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Improving medication safety — prescribing and dispensing errors

Strategies to reduce errors during the prescribing and dispensing processes were discussed at this year's UK Clinical Pharmacy Association autumn symposium.

Christine Clark and Hannah Pike report

One critical error has changed Bryony Dean Franklin's practice with respect to rewriting prescriptions. In a workshop concerned with improving the safety of the prescribing process Professor Dean Franklin, principal pharmacist, clinical services and director of the academic pharmacy unit, Hammersmith Hospitals NHS Trust and London School of Pharmacy, described how a doctor had misinterpreted a prescription form and made a prescribing error. The doctor's colleague had crossed off the administration section — effectively stopping further administration — but not the prescribing section. The doctor's own practice was to cross off both sections and her method for rewriting was to look down the prescription section and rewrite all those that were not crossed off. This led to the doctor rewriting the item that her doctor colleague had meant to be discontinued. As a result of this episode, Professor Dean Franklin now recommends that both the prescribing section and the administration section of the prescription document be clearly crossed off when a treatment is discontinued.

Accident causation

Professor Dean Franklin also described an accident causation model that can be used to help understand the causes of prescribing errors. In this model there are three components; latent conditions, error-producing conditions and active failures. When all three combine, an accident occurs. Most of the time this is prevented by defences in the system, for example checking procedures by nurses or interventions by pharmacists. Previously all investigations focused on the active failures, such as the nurse who gave the wrong dose. The staff involved were blamed, disciplined or dismissed. One big

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Bryony Dean Franklin: encourage good practice

advantage of the accident causation model is that it invites investigators to take a step back and identify the underlying error-producing conditions and latent conditions.

Active failures can be divided into errors, which are unintended, and violations, which are intentional bending of the rules. An example of this would be a doctor getting a medical student to write a prescription because he was busy. There is no intention to harm in this situation, explained Professor Dean Franklin.

Errors can be divided into slips, lapses and mistakes. "Slips" arise from lacks of concentration such as when one drug or dose is intended and another is written. A recent example was a prescription for oxybutinin 250mg, written in error for oxytetracycline 250mg. In this case the ward pharmacist assumed that oxybutinin was the correct drug and that the dose was wrong. The error was identified when the patient asked about the tablets for her skin. Lapses arise from lapses in memory, such as changing a dose or formulation and forgetting to cross off the original prescription. Mistakes can be rule-based or knowledge-based and typically arise when individuals forget or confuse "rules" or simply do not have sufficient knowledge to make a particular decision.

Professor Dean Franklin has conducted a study in which prescribers who had made potentially serious errors were invited to par-

ticipate in an interview to explore why the error had occurred. In 60 cases out of 88 potentially serious errors the prescriber was identifiable and 44 of these agreed to participate. All the prescribers found the process useful and were interested to talk about the potential error.

Numerous error-producing conditions were identified including aspects of the work environment, poor communications between team members and individual attributes such as poor health or inadequate knowledge. In addition, the nature of the task in hand played a part: error-prone tasks could be non-routine or complex tasks or they could be simple but unfamiliar to the individual involved.

A number of interesting latent conditions emerged during the study. For example, prescribing was generally seen as a low priority activity and transcribing was perceived to be more of an irksome clerical task than a prescribing task. Gaps in the training provided at medical school and lack of awareness of errors also contributed to the latent conditions. Another factor was the lack of documentation when doctors covered patients under other firms.

Reducing errors

Professor Dean Franklin outlined some of the measures that could be used to reduce prescribing errors. Principles of prescribing should be taught at medical school and junior doctors should be trained and undergo prescribing competence assessments. A prescribing test is currently used in the London region, she noted. Good practice in documentation should be encouraged and there should be feedback, review and discussion of prescribing errors to raise awareness and prevent repetition. The defences in the system, such as pharmacists, nurses and patients should be recognised and used.

Lastly, some systems could be changed. For example, the administration time for warfarin could be changed from 6pm to midday to ensure that the prescription is written while the day staff are still on duty. Electronic prescribing could also be introduced.

Causes of dispensing errors and possible solutions

In a workshop led by Amanda McLean, quality assurance pharmacist at Western General Hospital, Edinburgh, the causes of dispensing errors were discussed and strategies to develop safer processes were outlined. Participants looked at a simplified model of the dispensing process and worked in groups to identify the types of error that can occur at each stage of the process.

When generating a label, potential errors included selection of the wrong patient on the computer if two or more patients have a similar name or hospital number, selection of the wrong item, dose or strength from a drop-down menu, and patient allergies not being taken into account. When selecting an item from the shelf, errors may be replicated by staff dispensing from an incorrectly generated label rather than from the prescription. Mixed batches, split packs and expired stock all have the potential to cause harm and labels are sometimes placed on packaging in such a way that vital information is covered up.

During the workshop delegates discussed factors affecting dispensing errors. These include:

Workload Although having a heavy workload may make errors more probable, studies have shown that they are more likely to happen in “downtime”, when the dispensary is suddenly quiet or when staff return from a break, for example.

Interruptions Dispensary staff are often interrupted by the telephone ringing when they are filling or checking a prescription. Techniques to reduce this include having a member of staff dedicated to answering the phone, the dispensary routinely calling the ward when a prescription is ready rather than vice versa, and electronic prescription tracking systems so that staff on the wards can see where a particular prescription has reached. Staff should have a policy of not interrupting their colleagues when they are filling or checking prescriptions.

New or inexperienced staff Delegates discussed whether the risk of errors was higher from less experienced staff. It was noted that these staff members might in fact be safer as they may work more cautiously and be more aware of their limitations.

Dispensing safety can be increased by raising awareness among staff, including by analysis of collected data. When analysing error reports, it is important to act on the near misses and not just the incidences that actually led to harm. Workshop participants discussed the benefits of the prescription being checked clinically in advance of it being dispensed, of staff being assessed for their competence in dispensing and checking, and in having systematic ways of working.

Space issues were also raised, with most participants agreeing that working in trays was a good way to keep the dispensing bench organised and to reduce clutter. Patient/carer verification at the point of dispensing was also mentioned, as this highlights to patients that they can take responsibility for their own medicines.

Participants discussed robotic dispensing, and noted that although robots can help to reduce errors, care is still needed as larger quantities of stock are likely to be coming through the dispensary at a time, and the capacity for human error still exists, for example, when loading drugs into the robot.

An audit of prescribing errors

Pharmacists should be available at the point of prescribing to offer advice and ensure the prescriptions are written safely. This is an issue raised by Gillian Cavell, deputy director of pharmacy, medication safety, Mee-Onn Chai, senior pharmacist, clinical services and Greg Scutt, senior pharmacist, clinical services, at King's College Hospital, London, who presented the results of their audit of prescribing errors at the symposium.

Over a one week audit period, 226 prescribing errors were identified and averted by pharmacists. The pharmacists categorised 117 of these as being due to errors in decision making, 84 as errors in prescription writing and 25 as errors due to the patient's clinical condition. The most common errors were the dose being above the recommended dose (12 per cent of errors identified), below the recommended dose (15 per cent), the prescription unintentionally deviating from the medicine prescribed on the inpatient chart (12 per cent) and omission of the dose, route or frequency (8 per cent).

Although the severity of the errors was not formally assessed, the authors report that a number of them had the potential to cause harm, including prescription of flucloxacillin to a patient allergic to penicillin and chlorpromazine 100mg being prescribed to another patient instead of chlorpromazine 10mg.

They note that the 2001 Audit Commission report suggests that junior doctors do not receive sufficient training in prescribing, and say that a change in practice is required to enable pharmacists to be present when patients are admitted, to attend more ward rounds and to become fully integrated into the multidisciplinary team.

The results of this audit have been used to develop a pharmacy-led prescribing skills training programme for pre-registration house officers, in conjunction with the Department for Postgraduate Medical and Dental Education.