Developing a climate for safe prescribing for children


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Developing a climate for safe prescribing for children

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Developing a climate for safe prescribing for children

Introduction

How do you solve a problem like prescribing? Prescribing error – a foremost threat to paediatric safety\(^1\) - has been studied (e.g. multicentre research quantifying prevalence and types\(^2\)), clarified (e.g. by elucidating factors that complicate prescribing for children\(^3\)), and prioritised within policy, quality improvement and education.\(^1\) Instances of successful and innovative interventions\(^4\) have been published, but prescribing safety remains elusive.\(^5\) This begs these questions: should we look at the problem differently? How can education better address it? How should we implement and share innovations? We address these questions by: proposing that prescribing safety is a complex problem; reviewing how familiar interventions can improve environments for safe prescribing; and showing how implementation science could contribute.

Complexity

The word ‘complex’ has a specific meaning: that no single factor alone causes harm. Because multiple factors interact unpredictably, prescriptions intended to benefit children always carry a risk of error and harm. Improving safety when faced with complex problems isn’t about finding a single root cause, but understanding which factors are most important and how they interact. While this article focuses on error, complexity principles equally apply to learning from factors underlying safe prescribing - a Safety-II approach. Understanding complex systems leads to sometimes blindingly obvious solutions that pay unexpected dividends.

The 2009 EQUIP study confirmed that (adult) prescribing errors resulted from complexity, not just prescribers’ lack of knowledge. Social interactions, working conditions, and culture played a major role.\(^6\) The situation is similar in paediatrics, though made even more complex by factors specific to children (Figure 1).\(^3\) Prescribers who lack experience in caring for children may not be familiar with paediatric medications or how to access information. They may lack senior support and struggle with involving parents and managing demands from colleagues.\(^7\) Heavy workload, the wish to ‘save face’ and trainees working in isolation may increase risk further. Perhaps most risky of all, workplace cultures may treat prescribing as a simple, routine task despite persuasive evidence to the contrary: errors are contextualised, interrelated, and influenced by how social interactions within paediatric teams ‘work out on the day’.

[Insert Figure 1 around here]\(^3,6,7\)
The word complex might suggest that problems are difficult to understand and address. Conversely, we propose that a complexity perspective (as shown in Table 1) can put practitioners more in control; they can understand how things operate at present and use their collective experience and common sense, informed by evidence, to make effective changes. The bottom line is that a complexity approach shifts the emphasis from training individuals to collectively developing a climate for safe prescribing. The next section considers what this might look like in practice.

Table 1: Features of complexity and how these create opportunities for safer prescribing

<table>
<thead>
<tr>
<th>Feature of complexity</th>
<th>Implication for safer prescribing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whilst education seeks to change the behaviour of individuals, workplace cultures and norms have a dominant effect.</td>
<td>Training people out of context may fail; practitioners may succeed by being more aware of the way people work.</td>
</tr>
<tr>
<td>Individual errors occur unpredictably and are dependent on context and circumstances.</td>
<td>Punishing individuals for errors or addressing a specific cause of a single error will not lead to lasting improvement; using errors positively, including studying near-misses and minor mishaps, may identify modifiable error-producing conditions.</td>
</tr>
<tr>
<td>‘Evidence’ about quality improvement interventions’ effectiveness (without detail about how they work) may be of limited value because what works in one setting may not work in another, and may even have unintended consequences.</td>
<td>Practitioners can improve interventions’ effectiveness by being attuned to their own context, engaging with stakeholders, and monitoring interventions perform and being ready to adapt them.</td>
</tr>
<tr>
<td>Simple recommendations (e.g. ‘give prescribers more feedback’) may fail at the implementation stage because the way they are enacted is key.</td>
<td>Stakeholders who take ownership of recommendations can adapt them to the local context and give useful advice to those who make recommendations.</td>
</tr>
<tr>
<td>Small acts, such as a consultant proactively reviewing the BNFc on a ward round, can have significant positive impact on overall prescribing culture and practice.</td>
<td>Prescribers can improve safety by being observant for small changes that make big differences, and being unafraid to promote and share them.</td>
</tr>
<tr>
<td>Even solutions that are ‘engineered’ to change</td>
<td>Taking ownership of change means being</td>
</tr>
</tbody>
</table>
complex systems (e.g. electronic prescribing) may be bedevilled by human behaviour and workplace culture. unafraid to comment on imported solutions, seeking opportunities to influence developers, and proactively tailoring solutions to local circumstances

Elements of a safe prescribing climate

Education, training and feedback

In published research prescribing education has taken the form of e-learning, tutorials, courses and posters; in clinical practice, it typically involves pharmacist-led presentations during junior doctor inductions and, sometimes, written tests of competency. While these approaches may provide an important foundation (e.g. that offered by the excellent RCPCH online module Paediatric prescribing principles), the context-dependent nature of error suggests that they are unlikely to improve practice on their own. For example, testing prescribers’ competence in classroom tests is unlikely to prevent many errors because most are made by capable professionals working in difficult circumstances. As one prescriber put it: “I mean, I can do four times ten, I did A Level Maths, so distractions happen.” Rather than persistently emphasising classroom education, what may help is on-the-job support from pharmacists and senior colleagues (‘feedforward’), regular teaching relating to medication safety issues arising in the specific context, and supportive feedback on prescribing. Feedback, in particular, is sought after by prescribers and associated with reductions in errors, but as with other interventions its success will wholly depend on its implementation and delivery. As well as their individual benefits, interventions like these have an additive effect by promoting a positive educational climate.
Incident reporting

Incident reporting is intended to promote openness and transparency, yet in behaviour typical of complex systems, has too-often had the unintended consequence of perpetuating an individually focused, punitive culture, undermining its usefulness in promoting safe prescribing. For incident reporting to contribute positively to a safe prescribing climate, we suggest the following ideas:

- Use narrative descriptions to glean important insights into factors underlying errors and near-misses, analysing in ways that encompass the complex nature of errors rather than individuals’ contributions
- Use aggregated reports to guide quality improvement, highlight high-risk areas of practice, and reinforce the value of reporting to staff
- Use reports to inform the content of collective, interprofessional education; ask staff for QI ideas stemming from errors and involve them in projects; avoid individual remediation that risks undermining a culture of openness

Where and when to prescribe safely

With distractions and interruptions a well-recognised source of medication errors, recent initiatives have trialled the introduction of dedicated prescribing areas and ‘zero tolerance prescribing’. As well as reducing distractions, these areas may also support prescribers by making essential resources readily available. In a different approach, some centres have integrated prescribing as a part of ward rounds or introduced specific prescribing ward rounds. Interventions such as these are welcome because they respond directly to evidence about why errors happen. Yet they may work in complex ways, not simply by reducing distractions; instead they may ‘make prescribing everyone’s business’, improve access to senior support for prescribing decisions, and reduce non-urgent prescribing out-of-hours. Understanding these mechanisms matters because other adopters may find that simply providing a desk and a BNFc proves insufficient, or that prescribing during ward rounds actually promotes distractions if the whole team are not on board. Moreover, practitioners may need to consider the feasibility and resource implications of delivering approaches such as daily prescribing ward rounds in their setting, issues often not addressed in published articles.

Safety culture

Other major interventions central to paediatric prescribing safety include clinical pharmacist support and electronic prescribing. Yet even well-evidenced, effective interventions like these may prove difficult to implement, exemplified by the finding in one setting that introduction of electronic
prescribing led to an unexpected increase in mortality.\textsuperscript{14} Whilst later study in a similar context did not replicate this finding,\textsuperscript{15} research such as this nevertheless illustrates the potential for complex systems to generate unintended consequences. The authors point to problems of ‘system integration’ as technical interventions and practitioners interact. Such issues are influenced by culture – collective attitudes, beliefs and behaviours in relation to a particular intervention – such as when practitioners deem a system to be ineffective and adopt workarounds that may compromise safety. Yet culture can also be leveraged in positive ways. A ‘safety culture’ means practitioners and teams developing a collective responsibility to strive toward safer practice, working proactively to reduce risks, support colleagues, and use errors and near misses as a driver for learning and change. Promoting a safety culture by, for example, engaging closely with end users of electronic prescribing systems to identify and correct flaws, or supporting the development of relations between prescribers and pharmacists, can form the backbone of a safe prescribing climate.

**Developing and sharing improvements using implementation science**

The interventions and initiatives discussed in this article demonstrate that successful intervention is possible within the complexity of prescribing error. Yet practitioners often struggle to translate published interventions’ success to other settings. Complexity tells us that this may be because of the influence of context, which is often given little consideration within evidence that focuses on effectiveness e.g. by emphasising measured reductions in error rates. It may also be that success is made more likely in research contexts than actual practice, as prescribers may act more carefully because they know their performance is being scrutinised or because they are keen to please colleagues studying the improvement. In other words, that resource intensive interventions often lead to demonstrable improvements is unsurprising, but does not guarantee reproducible success. The emerging discipline of implementation science (IS) may help practitioners to address this issue. IS is ‘the scientific study of methods and strategies whose goal is to assimilate research evidence into practice’.\textsuperscript{16} Rather than focusing solely on effectiveness and outcomes, it encourages researchers to measure processes, to think about broader dimensions of success such as feasibility, sustainability and cost-effectiveness, and to offer transferable ‘lessons learned’ for others hoping to apply and adapt interventions. Supported by frameworks such as the Consolidated Framework for Implementation Research,\textsuperscript{17} IS may also support iterative development and refinement of interventions, offering tools to evaluate essential but overlooked elements, such as practitioners’ behaviour change and workplace culture, that contribute to a safe prescribing climate.
Key messages

- Evidence shows that prescribing errors have multiple complex causes, so improving safety is less about training individuals and more about creating a safer prescribing climate.
- Familiar interventions can be effective but practitioners should adapt them to their context and stay alert to the impact of workplace culture.
- Implementation science offers tools and approaches to help evaluate, refine and share solutions to complex problems like safe prescribing.

References


