomised controlled trial" or "randomized controlled trial" or meta-analysis or "meta analysis" or "systematic review" or metasynthesis or meta-synthesis or "meta synthesis" or meta-review or "meta review" or metareview or "integrated review") OR AB ("randomised controlled trial" or "randomized controlled trial" or meta-analysis or "meta analysis" or "systematic review" or metasynthesis or meta-synthesis or "meta synthesis" or meta-review or "meta review" or metareview or "integrated review") Limits - Scholarly (Peer Reviewed) Journals; Date of Publication: 20051101-20151031

S9 S7 AND S8

Appendix 6: PsycInfo Search Strategy

S1 TI (Nurs* N3 (communit* or "public health" or "primary care" or district or SCHOOL* OR "home health*" or "home care" or homecare or domicil* or rural or liaison or outreach or ambulatory)) OR AB (Nurs* N3 (communit* or "public health" or "primary care" or district or SCHOOL* OR "home health*" or "home care" or homecare or domicil* or rural or liaison or outreach or ambulatory))

S2 TI (Midwi* N3 (communit* or "public health" or "primary care" or district or "home health*" or "home care" or homecare or domicil* or rural or liaison or outreach or ambulatory or "home birth*" or homebirth*)) OR AB (midwi* N3(communit* or "public health" or "primary care" or district or "home health" or "home care" or domicil* or rural or liaison or outreach or ambulatory or "home birth*" or homebirth*))

S3 TI "health visit*" OR AB "health visit*"

S4 TI (model* or approach* or framework* or intervention* or strateg* or polic* or role* or "case manag*" or "care manag*" or caseload*) OR AB (model* or approach* or framework* or intervention* or strateg* or polic* or role* or "case manag*" or "care manag*" or caseload*)

S5 S1 OR S2 OR S3

S6 S4 AND S5 Limits - Published Date: 20051101-20151031; Peer Reviewed; English

S7 TI ("randomised controlled trial" or "randomized controlled trial" or meta-analysis or "meta analysis" or "systematic review" or metasynthesis or meta-synthesis or "meta synthesis" or meta-review or "meta review" or metareview or "integrated review") OR AB ("randomised controlled trial" or "randomized controlled trial" or meta-analysis or "meta analysis" or "systematic review" or metasynthesis or meta-synthesis or "meta synthesis" or meta-review or "meta review" or metareview or "integrated review") Limits - Published Date: 20051101-20151031; Peer Reviewed; English; Document Type: Chapter, Editorial, Journal Article

S8 S7 AND S8

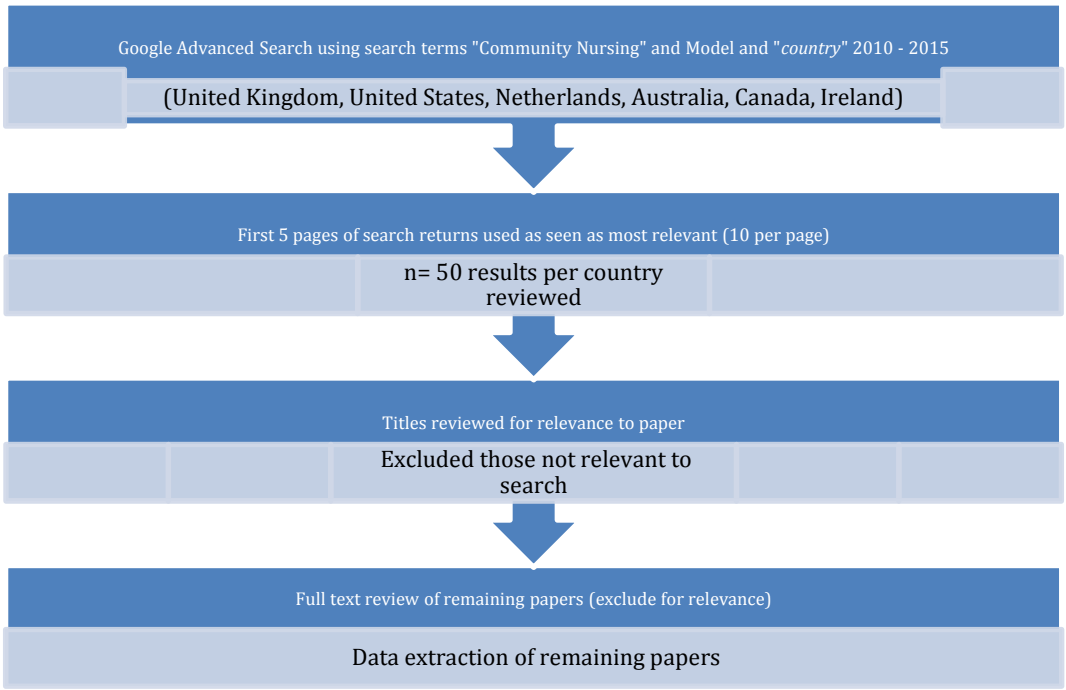
Appendix 7: Cochrane Library Search Strategy

Includes: Cochrane Reviews, Other Reviews (DARE), Trials (CENTRAL) Technological Assessments (Health Technology Assessment Database)
Publication date & language limitations

Search Terms & combinations (in Record Title)	No. of hits	Retrieved for screening
"rural nurs"	2	2
"public health nurs"	9	7
"health visit"	14	12
"Primary care nurs"	11	6
"school nurs"	3	2
"outreach nurs"	0	0
"liaison nurs"	3	0
"community midwife"	2	2
"district nurs"	5	4
"domiciliary nurs"	0	0
"domiciliary midwi"	0	0
"community nurs"	27	22

Appendix 8: International Grey Literature Search / Review Process

Computer search history and cookies cleared prior to any searches undertaken.



Appendix 9: Breakdown of countries, paper type and related categorywithin the grey literature review

Country	Author	Paper type	Type
US	Kulbok et al. 2012	Programme evaluation	Nursing model
UK	Grey et al., 2011;	descriptive case studies	Nursing model
	Lewis et al., 2013;	descriptive case studies	Integrated/collaborative care models
	Lindsay, 2013;	Discussion	Nursing model
	DoH PHN 2013;	Best practice guidance	Nursing model
	RAND, 2012;	Report	Integrated/collaborative care model
	Department of Social Services and Public Safety et al 2010;	Report	Integrated/collaborative care model
Netherlands	De Blok, 2011;	Discussion paper	Integrated/collaborative care model
	Gray et al. 2015	Discussion paper	Integrated/collaborative care model
Canada	CHNC 2011;	Report	Nursing model
	CNA 2013;	Report	Nursing model
	CNA & ANAC 2014,	Report	Nursing model
	Lee Metro 2015	Discussion paper	Home based community nursing
	Pijl-Zieber 2015	Discussion paper	Nursing model
Australia	MTAA, 2012	Strategy	Telehealth
	Department of Health (2011)	Framework	Integrated /collaborative care
	Shuter et al., 2011	Qualitative study	Nursing model
	Borrow et al., 2011	Qualitative study	Nursing model
	Sydney Local Health District. 2012),	Strategy	Integrated/collaborative care
	NSW Government / South Western Sydney Local	Strategy	Integrated/collaborative care

	Health District. 2012		
Ireland	Pye (2011)	Narative Review	Nursing Model
	National Direcors of Public Health Nursing in partnership with Shannon (2014)	Report	Nursing Model
	ONMSD (2011)	Report	Nursing Model
	Hussey and Rodger (2014)	Report	Integrated/collaborative care
	Socio-Economic Review (2011)	Report	Integrated/collaborative care

Appendix 10: Grey literature quality tables per country

Source (Author & date) **Country** **Type of evidence (include n)** **Aim (can be in quotes with Page number)**	**1. Definition of nursing/midwifery or global interventions** **2. Overview of Models** **3. Main components**	**4. Population Group and Size** **5. Health Condition / Problem** **6. Healthcare context / setting addressed** **7. Nursing disciplines involved**	**8. Outcomes assessed and effects on outcomes – use stats** **9. Components associated with improved outcomes**	**10. Resource Implications** **11. Enablers** **12. Barriers**	**13. Key conclusion** **14.Recommendations for Practice, Policy, Education, Research**
Pye (2011) Ireland. Narrative review integrating literature and statistics on community nursing. Aims to identify areas of reform in community nursing services.	1.The public health nurse provides care to all client groups: children, older people with a disability and the young chronic sick. 2.Geographic caseload management for population based health based on a generalist approach to health. 3.Preventative and curative health based care delivery.	4 All members of the population within a geographical caseload. Cites DoHC (2002) figure of 1:2500 people. 5. Population based health-works within primary, secondary and tertiary care. 6. Based on a primary health care model as prescribed in Irish Health Policy. 7. Public Health Nurses.	8. Narrative paper about public health nursing thus no outcomes. 9. NA.	10. Does not indicate resource implications, but does note that the current model is under pressure and requires leadership to respond to challenges. 11. Strategic governance, leadership, caseload management systems, and client dependency assessment frameworks. 12. Government moratorium, restricted funding, more complexity in client management, confusion regarding service eligibility and pressure on retaining a generalist approach "By focusing on exclusively on the integration of care for very high-risk patients, virtual wards may divert attention away from the integration of care for lower risk patients."	13. Reform of pubic health nurse service required to address current challenges. 14. Need to re-orientate services and meet service demand. Requires discipline leadership and service reform.
National Directors of Public Health Nursing and Shannon (2014) Ireland	1. Public health nursing is defined as working with individual client groups within a	4. Population groups as defined in point 3. Caseload ratio not defined but retaining of geographic coverage.	8. Model proposal thus no outcomes in this documents. 9. Requires structural, service and financial reform with in	10. Financial reform involves 'the implementation of innovative developments and through collaborating with others to achieve effective and efficient	13. The current framework for community nursing is unsustainable and to meet population need, reform is imperative.

Report based on existing challenges in Ireland. Cites population and service statistics To present a community nursing model for the future	generalist nursing approach. Core to this is a comprehensive community nursing assessment based on the social determinants of health. 2. Geographical caseload working with individuals, families and communities. Proposed reform of current models. 3. Reform components: Two cohorts of PHNs in community a) PHNs within a universal service who work in community with children, families and schools. Focus on and community and population groups in relation to promoting health and well- being and b) PHNs who work on corporate case management of clinical cases and work with community RGNs and other generalist nursing grades.	5. Primary, secondary and tertiary care. 6. Home, community and school. 7. PHNs with CRGNs and other generalist nurses.	built clinical governance systems.	value-for-money outcomes' (2015:40). 11. Reform of structure and organization of service, service reform, specialization, role expansion & extension; corporate and clinical governance; increased ICT use; professional development and monitoring and evaluation of service. 12. Requires appropriate support for reform to work (Policy, governmental and finances)	14. Reform of practice to match population need. Needs to ensure professional development. Clinical governance frameworks essential.
ONMSD (2011) Ireland Report on pilot of a caseload analysis tool: The Population Health	1. Community nurses focus is on case management of individuals, families and communities to work in partnership for the potentialisation	4. All population groups within caseload. 5.Primary, secondary and tertiary care. 6.Community based population	8. Caseloads were profiled and identified 533 new cases 5% of whom were listed for more than one care group. Caseloads are now linked to district electoral divisions and nursing caseload code. The outcomes	10. Resource Implications Resources needed to roll this out nationally with education and training for staff. 11. Enablers: Resourced appropriately.	13. Key conclusion PHIT has the capacity to promote caseload profiling and promote effective and equitable care. 14. Recommendations are presented under the headings a) Health Information , b) Quality & Governance, c)

Information Tool (PHIT). The project aim was to 'identify sources of information that are available on health and health needs and to explore how this information can be accessed, recorded and used to develop a population health model for use in community nursing practice'. (ONMSD 2011:11)	of health. 2. Changing Practice to support service delivery recommendations 1. Health Information 2. Quality & Governance 3. Research & Development 4. Service Development and Workforce Planning 5. Education and Professional Development. 3. Collection of data on a) incidence and prevalence of cases within PHN caseloads b) geographic registration c) a review of the validity and reliability of the assessment, d) patient dependency and nursing intensity, and e) caseload analysis.	caseload. 7.PHNs and CRGNs.	demonstrated the utility of the PHIT but a second phase needed to identify nursing assessment tools to ensure valid and reliable PHIT registration and the need to upgrade all patient care plan documentation. Enabled a profile of both patient dependency and caseload analysis. 9. Improved outcomes are associated with better and more efficient caseload management and comprises the collection of Health Information , the provision of a framework of Quality & Governance, a framework conducive to Research & Development , Service Development and Workforce Planning as well as identifying areas for Education and Professional Development	12. No barriers identified.	Research & Development , d) Service Development and Workforce Planning, e) Education and Professional Development.
Hussey & Roger (2014) Ireland. Report featuring case study. The aims were to 'a) demonstrate the unique contribution that nursing services make in inter agency	1. Nursing is considered to provide discipline related care and to be an important contributing member of the interdisciplinary team. 2. E Health models are considered to promote personal independence, enrich consumer choice and	4. Older person care across services of acute and community. 5. NR. 6. Community and acute service in North Dublin. 7. Community Interventions Team Nurse , Partnership Nurse , Community Liaison Nurse/ Clinical Case Manager, Clinical	8. Outcomes assessed: Follows the path of interdisciplinary communication for the case of an older gentleman from A&E to home and readmission to home with involvement of day services and referral agencies. 9. E Health systems need to be designed with nurses dual role highlighted (see point 1).	10. Resource Implications are not detailed. 11. Enablers: Comprehensive E Health design for potentialising nursing contribution. 12. Barriers: Poor design of future E Health Records will negatively impact on the important role nursing has in inter-setting health case management.	13. The need for well planned E Health Records that accommodate a nursing input and the nursing within an inter-disciplinary care perspective for patients across settings. 14. 'Future design and technology requirement specifications will be required to be cognisant of the dual role that nursing plays in health service provision'. (Hussey & Roger 2014)

communication in Ireland in regard to nurse to nurse and nurse to MDT Role, b) explore the need to engage with the development of a Subject Area Model for Nursing and Midwifery services within the HSE Integrated Services Framework Programme from a national perspective, c) Identify within HSE ICT a nursing and midwifery profile for future procurement recognizing the dual role that contemporary nursing and midwifery provides in accordance with recently published DoH eHealth and HSE ICT Strategy (EU and WHO Nursing Division)'. (Hussey & Roger 2014:4).	enable individual empowerment. 3. Main components: E Health Systems which are conducive to nursing care delivery and nursing's input in case management across settings.	Nurse Manager 3 , Advanced Nurse Practitioner Role.			
Socio-Economic Review (2011) Ireland. Report. To examine the nature of health inequalities in Ireland and their intersection with the	1. This report uses the World Health Organisation (2006) definition of healthcare ' … a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'.	4. Particular attention is given to older people, child and family services and disability and mental health. 5. *Older people care services* in the community need additional resources and access to acute care when needed-infrastructure is not able to do this currently. A particular focus	8. Better population health by addressing issues identified in 4. 9. Reform in areas of primary health care, older person service, child and family services, disability services, mental health services, general medical card services, health budget-more investment in	10. Resource Implications *Older people services:* €100 million per year for 5 years. *Primary health care teams:* €250 million investment over a five year period. *Child & Family services*: €250 million investment over a five year period.	13. To address population health and social care needs requires a determined effort to identify health inequalities and to address issues with appropriate funding and service provision 14. To realize that the standard of care is greatly dependent on resources made available for health care. Recommend considering social inequality as the basis of government decision making on

social, economic and political environment.	2. The paper presents issues related to health and contextualizes selected issues to consider within EU statistics. 3. The main components covered are a) poverty and healthcare exclusion b) life expectance and infant mortality c) health expenditure d) area of focus in a model of healthcare (Accessibility, responsive, supportive of communities, gives priority to primary care).	necessary for older people with dementia as service uncoordinated. *Children and family services*- notes difficulties in standards of care. States local infrastructure of community and family services are in need of upgrading to facilitate services that are locally owned. *People with disabilities:* Continue the implementation of the National Disability Strategy. *Mental Health*: Impoverished services in outreach and follow up on discharge of people from mental health acute services People with intellectual disability who require mental health services are unable to access this service Need to target suicide prevention *General medical card reform* needed 6. Primary care based on a social model of health. Additional budget needed and reform of the General Medical Service. Community development, partnership and involvement essential. Further development of primary care teams are fundamental to population health. 7. Primary Health Care teams specifically mentioning PHNs, community RGNs and practice nurses	primary care services	*Disability and mental health:* not indicated but advocates commitment to Programme for Government 2011. Medical cards: Stated that an extension is needed for vulnerable groups. 11. Enablers include the recognition of health inequalities and the restructuring of health funding to achieve specific goals with particular groups in primary care. Monitor health reform programme. 12. Barriers include the lack of attention to a model based on health inequalities which target vulnerable groups.	service and fiscal strategy. This perspective advocates for a consideration of inequalities within the context of Ireland's social, political and economic environment.

Source (Author & date) **Country** **Type of evidence (include n)** **Aim (can be in quotes with Page number)**	**1. Definition of nursing/midwifery or global interventions** **2. Overview of Models** **3. Main components**	**4. Population Group and Size** **5. Health Condition / Problem** **6. Healthcare context / setting addressed** **7. Nursing disciplines involved**	**8. Outcomes assessed and effects on outcomes – use stats** **9. Components associated with improved outcomes**	**10. Resource Implications** **11. Enablers** **12. Barriers**	**13. Key conclusion** **14. Recommendations for Practice, Policy, Education, Research**
Department of Health, Western Australia (2011). Model of Dementia Care Framework. Sets out a model of care for people with dementia in WA *"to provide health service environments and related services with a guide, to work towards best practice for improving and implementing dementia care services. This model of care aligns and builds on the National Framework for Action on Dementia 2006-2010 which has been formally adopted by WA.*	**1.** Role of Community Nurse in Dementia: Nurses are well placed to facilitate best practice 'at the coalface' in the clinical processes of early identification of risk factors, baseline cognitive screening, promoting the foundations of essential care and adhering to clinical standards required for dementia care. 2. At the heart of the model is improved assessment of care needs and clear communication processes at all points along the continuum of care with a focus on person centredness. 3. The model focuses on (1) Saying well; (2) Staying at home; (3)	4. Predicts the number of Australians affected by dementia is expected to increase from 245,000 in 2009 to 591,000 in 2030 and again to 1.1 million by 2050. 5. Dementia. 6. People with dementia across all settings. 7. Refers to nurses across the patient journey as a member of a team.	8. Refers to 'good care outcomes' and 'adverse outcomes related to functional decline' but does not specify. 9. Age friendly principles across the trajectory can result in good care outcomes	10. Training programmes. 11. NR. 12. NR.	13. Describes a high level service delivery model of care for older people with dementia and their carers across the continuum of care. 14. The model makes 8 key recommendations: i. Adopt relevant framework documents ii. Simplify access to community care iii. Facilitate early screening, assessment and diagnosis iv. Formalise and strengthen access and partnerships with multidisciplinary specialists. v. Inclusive discharge planning vi. The person with dementia and carer as partners in care vii. Workforce training viii. Legal issues

	Staying out of hospital. .				
The Medical Technology Association of Australia (MTAA) (2012) Australia. Strategy. A strategy developed to influence national policy makers.	1. Telehealth: "the delivery of medical services through information technology and telecommunications. It is an overarching definition that includes remote patient monitoring. Remote patient monitoring (or tele monitoring) covers the exchange of medical data between a patient who is at home and a healthcare professional based (usually) in a medical centre. Patient data are transferred using phone lines or wireless technology" (p3). 2. Describes many devices that can be used to monitor patients at home, their benefits and cost implications. 3. Multiple telehealth interventions described.	4. All, however there is a focus on older people and those with chronic disease. 5. Elderly and chronic illness. 6. Community. 7. Refers to nurses generally and once to a tele-health nurse.	8. The authors report outcomes described in other studies associated with telehealth. 9. An increase in mean survival time in a sample of 387 diabetic patients who undertook daily monitoring of vital signs. Significant improvement in glycemic control in diabetic patients who transmitted blood glucose and blood pressure data to a telehealth nurse. A 71% reduction in Emergency Room (ER) admissions in respiratory patients who had oxygen saturation measured by pulse oximetry and monitored daily. A reduction in the number of hospital readmissions in patients with angina. Significant improvements in health related quality of life and a decrease in mortality in COPD patients using home monitoring. A 25% reduction in numbers of bed days of care and a 19% reduction in hospital admissions in 17,025 veterans with chronic disease who were enrolled in a home telehealth program. A telehealth program run by Silver Chair in Western Australia has reported a decrease in the number of COPD related ER admissions by almost 50%. A 43% reduction in hospitalizations and a 68% reduction in bed days of care in cardiac patients who	10. Reports that Rojas and Gagnon (2008) performed a comprehensive literature review on the cost effectiveness of telehealth. There were 23 studies that met the inclusion criteria and included both tele-consulting and vital signs monitoring. The study found strong evidence for the effectiveness of telehealth. The strongest evidence was reported for reduced travel (time and distance), increased patient productivity and reduction in total costs. 11. Savings depend on technology selected and patient group. 12. Lack of reimbursement.	13. The provision of appropriate home monitoring will decrease ER visits, decrease unnecessary hospitalisations, avoid inappropriate transition to residential care and achieve cost savings through maintaining people in their own homes. The provision of care that enables individuals to be treated in the home environment is far more cost effective than *all* other alternatives. A range of technologies exist to assist and support patients who wish to remain in their own homes. 14. Appropriate policies for the integration of remote monitoring be introduced into the health system, using funding models that are cost effective based on current evidence, supplemented by additional pilot programs where needed.

			transmitted daily ECG and blood pressure data. Reduced office visits and earlier detection of clinical anomalies such atrial arrhythmias in patients with implantable cardiac devices who were monitored remotely using automated, wireless technology. Faster detection of clinically actionable events in patients with cardiac pacemakers. A significant decrease (45%) in the need for in-patient hospital evaluation in 1,339 patients with implanted cardiac defibrillators who were remotely monitored. Reduced time to clinical decision in a large group (*n*=2,000) of patients with implantable cardiac devices who were monitored using wireless telemetry devices and alerts. Detection of a far greater number of clinical or device related events than during scheduled office visits in patients with implantable cardiac devices. Earlier detection of clinically relevant events, most of which occurred within a month of follow-up in patients with implantable cardiac devices. A 50% reduction in the risk of heart failure related readmission and 55% reduction in cardiovascular mortality in chronic heart failure patients monitored at home. A 50% reduction in mortality in a large sample (*n*=69,556) of patients with implantable cardiac devices, including cardiac defibrillators.		

South Western Sydney Local Health District (2012) Australia Strategy- Integrated Primary and Community Care (IPCC) Development Plans. The document describes a model of integrated primary care, using Ireland – and the work in Mitchelstown re: PCT development as a case study.	1. Multiple definitions of terms relevant to primary care are outlined in Appendix A, however there are no definitions specific to nursing. 2. Integrated primary and community care (IPCC) - characterised by local disease prevention and early interventional care provided by multidisciplinary primary care teams; linked up with secondary and tertiary providers outreaching from hospitals; at the leading edge of innovation, quality and excellence; exploring the practical application of evidence - based policy; teaching the next generation of health care providers partnered with academia; and accountable to local communities. 3. Regional Integrated Primary & Community Care Centre (RIPCC) Catchment population	4. Whole population approach. See Q3. 5. All. 6. Primary healthcare 7. RIPCC includes specialist clinics but does not identify the role of the nurse. PCCs include practice nursing, early childhood nursing, community nursing, diabetes education and wound management TGPs include practice nursing.	8. Health systems with strong primary health care have lower rates of hospitalisation, fewer health inequalities and better health outcomes such as lower adult mortality and lower infant mortality at a more efficient cost than those that do not. 9. When mobilised and well - resourced, primary health care optimises maternal and child health outcomes, well - being for adults, avoidance of preventable conditions and better aged care. Their defining characteristics include being first point of contact, continuity, coordinated and highly visible to local communities as part of social capital.	10. A mixed funding model for capital and operational costs will be required. For capital, the mix of funding is likely to vary between the hierarchical levels. For the largest regional IPCCs it is expected that a mix of Australian Government (possibly Health and Hospitals Fund or like funding) and NSW Government funding sources would be required. For the middle level PCCs a mix of Australian Government (possibly GP Super Clinics or like funding) and private sector funding is envisaged. For the smallest hierarchy level, TGPs, predominately private sector funding is envisaged with Australian Government top - up funding (possibly Primary Care Infrastructure Grants or like funding). 11. A review of enablers identified: Information management and technology; Use of electronic medical records; Governance; Clear agreed PPGS; Community involvement / consumer participation; Provision of locally and culturally appropriate services; Access to training and support; GP involvement and leadership; Access to services and flexible funding; Supporting the role of community health in primary healthcare.	13. A number of 'next steps' are described to operationalize the planned model. 14. Further studies to determine outcomes associated with these models is required.

	75,000 - 100,000. Hub for multidisciplinary primary care and specialist hospital outreach in medical ambulatory care and potentially day surgery. Co - located community health, general practice PCC(s) and on - site specialist ambulatory care. Educating the health disciplines. Integrated management structure. Primary Care Clinics (PCC) Catchment population 15,000 - 18,000 Private general practice with 6 - 8 GPs, Practice Nurses, onsite allied health therapy and other services on visiting basis. Educating the health disciplines. Private practice GP led management structure. Team General Practice (TGP) Catchment population 4,000 - 5,000 Private general practice, normally 5			12. A review of barriers identified: Workforce shortages; Fragmented service systems; Inter=professional rivalry and dominance of the acute setting.	

	GPs supported by lesser number of Practice Nurses. Includes solo and partner practices teamed through virtual alignment including for education. Private practice GP led management structure				
Shuter et al. (2011) Australia Participatory action research (PAR) study performed concurrently with an RCT (paper reports only on PAR study). "To explore and enrich the results of the RCT" and "examine the psychosocial benefits and outcomes for clients of community-based Leg Clubs®." (p 16).	1 NR 2 Leg Club model 3 Drop in centre providing social interaction and peer support, and leg ulcer care. Patients become stakeholders in their care provision in a community-based setting (p16) Control group: usual care, consisting of leg ulcer care in the home	4 Adults (total n= unspecified; n=2 case studies) 5 Leg ulcers 6 Community 7 Nurses performed leg ulcer care. Unspecified staff and volunteers involved in club.	8. Psychosocial changes: Increased willingness to challenge advice from doctor/ hospital, and so clients became 'agents for change'. 9 Case study 1: interaction and collaboration was associated with empowerment and as a result, improved quality of life. Case study 2: Empathy and support enabled advocacy which challenged hospital's approach to client.	10 NR 11 Volunteers 12 NR	13 The Leg Club enables and empowers people to improve their social context and highlights the potential of expanding care that is normally clinically based (particularly in relation to chronic conditions) but transferable to community settings in order for patients and community settings to become 'agents of change' for addressing issues such as social isolation and related challenges including non-compliance to treatment. Indicates that positive change can result from a dynamic social framework where power relationships are challenged and clients have been empowered 14 PAR is a good method of research for understanding and improving practice, as the findings of this type of research may be more meaningful to practitioners as they more closely reflect real situations as they naturally occur. Highlights the potential for expanding care that is normally clinically based (particularly chronic conditions) but

					transferable to a community setting, particularly for marginalised groups.
Sydney Local Health District (2012) Australia Strategic Plan "to identify the goals and strategies relevant to Community Health, ... to develop actions to achievetgoals and implement strategies" (p8), thereby informing actions and development of plan.	1.Community Health care is located close to where people live, involves front line health workers who have well-developed generalist skills and competencies and maintain regular contact with individuals/families and local communities across a broad range of health issues. There are also specialised community based health services that provide services for individuals/families/ communities with specific health conditions or more complex and multiple needs 2. NR- Strategic Plan 3. NR	4.NR 5. Focus involves many different at-risk populations. 6.Community 7.Healthcare professionals from community, Local Health District, and Community Health Executive	8. Strategic plan aims to achieve the following outcomes. Equity- focus on reaching vulnerable families, focus on marginalised and disadvantaged populations, maintaining focus on priority population groups who have difficulty accessing mainstream care. Prevention and Early Intervention: increased focus on prevention and early intervention, improved coordination of government, NGO and community services/stakeholders, health promotion governance framework and targeted health promotion programmes. Acute/ Post-Acute Treatment: implementation of Hospital in the Home (HITH) services and community nursing, and strengthen community palliative care to promote early discharge and hospital avoidance, improved discharge processes between community and hospital setting. Multidisciplinary care Community Participation: Use of consumer and community values to develop, plan and implement interventions and services. Develop Community Health Profile Develop Research and Evidence Base	10. NR 11. NR 12. NR	13 & 14. **Key priorities for Community Health** <u>Performance & Workforce Planning.:</u> Real time Workforce Measurement Tool (WMT) , definition of direct and indirect Clinical Hours, development of a CERNER system to collect direct and indirect clinical hours, development of a Dashboard & Patient Flow Portal, development of a Communication Strategy to implement the tool effectively and sustainably. <u>Develop Community Health Access and Intake (CHAIN)</u> Phase 2- focuses on quality, governance, streamlining the referral process & enhancing the efficiency of business processes to ensure a responsive service to all stakeholders <u>Develop an Assessment Focused Service:</u> Develop a CHN Client Management Framework, a standardised CHN Assessment tool based on A-G, DETECT and Between the Flags programs, a CHN Standard Adult General Observation Chart (SAGO), a standardised CHN Medication Chart, and a reflective, accountable client focused nursing service through enhanced case review, a sustainable Morbidity and Mortality review process and Clinical Supervision <u>SLHD Education Strategy</u> to ensure that the District has an adaptable health workforce with the requisite skills, knowledge and attitudes for contemporary patient-centred, interdisciplinary, collaborative care

			for Community Health Develop new Technology and Business Processes: Implementation of eMR and pilot use of social media. 9. NR		**Key priorities for Child and Family Health Services:** Trans-disciplinary model needed- multi-disciplinary assessment and internal referral to community services, monitoring and sustaining multidisciplinary assessment Clinics: common referral, intake and service pathways for assessment of children with vulnerabilities and children in out of home care (OOHC). Reviewing models of care in response to emerging health and community issues. Prevention, early intervention and treatment particularly for complex clients: Timely access to diagnostic and treatment services, increased availability of sustained home visiting to vulnerable families. Collaborative development of models of care for high risk client groups Enhance relationships with Mental Health and Drug Health-clearly defined roles and identification of overlaps and gaps. Improve partnerships with maternity services-antenatal outreach clinics and a midwifery group practice model integrated with CFHN. New models of care with community nutrition for people with chronic and complex health needs Electronic medical record (eMR). Increase staff skills **Key priorities for Community Specialist Health Services:** Reducing the prevalence of HIV among

					gay men and reducing the prevalence of STIs among gay men, Aboriginal people, young people and sex workers. Supporting chronic disease management and avoiding hospital admissions for people with HIV. Reducing the prevalence of hepatitis C by providing access to sterile injecting equipment and improving access to medical treatment for people with hepatitis C. Minimising the trauma associated with sexual assault by providing 24/7 crisis counseling services. Improving early childhood feeding practices and preventing childhood obesity. Improving the health and wellbeing of marginalised and disadvantaged young people, young people with a disability and frail older people. Improving rates of cervical screening for priority women. Improving the health literacy of culturally diverse communities. Piloting innovative approaches to improve access for priority groups as indicated by changes in epidemiology, demographics and research findings..
Borrow et al (2011) Australia Descriptive qualitative study To define the current role/practice domain	1. Child health nurses provide holistic individualised care by comprehensive assessment and program planning . Recently the child health nurses' roles and responsibilities	4. Child Health Nurses (n=60) 5. Child health 6. Child health nursing services from a metropolitan health service, community	8. Current practice of community based child health nurses Decision making process Recent changes in child health nurses' role 9. Type of contact: client–nurse contact was by voluntary clinic visiting (43.9%), followed by home visiting	10. Lack of resources identified as barrier to accommodating changes in practice 11. Good brokerage and facilitation skills needed to enable community inclusion and inter-agency collaboration at the local	13. Community-based child health nurses currently have a more complex and expanded role and increasingly diverse client population, in addition to their traditional practices. Excessive workloads and lack of staff and resources also presented challenges. There are increasing requirements for child health nurses to engage in community

of community-based child health nursing in light of widespread political, economic and social changes in Western Australia, and to identify the decision-making process that underpins this nursing specialty (p71).	have included health promotion and prevention strategies, with more of a population health approach. 2. 2 week work diary kept to record activities. Follow-up focus group interviews conducted (n=24 participants). 3. Nurses instructed on format and level of documentation required for diary. Recorded: date and time of each client interaction, the client's age, sex, marital status and parity and the type of contact e.g. home visit, clinic visit, telephone contact, emailor a group session. The nurses were also asked to describe the outcome, and the rationale for the decision made. They were also given the opportunity to write any thoughts, feelings or reflections they experienced	health service and country health service. 7. Child health nurses (n=60)	(21.3%), nurse initiated contact (21.3%), phone contact (17.5%) and routine clinic visit (11.7%). Current practice: Working in partnership with families e.g. providing info on breastfeeding, development, etc.; referrals e.g. psychologist, lactation consultant; play groups, mothers groups; support and advocacy to empower families; health education and promotion; counseling and mediation; liaison with relevant agencies and professionals e.g. social worker; early detection of high risk families e.g. drug abuse, domestic violence; building trusting relationship with clients. Issues/ challenges: isolation, time constraints, changes in changes in practice, lack of resources, increased numbers of multi-cultural clients, changing family dynamics. Clinical supervision and professional development: expressed the importance of clinical supervision especially in light of the complex and very challenging work environment they practice in. Disappointed in lack of supervision. Need identified for professional development training and education in counseling, cognitive development and dealing with mental health issues. Impact of reflection on decision	level. 12. Issues/ challenges: isolation, time constraints, changes in changes in practice, lack of resources, increased numbers of multi-cultural clients, changing family dynamics.	development, often through multidisciplinary partnership, which requires good brokerage and facilitation skills to enable community inclusion and local collaboration. 14. More resources should be allocated to help community-based child health nurses to support culturally and linguistically diverse families Mapping child health nurses' workloads Development of community health client dependency rating criteria reflecting the social determinants of health, for health service refinement of staffing allocations based on acuity. Specific staff development opportunities to reflect increased complexity of workload Managerial support for implementation of formal clinical supervision Additional clerical assistance with non-nursing duties.

	during or following each interaction. Focus groups conducted in 4 locations to explore content of diaries further and identify new themes.		making: important role in decision making. Changing nature of role: Dynamic. Role has broadened to address gaps in community services. Changing demographics of clients – multicultural.		

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Community Health Nurses of Canada (revised 2011) Canada *Report of practice model* and *standards* review To describe 'the components of the Community Health Nurses of Canada professional practice model and standards of practice for community health nurses in Canada' (p2)	1.Community health nursing values caring, principles of primary healthcare, multiple ways of knowing, individual and community partnerships, empowerment and social justice. 2.Model includes structure, process and values that supports nurses' control over the delivery of nursing care and the setting in which that care is delivered. <u>3.Model has 13 components:</u> client, code of ethics, community health nurse, community health nursing standards, delivery structure and process, determinants of health, discipline	4.Individuals, families, groups, communities, populations and systems. 5. NR 6.Primary, secondary and tertiary care Health centres, homes schools and other community based settings. 7.Community health nurses (home health nurses and public health nurses) in Canada who work in practice, education, administration or research	8 & 9 Guidance document based on literature and expert agreement. Contains descriptors of all 13 model components and 7 standards components.	10. NR 11. Application of principles of model and standards. 12. NR Not identified	13. A professional practice model requires structure, process and values that underpin the specific nature of nursing in the community and is supported by standards that define the practice of a registered nurse working in the specialist area of community health nursing. 14. The model 'provides guidance into supporting nurses' control over the delivery of nursing care and the environment in which care is delivered' (p.3) while the standards provide 'a vision for excellence' (p.7) by defining scope of practice, criteria for practice, professional development, performance measurement and a benchmark for new community health nurses. States two years is required to meet standards and should have mentorship, leadership and peer support.

	specific competencies, government support, management practices, professional relationships and partnerships, professional regulatory standards, theoretical foundation and values and principles. <u>Standards have 7 components:</u> health promotion, prevention and health protection, health maintenance, restoration and palliation, professional relationships, capacity building, access and equity and professional responsibility and accountability.				
Canadian Nurses' Association (2013) Canada Report of a literature review of home health nursing, survey and telephone interviews and 38 completed a survey (RR 83%) and 16 telephone interviews.	1.'Home health nursing is a specialized area of nursing practice that provides care in the client's home, at school, in the workplace or in other community settings (Ontario Home Care Association [OHCA], 2011). It is a unique nursing field that focuses on care to	4.Community Health Nurses (n=48) 5.NR 6.Community based: Client's home, school, workplace or other community setting. 7.Community Health Nurses	8. Role optimization can be mixed, potentialising can attract nurses, while some indicated role was task focused. Potential for expansion in home care. 9. NR	10. Move beyond a medical model of funding. Cost containment stunts nursing scope of practice. Needs a good funding package to attract and retain nurses. 11.<u>Enablers: a)</u> Leadership that creates supportive workplaces and strive for change in policy and funding; b) Health systems that are aligned and work for the common goal of providing care closer to home; c) Nursing	**13.** Need to reform for demographic change. Use outcomes specific to patient populations rather than process based models. **14.** 1) Use transformational leadership for advocacy, policy and infrastructure development. 2) Align health systems 3) Develop nurses' proficiency 4) Interprofessional respect 5) Technology

This publication 'identifies issues and options for optimizing the role of RNs and NPs within home care. It examines the current practice setting and the value proposition of home health nurses (including related outcomes), while offering a discussion and recommendations on moving forward' (p.7)	acute, chronically ill and healthy clients of all ages. Home health nursing integrates community-health nursing principles that promote health while emphasizing the environmental, psychosocial, economic, cultural and personal health factors affecting an individual's and a family's health status (Humphrey & Milone-Nuzzo, 1996).' (p. 3). 2.Role based on five Canadian Community Health Nursing Standards of Practice a) Promoting health — health promotion; prevention and health protection; health maintenance, restoration and palliation, b) building individual and community capacity, c) Building relationships, d) Facilitating access and equity, e) Demonstrating professional responsibility and			proficiency (through education and practice standards that helps maintain competency and professional confidence in home health; d) Interprofessional respect within team relationships and supportive communities; e) Technology that supports clinicians and clients in more efficient care and timely communication 12. <u>Barriers: focusing on individual (client and nurse) and organizational (employer, association and academic)</u> a) Changing patient and nurse demographics, b) Challenges related to the working environment (which changes with every home visited), c) Gaps between education and the realities of practice; d) Challenges for ongoing professional development, which must address the diversity and increasing complexity of client need (for a mobile workforce dispersed across the community); e) Lagging recognition of the need to fund development and support programs to help new nursing graduates meet this clinically demanding role and to adequately sustain existing staff levels f) Limits on funding models for comprehensive home nursing practice and both basic	(Useful as includes specific key actions and key success indicators both short and long term)

	accountability (CHNAC, 2008). Nurses in practice education, research or administration 3. Assessment, monitoring and clinical decision-making; care planning and coordination; health maintenance, restoration and palliation; identifying and meeting gaps in knowledge and care; teaching and education; communication, especially listening; and building capacity and client engagement (CHNC, 2010).			and innovative technologies to deliver care and communicate with team members; g) Ramifications for clients and the health care system due to outdated perceptions about the capacity of home care (generally and specifically) and the role and expertise of the home health nurse	
Canadian Nurses' Association (2014) Canada Report on telephone interviews, survey (n=102), roundtable discussion with key stakeholders and literature review. To develop a discussion paper and	1. 'Aboriginal nursing refers to clinical practice, research, administration and policy that specifically involve aboriginal nurses who provide aboriginal health nursing. Aboriginal nursing also refers to education programs that address the needs and concerns of Aboriginal nursing students. It does not	4. Nurses 5. Care to Aboriginal population in Canada 6. Population based-unspecified setting 7. All nurses	8.Foundational and practice based priorities for nursing related to Aboriginal populations identified. Survey ranked these in order of priority and supplemented via interviews and roundtable. 9.<u>Foundational:</u> 1) Identifying institutional policies, practices and administrative barriers that make it difficult for nurses to provide the care that aboriginal people need; 2) Identifying racism in policy & practice. <u>Practice based:</u> 1) Recruiting Aboriginal people to the nursing	10. NR 11. NR 12. NR	13. <u>Identification of 5 Priorities</u> 1) Integration of indigenous ways of knowing and being. 2) Addressing institutional barriers to aboriginal health nursing and aboriginal health 3) Education: recruitment and retention 4) Practicing nurses: recruitment and retention 5) Building capacity for leadership and advocacy. 14. The priority areas are considered to be interdependent, not mutually exclusive. In particular, respondents cited institutional barriers such as racism as foundational issues that play an

for the development of policy and action as these pertain to nurses working with Aboriginal Peoples in Canada	refer to a specialty in aboriginal nursing.' (p.1) 2. Targeted informants to illuminate context of nursing care for Aboriginal peoples in Canada. 3.Participants/ respondents demographics detailed. Respondents asked to rank 14 issues generated from the preliminary review of the literature, followed by consultation with CNA and the CNA aboriginal advisory group		profession; 2) Providing continuing education and professional development 3) Developing leadership capacity 4) Recognizing indigenous knowledge; 5) Developing mentoring programs; 6) Developing recruitment and retention strategies for nurses to work in northern and remote areas. Recognition was also given to nurses, aboriginal organizations and national nursing organizations in supporting aboriginal health nursing		integral role in the other priorities. Integration of indigenous ways of knowing and being was also seen to have a potential impact on the other priority areas.
Lee Metro (2015) Canada Discussion paper To discuss a model of community health nursing	1.Community Health Nurse must 'promote, protect [an] preserve the health of individuals…[and] populations in the settings where they live, work, learn, worship and play in an ongoing and/or episodic process' (Used by author but cited from CHNC (2011-1/1):5) 2.Model cited CHN	4.Illicit drug users (age unspecified) 5.Illicit drug users 6.Multiple settings but predominantly primary care and care delivered by CHN 7.CHN	8.Primary care and harm reduction, secondary care and tertiary care preventions. 9. Case finding and advocacy. Improved access to appointments/methadone clinics, collaborate with MDT. Advocate at a political level using five primary health care principles (accessibility, public participation, intersectoral collaboration, appropriate technology and health promotion.	10.Not stated but cites the BC Center for Disease Control on the merits of harm reduction in reducing crime, overdose, HIV/AIDS HCV, public injecting, unemployment rates and increasing education opportunities 11.Education 12.Lack of appropriate competency to care for this group. Perception of conflicting	13: Current and potential contribution of CHN in IIDU 14: Education, political lobbying and policy reorientation

	with IIDU a) provide primary care, b) advocate for clinic in the healthcare systems and c) advocate at political level. (Hardill 2006) 3.Discusses current CHN role as in many settings such as hospital, street outreach programmes or urban street clinics.			perspectives- lobby for health and social policy but may face public & political opposition. Also, recognised controversial issue.	
Pijl-Zieber (2015) Canada Discussion paper To discuss rhetoric vs reality of models of community health nursing.	1.CHN describes nurses who practice in roles such as public health, visiting nursing or home health (p. 2) 2.Cites models based on competencies for professional nursing underpinned by a community nurse focus. Recognises individual countries develop their own set of competencies. 3.Argues the rhetoric versus reality in practice.	4.Conflict of ideal and real practice. 5. Lack of community nursing preceptor placements except in non -traditional community health areas. 6. Community nursing 7.Community nurses	8.NR 9.Reduce rhetoric to actual practice reality	10. NR 11.Careful review of practice and orientation to match policy to practice 12.Current practice Lack of appropriate placements for students and appropriate experience	13.Debate on what it means to be an RN in primary care 14.As above

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Grey et al. (2011) UK (Scotland) Descriptive qualitative Case Study (including focus groups and managerial interviews) The study aimed to explore how community nurses and managers thought of proposed changes towards generalist working, in contrast to their established specialist community nurse model Proposed changes across Scotland and to be tested within 4 health boards Interviews took place before changes occurred, to establish	1. Outlines the role of the Registered General Nurse and their transition into community nursing, differential given between Specialist Community Nurse and Community Staff Nurse roles within the UK. 2. Current NHS modernization agenda has emphasized flexible working and task-oriented skills as opposed to traditional role-defined skills through efforts such as 'skill mix'. 3. Explored views about the new generalist role, the main issues and lessons learnt for community nursing,	4. Community nursing practitioners (n=27), range of specialties, Inc. 3 community nurse managers. 5. Specialized community nursing vs. general – no specific health condition 6 & 7. Any community healthcare setting, Inc. schools, district nurse, health visitor	8. NR - qualitative thematic analysis – led to 4 key themes: a. The community health nurse role – questions raised re: importance of defining roles of specialized and generalized community nurses. Nurses felt demoralized by the proposed changes b. Specialist roles and boundary work c. The validation of existing specialist roles – feeling that nurses had to justify their position d. The management of accountability for future changes 9. NR	10. NR 11.Findings of the survey were thought to be useful for informing future debate on ole changes with this group of staff, incorporating the needs of patients into these debates 12. Nurses felt undermined by the proposed changes, and it was thought that generalising nurses would lead to de-skilling and lack of transferrable knowledge. Negative outlook / impact perceived y all in the survey, and thought it would decrease the level of patient care	13. Suggested that more discussion needs to be had when considering changing nurses roles for the future. From managers, through policy makers and frontline staff, more discourse should be encouraged to ensure everyone clear on the potential of proposed role changes 14. Recommendations for future practice and proposed role changes, emphasis was put on the perceived value of the profession, which was seen to be highly linked to job satisfaction. Future proposed changes to policy should include the discourse of the community nurses involved to ensure retention of staff and show the workforce their opinions are valued.

nurses views on the proposed changes	the future of community nursing and the change process experienced				
Lewis et al. (2013) UK Case studies across 3 clinical sites "To describe the care practice in three virtual ward sites in England and to explore how well each site had achieved meaningful integration".	1. Hospital avoidance programme using 'Virtual wards' MDT approach to care, aiming to avoid hospital admission using a combined predictive model 2. Virtual ward linked to a group of general practices, specified catchment area. High risk patients are put in 'virtual beds' (daily, weekly or monthly) are reviewed by MDT remotely. Care delivered in patient's home, on telephone or in clinics. 3. Aimed at reducing hospital admission for 'high risk' patients by assessing them using an MDT approach	4 & 5. Patients who are assessed as being high risk for admission, multiple co-morbidities combined with complex social and psychological – numbers undefined. 6. Any community health care setting 7. All nurses	8. Initiative assessed using qualitative data obtained from 3 clinical sites. Case studies involving semi-structured interviews, workshops and site visits. 9. NR – wide differentiation across 3 sites meant results were not generalisable	10. Resource heavy initiative (time, staff, integrating services, information technology) 11. having a general practice sponsor – increases sustainability of the project; inclusion of specific funding for risk stratification and case management – ensures continued primary care support 12. Simultaneous launch of other improvement programmes across health care system – limited focus on this initiative. By focusing on exclusively on the integration of care for very high-risk patients, virtual wards may divert attention away from the integration of care for lower risk patients.	13. High-risk patients often experience fragmented care; therefore, this is a fertile area for improving integration. 14.. Outlined the importance of involving general practitioners in the design and delivery of innovative models of care; safeguards, such as *key performance indicators*, may be helpful in avoiding regression back to old ways of working; there may be advantages to greater standardisation across projects, both in order to facilitate evaluation with sufficient numbers of patients and homogeneity of the intervention
Lindsay (2013) UK Discussion paper Discusses the challenges and	1. 'Leg Club Model' - community-based social clinic is primarily aimed at integrating the patients into an environment where they can socialise with	4 & 5. Adults with leg ulcers requiring treatment 5.Leg ulcers 6. Any healthcare setting, aim to	8. Assessed with quality of life indicators of patients attending leg club, proving 'significant' improvements in QoL vs. those being treated at home. Benefits reported in pain management, healing rates and patient morale	10. Not mentioned 11. Benefits of community and patient led treatment being accepted at the top level of NHS, and promoted thereafter 12. Individual Leg Clubs rely on	13. This semi-autonomous model results in practitioner and patient empowerment, relieves pressure on other healthcare providers/services offering traditional models of treatment. Leg clubs are cost-effective. 14. Practitioners should be challenged

rationale of introducing a new service delivery for leg ulcer management based on patient empowerment, health promotion and education, and its implication for clinical practice.	others who are experiencing similar problems. Empowering patients to become stakeholders in their own treatment. 2. Applies philosophies of social and health belief models in a framework that addresses the individual's hierarchy of needs. Supported by committed teams of nurses and the outstanding involvement of community volunteers. Previously house-bound nonconcordant patients have taken on the responsibility of self-management of their condition. 3. Delivers an environment for truly patient-centred holistic care; collective treatment, shared experience, open access, maintenance and health promotion	complement existing care delivery mechanisms 7. All nurses	9. Previous RCT in another country demonstrated improving healing rates, quality of life, health status, functional ability and pain management (figures not reported in this paper).	the availability of keen individual clinicians, interested volunteers and a committed commissioner or NHS management. Resistance to change; "changing a nursing service from the traditional pattern of organised care delivery to the new philosophy and objectives of a progressive patient care organization"	and reassured by the prospect of developing new ways to deliver evidence-based practice in partnership with their patients and colleagues.

Department of Health Public Health Nursing (2013) UK Care in local communities - district nurse vision and model Best Practice Guidance "The document sets out the vision and service model for district nursing service. It builds on Compassion in Practice - the National Nursing, Midwifery and Care Staff Strategy."	1. The Community Nurse Development Programme sets out the range of services within local communities and the importance of strong relationships and, where appropriate, integration of services to provide joined up care to local people. Visual representation which can be found: https://www.wp.dh.gov.uk/vivbennett/files/2012/10/Draft-model-of-Community-Nursing-for-Improved-Healthand-Wellbeing.pdf 2. The purpose of the programme is to provide focus on leadership and support to maximize the role of district nurses and their teams to develop the services that deliver the best possible care and outcomes for our patients. The model shows 'Compassion in Practice' applied to district nursing and aims to promote	4. All patients – service wide 5. All patients 6. All community healthcare settings 7. All nurses	8. Measuring Impact: Outcomes and indicators: - District nurses contributing to population health needs - District Nurses leading care and contributing to healthy communities - District nurses working in partnership with social care (more detail in document) 9. Involving Commissioners, provider organisations, district nurse leaders, practitioners and teams.	10. NR 11. Next steps for this programme are : Work led by the Programme Board to ensure continued focus on district nursing; Work by national bodies to implement 'Compassion in Practice'; A local 'call to action' based on evidence and expert professional advice as part of ensuring that 'Compassion in Practice' is implemented in all care settings and to develop district nursing services to meet the current and future health needs of local people delivering good experiences of care and best possible outcomes 12. None identified	13. Through co-operative working nationally and locally, improved services can be delivered closer to home, maximising health and wellbeing outcomes, supporting independence and reducing social isolation.' 14. The professional roles of Directors of Nursing at national, regional and local level will be clearly articulated in relation to the professional support and commissioning requirements of district nursing. In addition, the NHS Commissioning Board will consider how best to support the role of the Clinical Commissioning Group governing body nurse and other clinical colleagues within Clinical Commissioning Groups and Area Teams. NHS Commissioning Board performance frameworks will incorporate the district nurse impact on NHS and Public Health Outcomes at national, regional and local level.

	innovation and disseminate the good practice that exists in many services across the country, to reduce variation, which improves health and reduces health inequalities. 3. Three core elements: - Population and case load management; - Support and care for patients who are unwell, recovering at home and at the end of life; - Support and care for independence.				
Department of Health (2011) United Kingdom A health review of community children's nursing. Aim was to identify and share "local good practice in community children's nursing (CCN) services" (p.2)	1. Community Children's Nursing is defined in the context of services provided to children in four main illness related groups 2. A comprehensive, wider out of hospital service staffed by a 'critical mass of community children's nurses with varying expertise integrated with specialist children's services.	4. Children in the UK in receipt of NHS services but focus is on England 5. Children with either acute, chronic, or complex illnesses, or disabling or life limiting conditions 6. Community but also referring to transition and outreach from hospital or tertiary settings 7. Community children's	8. While no outcomes are assessed, what is proffered are those that are deemed to be 'good practice' such as: services that are accessible, equitable, comprehensive, sustainable and flexible, non-discriminatory; parents are not main health providers for their children; advocacy is offered for children whose views are different from their parents; child centred seamless service; children admitted to hospital or stay in hospital only when it is clinically unsafe to care for them in the community; simple and easy access to the resource; comprehensive care package that reduces hospital or A&E admission; choice about end-of-life	10. Cost comparison was presented for a child diagnosed with congenital central hypoventilation syndrome (CCHS), as being more cost effective for care in the community over a 12 month period 11. N/R 12. A potential barrier is the need for children's nurses to maintain competency which may be facilitated by staff rotation	13. A comprehensive service requires a "critical mass" of staff, which improves sustainability, accessibility and efficiency. In some areas this could be achieved by bringing together staff from existing disparate services. 14. Care needs to be delivered across integrated pathways of services: primary, secondary and in some cases tertiary care; transition into adult services; children's social care, education and housing services;

	3. Integration across primary, secondary and tertiary children's services as well as integration with existing health services in order to provide a coordinated and cohesive community children's nursing service	nurses.	care; 9. N/E		
RAND Europe, Ernst & Young LLP Prepared for the Department of Health (2012) Lengthy report detailing 16 pilots projects by the DOH in the UK. Final output of a two-year, real-time national evaluation of the Department of Health (DH) Integrated Care Pilots (ICPs)	1. ICP's based on the need of local communities within organisations within the NHS, submitted by individual departments where it was thought improvements were needed. 16 ICP's were chosen to take part. The aim was to change how that part of health care / particular health conditions was managed by integrating existing services and pulling together different members of the MD, including G.P's, Practice nurses, staff employed by the PCT 2. Integrated Care 3. integrating existing	4. Multiple population groups involved (see 5) 5. Healthcare conditions included patients with dementia, mental health problems, older people at risk of admission, end of life care needs, COPD, CVD, and diabetes 6. Various healthcare settings across community / hospital settings 7. As above	8. Both staff and patients' feedback on the ICP's were taken into account Staff experiences were positive, patient feedback was mixed, as it was felt there was less continuity of care. Increased coordination of discharge from hospital was observed however Multiple methods of analyzing ICP's – quantitative and qualitative 9. see 11	10. Organizations aimed to run the ICP's without incurring extra costs, and savings were actively encouraged across all projects 11. Strong leadership, engaging with staff across specialties, sharing a collective vision were all seen as facilitators to the success of these projects 12. Barriers included; more complex interventions, staff not engaging with the project, IT infrastructure. Resistance was met if roles / professionalism were perceived as being threatened. It was highlighted that the current financial constraints do not lend well to integrative care. There needs to be initial funding available for long term success of such initiatives.	13. Interventions designed to integrate care are likely to improve processes of care and users' experience of care but much less likely to reduce costs. Integration is a way of managing the problems associated with specialisation and organisational differentiation. It is difficult to produce fast, meaningful change in a system as complex as health and social care. Many barriers to success and limited resources to manage these effectively. 14. Moving forward, the recommendations for the future would include employing some of the structured approaches used within this project to enable effective changes to take place. More time is needed to focus on the setting up of integrated care systems, and resources need to be provided for these to be a success (e.g. Staff, funding, IT infrastructure). Highlighted that effective integration of care is not a fast process.

	services and pulling together different members of the MD, including G.P's, Practice nurses, staff employed by the PCT				

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De Blok, (2011) The Netherlands (Buurtzorg Nederland) The paper provides a descriptive report of the Buurtzorg initiative which is a nurse-led, nurse-run organization (company) consisting of self-managed teams that provide Home-care to patients.	1 Definition of nursing/midwifery or global interventions NR 2 Model of Care Team based approach using generalist nurses to delivery care in the home setting. 3 Main Components Care ranges from low-level personal care to high level technical care.	4 Teams with a max of 12 nurses allocated to a population of 15,000 5 Patients with a terminal illnes, chronic disease(s), dementia, cancer, recent surgery. Also patients in a vulnerable situation with comorbidity 6 Community setting 7 Generalist nurses working in a community setting	8 NR 9 NR	10 Report claims that the organizational structure and self-supporting teams, reduce costs and the need for additional administration. 11 Team based approach Web and IT support 65% of nursing staff have a degree Team coaching 12 NR	13 NR 14. NR
Gray et al (2015) Netherlands **Discussion of case study of nursing model** To present a case study on the Buurtzorg model which	1. Definition of nursing/midwifery or global interventions Provides a holistic nursing care model from assessment to care delivery, scheduling medical visiting and care	4. Age group not stated. 8000 nurses in 700 teams across Netherlands 5. Health deficit requiring input from nursing 6. Community	8. High patient satisfaction and high employee satisfaction. Also demonstrates reduced care hours 9. Components associated with improved outcomes 'Integrating simplification'	10.Although saving in care hours delivered, notes that the total per patient costs are average for the Netherlands 11. Enablers: Self-governing. Deployment of nurses with appropriate skills for patient need. Focus on self care	13. Self-management model based on nurses within flattened governance systems. Holistic care delivery by nurses with appropriate skills. 14. Expand the service but need to retain the value of key components of its ethos. Colocation of staff and self-management of teams essential.

is a neighbourhood nursing care model in the community to maximinse independence	documentation 2. Managed by coaches who assist the functioning of front line staff. Independent administration office. Nurses paid according to grade. Surplus money used for education and training and community development 3. Self-governing nursing model with a focus on sustainability and patient independence. Uses community networks and nursing professionalism	7. Different grades of nursing working the community	(2015:1) Flattened governance structure, self governing	12. Barriers: States the model has been critiqued for cherry picking patients and that there are some challenges if the patient has unplanned care needs- need to source assistance elsewhere. However, this paper did not find support for this. Challenges in engaging in flat hours' rate of pay within multiple payment schemes As popularity rises, ? about sustainability	

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Kulbok et al (2012) USA, Programme evaluation The purpose of this article is to examine evolving PHN roles that address complex, multi-causal, community problems. Project Aims: Establish a community participatory research team (CPRT) in a rural county composed of youth, parents, and trusted community leaders; Conduct a community and environmental assessment with the CPRT to identify ecological, cultural, and contextual factors influencing substance-free and substance-	1. A project involving the community participation and ethnographic model provides an exemplar of evolving PHN roles in community participatory health promotion. 2. The community participation and ethnographic model 3. Collection of qualitative data about substance use in Virginia including 14 individual interviews of community leaders and five youth group interviews, with a total of 34 youths and one group interview with	4. 34 youths, 14 to 18 years of age 5. Youth substance use prevention project 6. Community 7. The inter-professional project team currently includes an advanced practice public health nurse and specialists from anthropology, architecture and urban planning, epidemiology, human development, and psychology. The team also includes public health nursing and psychology doctoral students.	8. Project currently in 3rd year, the process is ongoing however analysis to date discussed 9. Local knowledge identified and understanding of the unique characteristics of the rural county provide direction in the selection of a potentially effective substance misuse prevention program.	10. NR. 11. The example relating to substance misuse identified the need for specialized knowledge, competencies, and skills utilized by public health nurses to successfully carry out complex assessments and interventions in communities. 12. Novel and detailed data collection methods were challenging but appear effective, e.g. photographs of communities	13. The use of the community participation and ethnographic model enabled identification of local knowledge, important long-standing PHN processes, as well as innovative strategies that public health nurses can utilize in community assessment and prevention program development. Essential knowledge and core PHN competencies were identified. This helps to ensure that public health nurses are prepared to move their nursing practice into the future as leaders in community participatory health promotion and prevention. 14. PHN core competencies include knowledge and skills derived from the core public health workforce competencies, which were developed by the Council on Linkages (COL) (Council on Linkages, 2010). These PHN core competencies include the three tiers of practice used in the COL competencies, i.e., Tier 1 -- the PHN generalist; Tier 2 -- the PHN specialist or manager; and, Tier 3 -- the PHN organization leader or executive level administrator (Quad

using adolescent lifestyles; Evaluate the effectiveness of prevention programs with the CPRT in light of the community's ecological, cultural, and contextual dimensions, health attitudes and behaviours, and on that basis develop a tobacco, alcohol, and drug use preventive intervention for this rural tobacco-producing community; andpilot test the intervention to determine feasibility, acceptability, obtain preliminary effectiveness data, and refine the intervention for formal testing in other rural communities.	seven parents Geographic Information Systems (GIS), and Photovoice were utilised e.g., picture-taking by community members and practitioners or researchers to identify community mapping and youth substance abusers and areas.				Council, 2011). These core competencies are necessary to implement community participatory health promoting roles.