Repeat prescribing—reducing errors

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ABSTRACT

BACKGROUND AND CONTEXT: Prescribing errors account for a significant proportion of overall error in general practice. Repeat prescribing occurs commonly in New Zealand and is a likely cause of error in practice.

ASSESSMENT OF PROBLEM: This paper reports on two related aspects of repeat prescribing; an audit of adherence to a repeat prescribing protocol and self-reported repeat prescribing incidents in a network of 97 general practices.

RESULTS: The audit of adherence to the repeat prescribing protocol revealed that some issues persist. In particular, prescribing medication outside an approved list and exceeding specified time limits or maximal scripts before clinical review were problematic. Repeat prescribing encompassed a range of departures of process from minor (such as prescription not available on time) to major (wrong medication). Corrective measures highlighted the importance of both the pharmacist and the patient in error detection.

STRATEGIES FOR IMPROVEMENT: Repeat prescribing needs to be recognised as a process potentially fraught with error. Effective practice systems, patient involvement and enhanced pharmacy communication are important contributing factors in reducing error.

LESSONS: There is need for robust data regarding error rates in prescribing and the impact of changing prescribing protocols on error rates.

KEYWORDS: Medication errors; electronic prescribing

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Introduction

Safe medical care requires carefully considered systems. Donald Berwick's work on reducing error in medicine reminds us that the error rate is dependent on the number of steps in a system and becomes magnified by each successive step.[1] Repeat prescribing in general practice (prescribing when the medication has previously been commenced, there is no reason to suspect change in the underlying condition and no face-to-face consultation occurs) can represent an efficient, cost-effective and convenient method of managing some aspects of chronic disease that are clinically stable and other medical processes such as ensuring a supply of oral contraceptives.

The practice is widespread, with 99% of New Zealand general practitioners indicating they have issued such prescriptions.[2] The number of repeat prescriptions issued as a ratio to other prescriptions ranges from 19%[3] to 75% of all items.[4] However, overseas research raises concern over the safety of this practice.[5] What little research that has been undertaken on repeat prescribing indicates that poor management systems are commonly found.[6] An electronic medical record would seem likely to decrease error rates in prescribing.[7]

The Pinnacle Network represents a network of 97 practices with a high rural practice ratio. Network members complete an annual quality plan, now in its fourteenth year, which has included the development of incident management systems at a practice level. Practices receive training and support to implement their incident management system and are able to submit anonymysed reports to a centralised database to facilitate learning at a network as well as a practice level.

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All practices in the network have in place a repeat prescribing protocol implemented approximately five years ago. Practices' repeat prescribing protocols were developed from a standardised network template based on nine key areas (see Table 1). The template was developed by clinicians based on best practice, and peer reviewed. The principles underpinning the design were informed by the previous research on barriers to effective incident management where time constraints, methods of remembering to use incident management systems and apprehension over external bodies becoming aware of such incidents were the major concerns voiced by all members of the general practice team.[8,9] Practice protocols detail each of the nine key areas but are unique to the individual practice, for instance all protocols detail the person authorised to take the prescription request but in Practice A this may be a general practitioner and in Practice B a practice nurse.

This paper reports on two aspects of repeat prescribing across the 97 practices in the network:
1. The identification of adherence to the practice repeat prescribing protocol, and
2. The analysis of significant events associated with the repeat prescribing process.

Method

Formal ethical application was not obtained because the data reported here were used for the purpose of quality assurance by employees of the health care provider.

Practice audit of adherence to repeat prescribing protocol

A total of 97 practices were involved in the audit process, representing 322 general practitioners. Each general practitioner audited the first 15 repeat prescriptions issued during a given week for compliance against their repeat prescribing protocol. The week of the audit was chosen three weeks retrospectively so that the audit would represent true performance rather than maximal competence. Repeat prescriptions were identified by interrogating the practice database for invoices tagged as repeat prescriptions. Incidents that occurred with the 15 cases were notified. Data were available for 3359 repeat prescriptions.

Repeat prescribing incidents

Practices submitted a register of all incidents related to repeat prescribing during a designated week. A total of 312 incidents from the 97 practices in the network related to repeat prescribing were reported for audit. All incidents are required to be submitted in a format stripped of identifying data such as names and locations. An underlying principle of the Incident Management System was to build and develop methods of continuous quality improvement at the practice level. Subsequently, the incidents outlined below were self-reported by practices with inevitable variation in how they reported the data. This in turn causes difficulties in aggregating the data.

Indeed, some reported incidents were simply descriptions of good process, some demonstrated no breach of protocol and some are lacking in sufficient detail to accurately categorise. For these reasons, accurate analysis of rates of error is not possible. Consequently, the 312 reported comments should be considered more in the realm of descriptive research with the role of identifying factors that give rise to error in repeat prescribing, rather than accurately assessing the contribution of each factor to the overall error rate. Individual reports were discussed by the authors for commonality of error types, a basic taxonomy developed and all reports classified within the taxonomy. Examples of comments made by respondents that describe an incident are given to add depth of understanding to the data.

Results

1. Adherence to repeat prescribing protocol (practice audit)

Several aspects of the repeat prescribing policy were universally well followed. These included correct authorisation of the person receiving the request, correct recording of the request, appropriate presentation of request to the prescriber, recording the request in the practice notes and availability of the notes to the prescriber, as shown in Table 1. The audit did raise concerns over prescribing of medications that were not in the practice agreed list. Also, there was poor concordance between number of issued prescriptions and previously agreed maximum number of

scripts before seeing the patient and with the time frames allowable by the protocol. Of issued prescriptions, 12% were queried or had some anomaly that required remedial action by the practice. Of these 12% with an anomaly or query, only 72% were managed according to practice policy regarding management of adverse incidents.

2. Repeat prescribing incidents

The overt manifestation of error and corrective mechanisms that detected error will be reported separately.

Error indicator

1. Prescription not ready on time

A prescription not being ready on time accounted for the majority (74 of 312) of incidents: "Patient came to pick up Rx: couldn't be found—reprinted". The comments about these incidents indicate the main causes are the prescription being lost by the practice, never being generated or not being signed by the doctor on time.

2. Fax oversight

There were 20 incidents involving faxed prescriptions. Of these, four were faxing the prescription to the wrong pharmacy. Missing details regarding fax instructions stalled the process in several other incidents: "Patient went to the pharmacy to pick up prescription which was not there— had not been faxed through due to the name of the pharmacy not being written on top of the prescription". Other fax-related incidents were impossible to classify or understand where the process faulted, such as "Urgent 'refax' of script not received at pharmacy". This incident could have been either practice- or pharmacy-related.

3. Overdue for clinical review

Overdue clinical review accounted for 23 incidents. One leading cause was practice staff overlooking the maximal time period after which repeat prescriptions should not be issued. "Time between last visit >12/12. Protocol is every 6/12 to be seen. Alert placed on patient's file for review next repeat." Difficulties finding semi-urgent appointment slots for patients who

WHAT GAP THIS FILLS

What we already know: Prescribing is a common and well-documented source of medical error. A significant majority of general practitioners issue repeat prescriptions, yet there is little described data regarding error occurring from these.

What this study adds: This research revealed a number of systemic problems that cause error in repeat prescriptions as well as demonstrating that it is possible to introduce a network-wide protocol designed to reduce error rates.

Table 1. Adherence to protocol for repeat prescribing; N=3359

		Yes	
		n	(%)
1	Is the person who received the request authorised to do so in the repeat prescribing policy?	3297	(98.1)
2	Was the request recorded as per the repeat prescribing policy? (For instance, in a dedicated book.)	3146	(93.6)
3	Was the request/script presented to the prescriber according to the repeat prescribing policy? (For instance, together in folder once per day.)	3280	(97.6)
4	Is the drug prescribed listed in Appendix 1 of the repeat prescribing policy (i.e. drugs that are deemed unsuitable for repeat prescribing)?	282	(8.4
5	Did the prescriber know the patient or have access to the patient's notes?	3353	(99.8)
6	Are the maximum time period and/or number of repeat scripts between clinical reviews for this condition documented in the patient's notes?	1794	(53.4)
7	Were the details of the repeat script recorded in the patient's notes according to policy?	3218	(95.8)
8	Was there an anomaly or query? (For instance was the script requested within the time period documented in the patient's notes?)	417	(12.4)
9	If there was an anomaly or query, was it managed according to practice policy? (For instance, documented in the patient's notes and/or managed according to the harm reduction policy.)	2428	(72.2)

unwittingly run out of medications add to the pressure of adhering to reasonable time frames for clinical review before continuing to issue repeat prescriptions.

4. Missing medication

The vast majority of practices in the network utilise electronic medical records in the repeat prescribing process. Eight incidents involved regular medications not being designated as regular in the electronic record and therefore causing confusion for practice staff receiving requests for repeat prescriptions.

5. Wrong patient

Failing to change the computerised file to the correct patient before prescribing would seem to be facilitated by the nature of electronic clinical records: "Prescription made out for wrong patient (wrong name, right medications)".

6. Wrong dose/formulation/amount

Some of these incidents were minor in nature or part of an informal check process, such as "Pharmacist rang. Dr changed patients Betaloc dose was 23.75 and up to 47.5 mg. Pharmacist query about 47.5 mg and Dr confirmed 47.5 mg is the correct dose as he prescribed." However, some of these incidents were potentially hazardous to patient safety: "Script for Prednisone 5 mg was given as 1 mg tabs. Patient noted change and informed us" and "Patient requested repeat script for insulin—when picked up insulin dose incorrect—script rectified and confirmed with patient." A common source for wrong dose/formulation errors were changes in medications being made by specialists but this information not translating into prescribing processes in primary care. Reasons quoted for lack of translation range from absence of discharge summary or outpatient letter to failure to update the patient record held in general practice. There were nine incidents where the incorrect quantity of medication had been prescribed: "Computer generated script for 45 Accupril tabs in place of 90. Fields checked and adjustment made". Although such errors are most unlikely to lead to patient harm, they nevertheless cause inconvenience and cost to both patient and practice.

Error detection

1. Pharmacist detecting error

There were 20 incidents in which the pharmacist was the person who alerted the medical centre of a potential medication error and the prescription was altered as a result. These incidents ranged from the minor to potentially major in nature. "Prescription handed to incorrect patient. Pharmacy notified reception." Other common errors picked up by pharmacists were incomplete medication lists "Losec missed off prescription by nurse generated script. Returned from pharmacist", wrong dose prescribed; "Pt telephoned to request repeat Rx wrong dosage was prescribed. Chemist rang re. same and Dr rectified the problem" and sometimes issues of convenience or cost that do not necessarily represent error "Call from pharmacy, OC scripted no longer subsidized and patient requested change. New script generated."

2. Patient detecting error

Patients also provide a check of prescription accuracy: "Script request taken by receptionist. Wrong medication selected from list. Patient recognised error on collection so a new script was generated by nurse and signed by GP" and "Patient reported a required medication had been left off repeat prescriptions".

Discussion

A position paper on reducing prescribing error states, "Medication errors are probably the most prevalent form of medical error, and prescribing errors are the most important source of medication errors"[10] and discusses the crucial role of changing organisational culture so that prescribing is perceived as a complex process requiring effective teamwork if error rates are to be minimised. The "Swiss Cheese" model of error in medicine, as described by Reason, is highly appropriate to understanding error in repeat prescribing.[11] The safety checking mechanisms can be understood as:

1. The *practice-computerised system* to ensure correct medication, correct dose, correct formulation and correct quantity and correct patient
2. The *staff member* who gives the prescription across the counter or faxes the prescription directly to the pharmacy
3. The *patient* who checks the prescription against what they wanted
4. The *pharmacist* to check what has been ordered against pharmacy held records, and
5. The *patient* after receiving the medications.

Successful detection of error is dependent on these systems operating well. Good processes within the practice and between practice and pharmacy are required to ensure that all checking mechanisms are in place and are functional.

The errors described above illustrate parts of this process that have not worked well.

Electronic medical records have revolutionised many of the steps regarding repeat prescribing. Unfortunately, automation may also cause a degree of complacency, where what is identified as "regular medications" may be simply accepted without question. This problem was identifiable in many of the incidents reported. Clearly, changes in medication in secondary care coupled with poor communication from secondary to primary care may well subvert the accuracy of the practice-held electronic record of regular medications.

It is apparent from this research that the pharmacy remains a crucial part of the safety mechanism for repeat prescribing. However, relationships between general practices and

malise an effective error detection mechanism. Inappropriate patient requests also raise questions as to how well a practice has informed its practice population about repeat prescriptions and the limitations of the process due to factors directly related to patient safety. Of interest to Berwick's concept of error rate being proportional to the number of steps in a system is the error rate caused by faxed prescriptions. Faxing requires two additional steps over prescriptions handed to patients; identification of the right fax number and the action of faxing. Both these steps caused error in this data set.

It is most encouraging to see the widespread adherence of practices in the Pinnacle Network to the majority of the repeat prescribing protocol. For those aspects that were not so rigorously followed, further work needs to be undertaken regarding the appropriateness of including them

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pharmacies are, for the most part, quite informal and are effective more by good will than design. It is suggested that more formalised relationships that describe respective responsibilities and provide clear lines of communication and feedback may be effective not only in 'last stance' error detection, but also in identifying deficient processes. Such a relationship could include weekly meetings between the pharmacist and practice, maintaining a log book of errors to be discussed or shared access to relevant patient information. A commonly overlooked step in error detection is the check conducted by the patient. Several of the instances reported for this research identified patient detection of error as the corrective mechanism. Yet it is not part of usual process in many practices to request the patient review the prescription once generated. Incorporating this step into the practice protocol and at the pharmacy may for-

in the protocol by understanding why practices do not use them.

It is tempting to regard a delay in having the prescription ready as somewhat separate from patient safety and more in the realm of convenience. However, these incidents could also be viewed as indicators of faults in a system and therefore the question is raised about differing rates of serious repeat prescribing errors in practices where delay in providing the prescription is rare against practices where delay is common.

The obvious weakness in this study is the self-reported nature of both errors in repeat prescribing and adherence to the repeat prescribing protocol that can lead to lack of consistency in data collection. There may have been incidents that the practice or practitioner chose not to report and these may have shed further light on

errors that occur. Consequently, the data does not give meaningful insight regarding the rate of incidents per repeat prescription and cannot be considered.

Conclusions

Repeat prescribing is part of the 'heuristic' of general practice; it is an accepted activity that has been traditionally undertaken for many years without acknowledging that a changing environment has significantly shifted expectations regarding safety. Some important conclusions from this research are:

1. It is possible to institute a protocol for repeat prescribing across a network.
2. There is good observance of many aspects of the protocol overall.
3. It is clearly of benefit to evaluate the results of instituting such a process, even accepting the limitations of evaluating practice driven continuous quality improvement initiatives.
4. Aggregating data can add value to understanding where flaws exist in systems for safe repeat prescribing.

There is a need to recognise and formalise the crucial role of the pharmacist in detecting and correcting prescribing error. Similarly, the patient for whom the prescription is written may also be incorporated and formalised into such processes as they represent a potent method of error detection. It is also suggested that protected time for repeat prescribing would reduce error rates. Timely communication from secondary to primary care would also be likely to reduce error rate. Clearly informing the patients of a practice about boundaries that need to be set around repeat prescribing would reduce requests for medications inappropriate for repeat prescribing.

For an activity that generates substantial error rates even when process and protocol is in place, continuing questions have to be raised around safety. Further research should be aimed at assessing the reduction in error rates that can be achieved by attention to the system's flaws found in this research, as well as methods of successfully integrating improved systems into general practices.

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