Appropriate and inappropriate polypharmacy—Choosing the right strategy

Hughes, C. (2020). Appropriate and inappropriate polypharmacy—Choosing the right strategy. *British Journal of Clinical Pharmacology*. Advance online publication. https://doi.org/10.1111/bcp.14589

Received: 29 July 2020 | Revised: 22 September 2020 | Accepted: 24 September 2020

DOI: 10.1111/bcp.14589

COMMENTARY - THEMED ISSUE

BJCP BRITISH PHARMACOLOGICAL SOCIETY

Appropriate and inappropriate polypharmacy—Choosing the right strategy

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Funding information
European Union, Grant/Award Number: CHI/5431/2018; Dunhill Medical Trust, Grant/Award Number: R298/0513

1 | INTRODUCTION

Prescribing of medicines is one of the most common and important health care interventions that will be experienced by most patients, particularly those who are old and have multiple medical conditions.[1,2] The prescribing of multiple medicines has been described as polypharmacy, but there is no precise or accepted definition of this term. Numerical thresholds have often been used,[3] but increasingly, this is not seen as helpful. Gurwitz[4] has stated that the use of larger numbers of medicines would always be a key part in the medical management of older (American) patients and stated that polypharmacy could be a 'new paradigm for quality drug therapy'.[4] Increasingly, there has been a move to differentiating between inappropriate polypharmacy (too many medicines) and appropriate polypharmacy (many medicines), with the legitimate goal of managing multiple medical conditions in the same patient.[5]

The context for this commentary is a meeting which took place at the Royal College of Physicians in London in November 2019. The theme for this meeting was 'Avoiding harm from over prescribing: how to reduce waste and dependence on prescription drugs' and the content of this commentary reflects the content of a presentation that was given by the author.

Historically, polypharmacy was viewed as something to be avoided, and there is evidence that potentially inappropriate prescribing is more likely to be associated with polypharmacy.[6] However, more recent work has demonstrated that the appropriate management of patients with several medicines can prevent unplanned hospital admissions. For patients with six or more conditions, those on four to six medications were no more likely to have unplanned admissions than those taking one to three medications.[7] These authors concluded that it could no longer be assumed that polypharmacy was always harmful and that the clinical context in which many medicines were prescribed needed to be considered.[7] However, ensuring that patients only receive appropriate medication that they need for disease management should be the goal.

So how do we reach the optimal balance between the prescribing of many medicines (appropriate polypharmacy) and the prescribing of too any medicines (inappropriate polypharmacy) and what strategies should we adopt?

A Cochrane review on interventions which have focused on polypharmacy concluded that there was little evidence supporting how to achieve appropriate polypharmacy.[3] Furthermore, most studies lacked detail on how interventions were developed and what had informed their content. Increasingly, attention is being paid to the way in which interventions are developed, particularly those which focus on changing the behaviour of health care professionals. Prescribing of medicines can be considered one such behaviour, and understanding what can act as a barrier to, or facilitate the behaviour of, prescribing appropriate polypharmacy may go some way to informing the development of an effective intervention. A systematic approach should be adopted, which will consider what needs to change, what may act as a barrier or a facilitator to such change, how change can be implemented through the application of an intervention and evaluating any change that takes place by monitoring relevant outcomes.

This approach has been undertaken by employing a framework known as the Theoretical Domains Framework (TDF).[8] The TDF contains a number of domains which are relevant to changing health care professionals' (HCPs) behaviour such as 'Knowledge' and 'Skills'.[8] There

are two versions of the TDF: the original version contained 12 domains[9] and the most recent contains 14 domains.[10] By understanding how these domains may affect behaviour, it is possible to consider how best to change such behaviour. Through an extensive programme of work, Cadogan et al. used the 12-domain TDF to develop an intervention to promote the prescribing of appropriate polypharmacy.[11–13]

The first stage of this work involved conducting a series of semi-structured interviews with general practitioners (GPs), using a tailored topic guide consisting of questions based on the TDF.[11] Questions covering each domain explored GPs' perceptions of barriers and facilitators to the prescribing of appropriate polypharmacy to older people. Examples of questions included the following:

> Knowledge: "What knowledge do you have as a GP that would help you to make the necessary changes to ensure that patients receive appropriate polypharmacy as opposed to inappropriate polypharmacy?"
>
> Social/professional role and identity: "What would you consider your responsibilities to be as a GP in ensuring that older patients receive appropriate polypharmacy?"

From the interviews that were conducted with 15 GPs, eight of the 12 TDF domains were identified as being important in influencing the prescribing of appropriate polypharmacy.[11] The eight domains are summarised below:These key domains were then mapped to behaviour change techniques (BCTs), which are considered the 'key ingredients' or the main active components of an intervention that can drive change in behaviour.[14–16] This mapping exercise resulted in the identification of four BCTs for inclusion in an intervention: 'Action planning', 'Prompts and cues', 'Modelling or demonstrating the behaviour' and 'Salience of consequences'. The definition of these BCTS are as follows[15]:

- Skills
- Beliefs about capabilities
- Beliefs about consequences
- Environmental context and resources
- Memory, attention and decision processes
- Social/professional role
- Social influences
- Behavioural regulation

- Action planning: *Prompt detailed planning of performance of the behaviour (must include at least one of context, frequency, duration and intensity). Context may be environmental (physical or social) or internal (physical, emotional or cognitive)*
- Prompts and cues: *Introduce or define environmental or social stimulus with the purpose of prompting or cueing the behaviour. The prompt or cue would normally occur at the time or place of performance*
- Modelling or demonstrating the behaviour: *Provide an observable sample of the performance of the behaviour, directly in person or indirectly e.g. via film, pictures, for the person to aspire to or imitate*
- Salience of consequences: *Use methods specifically designed to* ***emphasise*** *the consequences of performing the behaviour with the aim of making them more memorable (goes beyond informing about consequences)*

Using BCTs in this way is probably the most challenging aspect of intervention development. The process of identifying key domains and BCTs as part of the intervention development process is now well-established and follows a stepwise approach which has been widely documented in the literature. However, the translation of this into a tangible intervention is much less systematic. For the polypharmacy intervention, we considered three factors to inform our thinking: context, evidence and experience.[12]

In terms of context, we considered current clinical work in a GP practice, its busyness and the requirement for any proposed intervention to integrate into established working routines. In relation to evidence, we had already updated our Cochrane review in appropriate polypharmacy and could find no obvious strategy or intervention content that would help inform our own approach. Experience proved to be an important factor. The research group which worked on the development of this intervention was multidisciplinary in nature (pharmacy, general practice, health psychology, geriatric medicine), had worked in health services research for a number of years and had an in-depth knowledge of relevant literature.[12] All three factors informed the drafting of a number of possible draft interventions which were assessed according to the APEASE criteria (Affordability, Practicability, Effectiveness/cost-effectiveness, Acceptability, Side-effects/safety, Equity) which can assist

TABLE 1 BCT content and practical operationalisation of a GP-targeted intervention

BCT	Example of how the behaviour change technique will be operationalised as part of the intervention
Action planning	GPs will plan to perform medication reviews on the specified date when patients meeting inclusion criteria present at the practice for a scheduled appointment
Prompts and cues	GPs will be prompted by the receptionist/ practice manager to perform medication reviews with older patients meeting inclusion criteria when patients present for a scheduled appointment
Modelling or demonstrating the behaviour	GPs will be provided with a video demonstration (using actors and a clinically authentic script) of how to perform a medication review with an older patient who is receiving polypharmacy
Salience of consequences	As part of the video demonstration of how to perform a medication review, feedback will be included from the GP and 'patient' to emphasise the potentially positive consequences of performing the review

researchers in designing and evaluating interventions.[17] The intervention which was deemed to be most suitable to take forward for feasibility testing was one which would target GP behaviour using the previously identified BCTs, operationalised as outlined in Table 1.

This intervention has undergone feasibility testing, with a view to assessing its usability and acceptability, and a number of methodological parameters such as recruitment, data collection methods and outcome assessment.[13] Two GP practices were recruited to the study. GPs within the practices were given access to the video and practice staff scheduled medication review consultations with older people (older than 65 years) receiving four or more regular medicine (up to five patients per practice). Clinical data were extracted from records to investigate the feasibility of applying prescribing appropriateness tools. GPs and patients provided feedback on their experience of the intervention, using structured questionnaires. Four GPs and 10 patients from across the two practices were recruited. Overall, the intervention was deemed to be acceptable to GPs and patients; however, it was not possible to assess prescribing appropriateness due to the short follow-up period in the study and the lack of required information in clinical notes.

This overview of a strategy to improve prescribing of appropriate polypharmacy has summarised a detailed, painstaking and systematic approach to developing an intervention which is grounded in theory, evidence, and step-by-step testing. Participants (health care professionals and patients) have been involved in its development and there is a rationale for inclusion of the active components. This should provide some level of confidence as we move into the next phase of testing: a pilot randomised controlled trial (RCT) involving 12 GP practices. Findings from this study will confirm if this approach to intervention development and implementation improves appropriate polypharmacy and produces better outcomes for patients.

ACKNOWLEDGEMENTS

The author wishes to acknowledge the support of the Dunhill Medical Trust (grant number: R298/0513) and the HSC R&D Division Cross-border Healthcare Intervention Trials in Ireland Network (CHITIN) programme, funded by the European Union's INTERREG VA Programme, managed by the Special EU Programmes Body (SEUPB) project reference CHI/5431/2018.

COMPETING OF INTERESTS

The author has no conflicts of interest to declare.

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How to cite this article: Hughes C. Appropriate and inappropriate polypharmacy—Choosing the right strategy. *Br J Clin Pharmacol*. 2020;1–3. https://doi.org/10.1111/bcp.14589