# Perspective

# Prescribing Errors in UK Hospitals: Problems and Solutions

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Prescribing errors have historically been under-recognised, under-researched, and largely ignored by the medical establishment. Happily, this is changing. We are now starting to appreciate the damage to individual patients, and healthcare organisations as a whole, by errors in prescribing and poor training of medical staff. The next few years will hopefully see an improvement in the UK situation, potentially with General Medical Council (GMC)-led national prescribing training and assessment forming a major part in this effort. However, it is worth reflecting that there is unlikely to be a simple "quick fix" to prescribing errors.

The scale of the problem of errors in medical prescribing in developed healthcare systems is staggering. The GMC reported, in 1993, that adverse events resulting from treatment errors contributed to 10% of UK hospital admissions and generated a potential financial liability of over £2 billion annually. This report seemingly had little immediate effect on the medical profession at large or our political masters.[1]

Small-scale studies in individual UK hospitals have generally revealed a high incidence of prescribing error and sequelae. For example, in 2002 a study from two London teaching hospitals estimated that prescribing errors led to an adverse event in around 10% of admitted patients, and one iatrogenic death per 384 patients admitted during the study.[2] Similar studies, in different parts of the UK and other countries, have yielded similar results, although lack of standardized methodology makes comparison of studies difficult.[3]

## The Problem

The problem of prescribing error is actually a series of sub-problems.

### 1. Medical school-who designs the curriculum?

Traditionally in UK medical schools, teaching of therapeutics and prescribing has been weak. Almost 40% UK medical schools do not teach therapeutics at all. Of the others, the majority do not teach therapeutics *per se*, but have a "vertical strand" running through the clinical course.[4] The EQUIP survey carried out in 19 UK hospitals on behalf of the GMC (and which, inexplicably, remains unpublished in a peer reviewed format) found a prescribing error rate of 8.9% in 124,260 hospital drug prescriptions.[5]

The poor aptitude for, and attitude towards, prescribing displayed by the newly qualified doctors who were the subject of the EQUIP study implies that current medical student/junior doctor training in prescribing is unsatisfactory. Pressure has grown for an NHS-wide system to ensure that medical students and junior doctors are adequately trained and assessed for prescribing. The result has been the proposed national medical prescribing assessment currently being piloted at a number of UK medical schools.[6] Worryingly, acceptance of this pilot scheme has not been universal, and some medical school curricula are actively reducing the amount of therapeutics teaching given to medical students.

### 2. Junior doctors shift patterns-an accident waiting to happen?

Human factors such as fatigue, hunger, and stress have demonstrable effects on prescribing error.[2] Moreover, recent changes to the way that junior doctors work could not have been designed more perfectly to facilitate prescribing errors. Several studies have shown that the chances of a prescribing error are greatly increased by lack of knowledge of the individual patient - a frequent occurrence in shift-systems where relatively small numbers of doctors cover large numbers of patients for relatively short periods of time.[2] Analysis of prescribing errors in a UK teaching hospital made the point that "error producing conditions" such as poor training, time pressure, or fatigue will increase the likelihood of an error - unless mechanisms are in place to detect and prevent them.[2] This suggests that a successful strategy to reduce medication error must include alterations to, or allowances for, working patterns as well as introducing new technologies such as electronic prescribing systems.

## 3. Detecting the problem-how do we know we have made an error?

Prescribing errors are, in general, difficult to detect. Active efforts have to be made to gather error data from prescriptions, and there remains a reticence on the part of the prescriber to admit to error, despite attempts to instill a "no fault" culture in the NHS. Electronic prescribing systems may provide a mechanism for gathering prescribing error data, and relatively easy mechanisms for audit. It has been proposed that feedback of prescribing errors in a structured setting could reduce future errors,[7] and electronic prescribing systems can often be configured to achieve this automatically. As ever, the caveat "more research is needed" has to be added here. In the current healthcare environment in the UK and internationally, it is unclear who will fund and who will carry out this research.

## 4. Hospital systems-too complex and poorly integrated?

Healthcare is inherently dangerous for patients. Absolute risks associated with being a patient are high, quite apart from the risk from the medical condition itself. Prescribing errors are just one of the potential hazards facing patients; even correctly prescribed medications lead to measurable levels of harm, as every student of clinical pharmacology will appreciate.

Hospitals are extremely complex organisations, and error-producing conditions can be created by seemingly trivial aspects of healthcare, such as infusion bottles containing different fluids but with a similar outward appearance.[8] Identification of situations where error is likely to be catastrophic, and instigating preventative measures is one strategy to mitigate the effects of error. For example, the creation of NHS "never events" such as intra-thecal vincristine injection has had a demonstrable effect on incidence, but has not eliminated it entirely.[9]

While it is probably impractical to "re-engineer" all existing hospitals to minimize system errors, many UK NHS trusts now have some sort of proactive effort to identify potential sources of harm. Unfortunately, making one area of healthcare safer in isolation from the entire organization often has unintended consequences. A study of the effects of implementing electronic prescribing systems in the UK found that the number of prescribing errors was reduced overall, but that there was a qualitative change in the error burden, i.e. fewer errors overall, but some types of error *introduced* by the new system, such as choosing the wrong drug from a drop-down electronic menu.[10] We have learned that implementation of electronic prescribing (or any technological tool) has the potential to introduce error, unless practice is altered appropriately.

## The solution?

Sadly, recent experience shows that there is no "quick fix" for prescribing errors. Introduction of electronic prescribing in a variety of contexts has shown that these (very) expensive, complicated systems reduce some types of error, but introduce other, completely unanticipated classes of error. It seems that there is no alternative to improving the training and assessment of prescribing in medical students and junior doctors. From a medical students' point of view, a prescribing test as part of finals or a local assessment before being allowed to prescribe "for real" in the FY1 year might seem burdensome, and yet another hurdle at the end of a long course. However, by far the commonest way for a junior doctor to harm a patient is by making a prescribing error. Until the medical profession as a whole accepts that prescribing errors are a threat to our patients, submits to regular training/audit, and reacts constructively to being confronted with our errors, disgracefully high levels of iatrogenic harm will continue. Hopefully a national prescribing assessment will be the first step in the right direction.

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