EDITORIAL

Drug safety in the intensive care unit

'To err is human' is the title of a landmark document by the Institute of Medicine, which highlights the high incidence of medication errors occurring in hospitals and the consequent complications, costs and deaths.[1] Extrapolating from two large hospital studies, medication errors may result in between 24 000 and 98 000 deaths per year in the USA, making this their 8th most common cause of death. Preventable drug events occur in 2% of hospital admissions and cost $2 billion per annum.

Drug errors in the intensive care unit are frequent but under-recognised. Studies that rely on self-reported data show a relatively low incidence,[2] but in recent prospective studies using direct observers, an astounding 20.2% of patients suffered adverse events of which 47% were medication related.[3,4]

Most commonly mistakes occur in the prescribing phase where the error is usually doctor related, but almost as frequent are administration errors, and in the ICU these generally involve nurses. The least errors occur at the pharmacy level.[1,3] Too frequently the patient gets the wrong drug, the wrong dose, or a drug through the wrong route. Critically ill patients are particularly vulnerable because they receive multiple interventions with potent agents via numerous access routes. Errors are more frequent and fatal in neonatal and paediatric ICUs.[5] Intravenous infusion systems are particularly error prone where mistakes occur in dose dilution calculations, infusion pump programming, line obstructions and disconnections.[6] The use of multiple lines and 'piggy-backs' can result in the mixing of incompatible fluids, back-pumping and inadvertent bolus administration. Of particular risk is the switching of access routes, such as the occasionally fatal intravenous administration of enteral feed, or the infusion of drugs intended for IV use via the epidural or intra-arterial route.[6]

The current apathy regarding drug safety is perhaps understandable in view of the high-pressure situation ICU staff work under. A common attitude is that 'we don't make mistakes', and minor errors are considered irrelevant and 'par for the course' in the light of the overwhelming benefit critically ill patients derive from the ICU. This situation needs to change, not only because of the risk of litigation and disciplinary action, but because *patient safety* should be one of our central principles.

Doing something about drug safety requires a multi-pronged approach. Improving staff knowledge and skills is important and in-service training should routinely include information on drug properties and interactions, prescribing and administration.[1] Leadership stressing patient safety must be provided by both medical and nursing unit directors. Written protocols and guidelines form an important part of a safety system. Potential booby traps, such as an injection port on an epidural delivery system, have to be identified and defused. The presence of a pharmacist on ward rounds in the ICU not only reduces prescribing errors, but can also reduce cost.[7] New technologies are being introduced, such as the availability of drug information on hand-held electronic devices and computerised prescribing systems that can reduce errors from 27% to 3.4%.[8] Bedside barcode scanners can be used to scan both the drug label and the patient armband, ensuring that the right patient gets the drug and at the same time updating the electronic patient and billing record.

There is little forgiveness in hospitals for those who commit major errors and are 'found out'. The guilty have to fill in incident forms and present themselves to the matron. This leads to a culture of 'cover up and ignore'. The opposite approach is taken by the aircraft industry, where a very high level of safety has been achieved. Here it is accepted that anyone can make a mistake, but mistakes are prevented by adherence to protocols, the use of checklists and the cross-checking of colleagues – regardless of rank.[9] Self-reporting of errors is encouraged as a means of self audit and system improvement.[10]

Critical care needs to develop patient safety as a core value, use a systematic approach to prevent medication and other errors, and encourage a culture of openness and personal accountability.

W L Michell

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