The Scottish Polypharmacy Guidance app in practice

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Medication reviews are an integral part of effective medicines optimisation. The NHS Scotland Polypharmacy Guidance – Medicines Review provides an app that is convenient to use in all care settings, giving users access to up-to-date, evidence-based guidance. Currently, pharmacists conduct medication reviews using a combination of personal experience and national guidance; however, there is no agreed protocol for this. In this scoping exercise, eight medication review pharmacists from two neighbouring trusts conducted medication reviews for 64 patients to explore how the clinical section of the app compared with their usual care in terms of identifying drug-related problems across various care settings.

Medication reviews are an integral part of effective medicines optimisation and a key component of patient care. They are undertaken by pharmacists in a variety of clinical settings as part of the multidisciplinary approach to care. The role of pharmacists in medicines optimisation has been highlighted in a number of key publications, including the NHS Long Term Plan, the NHS GP Contract, NHS England’s Universal Personalised Care model and the World Health Organization’s (WHO’s) third Global Patient Safety Challenge. Medication reviews are promoted for inpatients with long-term conditions or who take multiple medications with the aim of reducing adverse events and medication waste, and supporting the use of evidence-based prescribing.

While medication review occurs in a variety of care settings, Structured Medication Reviews (SMR) are now commissioned as a Direct Enhanced Service (DES) within the NHS GP Contract, and this has brought medication review into a renewed focus. There are resources available, including the NICE medicines optimisation guidance and the Royal Pharmaceutical Society (RPS) polypharmacy guidance, which outline the essential components for completing a medica-
With the introduction of the DES, additional information is being developed to support SMR. Current guidance provides recommendations on best practice in medication review, encouraging use of appropriate tools to guide practitioners, including the NHS Scotland Polypharmacy Guidance – Medicines Review. This guidance includes the release of a digital app, which allows the guidance, including the “7 steps to appropriate polypharmacy”, to be accessed on mobile electronic devices, including tablets and mobile phones.

Across Central London Community Healthcare NHS Trust (CLCH) and London North West University Healthcare NHS Trust (LNWUHT), it was recognised that pharmacists undertake medication reviews in hospital, care homes, general practice and domiciliary settings. Following discussion between pharmacists working at both organisations about support and guidance to optimise medication review, it became clear that all the pharmacists, both newer and experienced practitioners, conduct medication reviews using a combination of personal knowledge/experience and national guidance; however, there is no agreed protocol for this in either organisation. There are also a multitude of tools available for pharmacists to use, and it can be tempting to focus solely on one rather than drawing on the valuable aspect of each in conjunction with the pharmacist’s clinical knowledge and experience.

The NHS Scotland Polypharmacy Guidance – Medicines Review provides an app that is convenient for use in all care settings, giving users access to up-to-date, well-researched and evidence-based guidance. CLCH and LNWUHT serve neighbouring London boroughs in North and West London. As neighbouring organisations, we decided to undertake a collaborative piece of work where pharmacists in both organisations agreed to undertake a one-week scoping exercise to explore how the clinical guidance section of the app could support and optimise medication review across various care settings.

### What did we do?

There are pharmacists working for LNWUHT and CLCH who support people at risk of preventable medicines-related problems, including some vulnerable adults. Between the two organisations, pharmacists can be categorised into the following groups:

- Hospital-based admission/discharge support interface pharmacist
- Hospital-based medicines optimisation pharmacist for vulnerable patients
- Medicines optimisation pharmacist in primary care
- Medicines optimisation pharmacist in GP practice
- Care home pharmacist.

We identified eight pharmacists across the above care settings, who were experienced in undertaking face-to-face medication reviews (at least one year’s experience) in their respective settings. Each pharmacist was asked to conduct their regular medication reviews (‘usual care’) for up to 10 patients over one week in the autumn of 2019, according to their availability. Each patient was provided with ‘usual care’ and was then crossed over to receive app-based medication review in addition to usual care (see Table 1). The number of drug-related problems identified was recorded for each medication review. Only one review per patient was included. Drug-related problems were defined according to the Pharmaceutical Care Network Europe (PCNE) definition: “A Drug-Related Problem is an event or circumstance involving drug therapy that actually or potentially interferes with desired health outcomes.”

Resources commonly used in ‘usual care’ included the BNF or Summary of Product Characteristics (SmPC) to support safe and effective treatment, such as concerns about potential drug interactions or dose modification in organ dysfunction. None of the pharmacists had used the app prior to this study as part of their ‘usual care’.

Following the completion of step 3 for each medication review in ‘usual care’, the pharmacists used the app to estab-

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<tr>
<th>Usual care</th>
<th>App care</th>
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<tr>
<td>1. Review of medicines administration record chart or care plan or medication chart (depending on the care setting) and review of the GP record for each medicine</td>
<td>The app was downloaded to a smartphone</td>
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<tr>
<td>2. Discussion with the patient/resident and/or carers, family and next of kin to address their concerns/expectations about medicines and health</td>
<td>A clinical review using the clinical section of the app was conducted for each medicine prescribed for the resident/patient by selecting “for healthcare professional”, then “medicines”, then “by medicine” or “by BNF” and choosing the relevant section</td>
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<td>3. Development of a series of recommendations using the pharmacist’s clinical knowledge of safety, cost and clinical effectiveness, information about patient/resident’s perspective and the clinical experience of the pharmacist</td>
<td>The information provided by the app was reviewed for each drug/therapeutic group. If a specific caution was highlighted in the app, eg “see anticholinergics”, then this link was selected for further information</td>
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<td>4. Communication of these recommendations with the relevant health and social care practitioners, patients/residents and carers/family</td>
<td>When it was not possible to find the drug in the “BNF” or “medicines” sections, it was entered into the search box at the top of the screen to ensure completeness of searching options</td>
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**Table 1.** Descriptions of ‘usual care’ and ‘app care’ used in the study
lish if any additional recommendations were required. Each individual pharmacist recorded anonymised results in their own copy of an agreed Microsoft Excel spreadsheet, owing to limitations of technology, which precluded sharing online. Each results spreadsheet was securely emailed to one member of the team, who created a combined spreadsheet of results, ensuring the data were anonymised before analysis.

**Results**

Of the eight pharmacists who agreed to participate, seven were able to collect data, with one pharmacist being unavailable during the data collection period. Medication reviews were conducted for 64 individuals (30 female, 34 male), with an average age of 76 years. About half of the patients were seen in their own homes (domiciliary or care home), with the remainder being seen either in primary care clinics or hospital (see Figure 1). Individuals were taking an average of 12 medicines and each had an average of six active clinical diagnoses.

In total, 458 drug-related problems were identified by pharmacists using their own expertise and the app together, with an average of seven per patient/resident. There were 328 drug-related problems that both the app and pharmacist identified in common. In addition, the app identified 13/458 drug-related problems that were not identified by the pharmacist undertaking ‘usual care’, and pharmacists identified 117/458 drug-related problems using ‘usual care’ that were not included in the app (see Figure 2). App care identified 23% fewer drug-related problems than ‘usual care’ and this was statistically significant ($p=0.018$, using T test for two independent means).

**Discussion**

The results of our study show that assessing patient medication using just the clinical section of the app identified 23% fewer drug-related problems than could be identified by pharmacists. One example of a drug-related problem identified only by the app was recognition of the anticholinergic effect of ranitidine. Examples of drug-related problems identified only by pharmacists included identifying patients who were given medication covertly without appropriate adjustment to formulations, and inadequate pain management prompting advice on commencing analgesics. We note that these types of interventions are not included in the app, and this highlights the importance of holistic, person-centred medication review, which forms part of ‘usual care’, whereas the app provides support with the clinical aspects of care.

We recognise that the NHS Scotland guidance provides much more than the clinical information that populates the app. The guidance promotes the use of “7 steps” in managing polypharmacy towards medicines optimisation, which includes discussion of “what matters to the patient” and a stepwise approach to medication review. This guidance is available in the app but requires looking at other sections of it. We did not use the whole app for this work because we wanted to compare the clinical support offered by the app in relation to interventions that may have been overlooked by the pharmacist. Our results align with the thoughts expressed in a recent essay about clinical judgement, that clinical practice is “an exercise in judgement driven by the evidence” and requires clinicians to think about the patient in front of them rather than slavishly adhering to guidance.\(^{10}\)

We recognise the benefit of using the app: that it can be accessed by healthcare professionals in various settings from ward rounds to patients’ homes. The app also has the additional benefit of taking into consideration shared decision-making and drug-specific information regarding numbers needed to treat (NNT), which can be utilised during patient consultations. However, according to anecdotal feedback, some of the pharmacists who used the app reported that it could be difficult to navigate and was quite time consuming to...
use. In addition, some expressed concern that people may rely on the app too much, assuming it would include all medicines prescribed, and so may miss information from other sources, such as the BNF or the electronic medicines compendium (emc), when required.

We looked for literature that was relevant to this work and found that our results concur with a study conducted by Delgado-Silveira et al., which concludes that pharmacists identify more interventions than guidance alone. In their study, 35% more interventions were identified using specialist pharmacist clinical judgement in relation to potentially inappropriate polypharmacy, compared to using guidance (the validated STOPP-START criteria) alone.

We note that each pharmacist involved in this exercise had completed postgraduate training in clinical pharmacy practice, and considered themselves to be experienced practitioners in medication review, with a minimum of one year of experience in their current role. It would be interesting to repeat this work with practitioners in their first year of this type of work, to support skill development and contribute to equity of service and good governance around medication review.

What could we do next time?
We recognise that there is potential for the app to be integrated into usual care, using both clinical guidance and support for holistic medication review. Our study used a small convenience sample of both pharmacists and patients for practical reasons, which means the data is less robust than we would have liked. In addition, the reviews were not all undertaken in the same week due to pharmacist availability.

We hope that when we are able to repeat this work, all pharmacists will use the same fixed dates and it will include cohorts of patients with specific clinical conditions in single clinical settings. There may be potential for randomisation of both medication review participants and pharmacists as well. We did not analyse the clinical significance of the different types of intervention or record the additional time taken using the app. Both of these would be relevant to the utility of the app in practice. Finally, the app has a number of other features that we did not explore during this scoping exercise, and we would be interested to include those features next time.

Conclusion
Medication review can have a positive impact on patient safety, outcomes, cost-savings and preventable medicines-related hospital admissions. The results of this study suggest that the knowledge and expertise of these pharmacists helped them identify more drug-related problems than the use of an app. The clinical section of the app has the potential to support a more holistic medication review through use of all aspects of the guidance, and this could be explored further, recognising that both time and pharmacist experience may influence the utility of the app in practice. We also recognise that there is the temptation to use the clinical section of the tool alone; however, this scoping exercise has reinforced the need to use the guidance in its entirety.

References

Declaration of interests
The authors have no competing interests.

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