



Medication error in New Zealand—time to act

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Preventable adverse events involving medications have been repeatedly identified as a leading cause of iatrogenic harm internationally.¹ They occur in hospitals, in primary healthcare, and notably at the interfaces between healthcare settings (e.g. on admission to and discharge from hospitals). They involve all routes of administration and all provider groups, and they are responsible for much serious and costly morbidity (and occasionally even mortality) in patients of all ages.

Thus far, there has been a disappointing lack of commitment to addressing them. In the end, these errors are simply an unacceptable failure in a process of only moderate complexity for which it ought to be possible to achieve the six sigma standard expected in high reliability organisations in other sectors of industry or service provision. Six sigma implies (in effect) no more than 1 failure in every 300,000 (or so) episodes of a process.²

In this issue of the *Journal*, Kunac and Reith report a prospective observational cohort study of preventable medication-related events in children in a New Zealand university-affiliated urban general hospital.³ They identified 761 medication-related events arising from 3160 medication orders over 3037 patient days of admission for 495 children.

One probable reason for complacency in relation to medication errors is the fact that many are without consequence. However, Kunac and Reith report that of the preventable events (which might also be called “errors”, or perhaps simply “process failures”), 38 (5%) caused actual patient harm, and a further 75 (9.9%) were classified as potentially harmful. It is a little disappointing that no examples were provided to illustrate the nature of this harm, but clearly these data describe a situation that is a long way short of six sigma and a reason for considerable concern.

In light of current interest in establishing a unified national incident reporting system in New Zealand, it is sobering to see that **less than 1% of the identified errors were captured by the hospital’s routine incident reporting system.** A voluntary staff quality improvement system was more successful (capturing nearly 15%), but **the vast majority of events (identified by chart review) were still missed.** It is also interesting that nurses submitted more voluntary incident reports than any other professional group.

A recent report from the UK’s National Reporting and Learning System⁴ made a similar observation and emphasised the importance of engaging the key speciality groups involved with generating incidents in the process of reporting them. Their analysis of 2000 incidents related to anaesthesia found that many patients had been harmed, but was unable to identify any recommendations to reduce the likelihood of the same things happening again because of inadequate detail about the specifics of what had gone wrong, and why.

In general, this requisite in-depth information needs to come from those who generate the events.⁵ Clinicians' engagement in incident reporting is likely to depend on their perception of the relevance of the information collected to their own field of practice, and of the likelihood of a constructive response. These concepts are sometimes embedded in the term "ownership".

There is, therefore, a strong case for supplementing any overarching generic incident reporting system with a number of more targeted initiatives driven and owned by specific groups of practitioners. For example, in this part of the World, the Australian and New Zealand College of Anaesthetists, the New Zealand Society of Anaesthetists, and the Australian Society of Anaesthetists have combined resources to fund re-energisation of a binational voluntary incident reporting system for anaesthetists with the aim of capturing sufficient detail to identify and promote effective ways of improving safety for their patients.⁵

There is no point collecting information without acting upon it. Reluctance on the part of many workers and funders in healthcare to embrace simple commonsense measures that might make a substantial difference to drug safety is disappointing. For example, the New Zealand Medicines and Medical Devices Safety Authority (Medsafe) has indicated (in a personal communication with Dr Ahmed Engin) that it opposes colour coding by pharmacological class of drug because this may reduce the imperative to read the label. However, the point of colour coding is *not* to substitute for the essential task of reading the label, but to provide a supplementary safeguard to make between-class errors less likely, on the basis that within-class errors are likely to be less serious or injurious.

The whole thrust of error management developed along principles of cognitive psychology over the last 3 decades has been to add as many protective measures to the mix as possible,^{6,7} and there is certainly scope for this principle in the administration of medications.^{8,9} The real issue here is that "look-alike sound-alike" drug ampoules are repeatedly identified in incident reports as contributing to drug errors.

It is not necessary to colour code all drugs, but it makes obvious sense to identify high-risk examples (that Reason would call "latent factors"⁶) and address these; the recent release in New Zealand of dopamine and magnesium in very similar presentations is just one example that could have been avoided, and it is one that has already led to the administration of a 200 mg bolus of dopamine instead of magnesium (and very nearly a disaster). This was a virtual re-run of the infamous dopamine for doxapram drug swap which led to a tragic patient death and the conviction for manslaughter of an anaesthetist in the early 1990s.¹⁰

Do we never learn? Similarly, there have been reports of incidents in which nursing staff have perverted the functioning of unit dose verification systems on the ward (see below), presumably in the interests of efficiency rather than safety. There is also anecdotal evidence that some individual practitioners provided with a system which uses barcodes to check the identity of intravenous drugs in anaesthesia by enunciating the name of the drug¹¹ choose to swipe the drugs *after* administration rather than *before*, despite the fact that wrong drugs have in fact been identified on swiping *after* the event.

The astonishing thing about this example is that it is hard to see any way in which it is easier or more efficient than using the system properly. Objections have also been advanced to requests for double-checking of drugs (for example, from the New Zealand Medical Council following another patient's death from yet another drug error), not only because double checking may occasionally fail (incident reports testify to this) but on the grounds that it might actually be counter productive (a highly improbable proposition for which we can find no empirical evidence).

Reluctance over patient safety initiatives sometimes reflects denial that a problem exists, or optimist bias (the belief that a problem applies only to *other* practitioners or organisations). In this case, we suspect that it also reflects a lack of awareness of the empirical and theoretical research which today not only continues to add to the increasingly indisputable evidence of the alarming magnitude of avoidable patient harm from medication errors, but also provides good guidance on many useful and sensible ways to improve the processes by which medications are presented, prescribed and administered (see below).

In all of these examples, one would surely expect constructive efforts to make sensible initiatives work rather than nihilist defeatism based on unrealistic demands for evidence¹² and the notion that if we can't achieve perfection it is not worth striving for any improvement on the status quo. In fact, pursuing small gains in a continuous iterative cycle of Plan Do Check Act (PDCA) is a widely accepted principle for quality improvement.¹ In patient safety, every little bit helps.

Kunac and Reith's observation that "Patients were supportive of the study" is not surprising. Of course patients want this problem addressed. It is very encouraging that the Quality Improvement Committee has identified Safe Medication Management as one of five priorities for healthcare in New Zealand, and that the Government has allocated \$10.2 million to this end.

A national programme will encompass a standardised hospital medication chart with built-in safety features, medicine reconciliation, electronic prescribing with standardised information on medicines with appropriate links between hospital information systems, and the use of barcodes on unit doses of medications for bedside verification of administered drugs.

Medication error is an entrenched and multi-faceted problem and it will take time for these initiatives to work. That time would be considerably shortened if everyone concerned elevated this issue to the priority it deserves, stopped raising vexatious objections to common sense initiatives and engaged fully in the fundamental healthcare responsibility of always giving the right drug by the right route to the right patient in the right dose at the right time.

Competing interests: Professor Alan Merry has financial interests in improving safety in healthcare and chairs the ANZTADC which is promoting anaesthesia incident monitoring.

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