

Electronic prescribing improves patient safety — an audit

By Andrew Barker, MRPharmS, and Julie Kay, MRPharmS

Implementation of an electronic prescribing system in an acute trust has been shown to reduce adverse drug events. This article summarises the audit findings

In 2003, after an initial pilot period, Doncaster and Bassetlaw Hospitals NHS Foundation Trust implemented a computerised system of prescribing, clinical pharmacy activities and medicines administration on a four-ward medical unit at Montagu Hospital, Mexborough.

The software application was provided by JAC and incorporates clinical decision support using the Multilex Drug Data File, supplied by First DataBank Europe. The system was selected because we considered it to be the most advanced of its type available in the UK, and it is compatible with the JAC pharmacy system already in use at the trust.

An audit was undertaken during which the impact of the system on prescribing decisions and adverse drug events was monitored.

Findings

Decision support An initial audit was carried out over a two-month period, on two acute medical wards, to identify how many times a warning generated by the system made a prescriber rethink his or her decision. Over the audit period 7,106 individual items were prescribed electronically for 387 patients. Decision support warnings were issued in 2,549 instances, most of them regarding drug interactions (1,081 instances), allergies (33 instances) or duplicate therapy (1,405 instances). On 74 occasions (1 in 97 orders) the warning prompted the prescriber to change his or her order. Prescriber response to the warnings is summarised in Table 1.

A further analysis was performed to identify the frequency of repeated warnings. Of the 2,549 warnings issued 1,582 (62.1 per cent) were repeated warnings. If most of these repeated warnings are excluded from the analysis then it can be said that about 20 per cent of first warnings were heeded.

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Adverse drug events We carried out an independent review of inpatient prescriptions on two acute medical wards before the introduction of the system (94 patients, 702 items) and afterwards (95 patients, 706 items).

The number of potential ADEs recorded, defined as events which had the potential to cause harm, delay recovery or result in lack of control of symptoms, was 11 per 100 before the system was implemented, and 4.2 per 100 after implementation — a reduction of 61.3 per cent. Figure 1 shows the number of potential ADEs recorded and their cause. While there was a significant reduction in potential ADEs both overall and in the areas expected to be improved by the system, implementation of the system caused an increase in medication selection errors, as a result of prescribers selecting the wrong item from menus displayed.

Compliance with policy Compliance with trust policy for writing prescriptions has improved from 37 per cent to 96 per cent since implementation. Compliance with trust policy on recording administration rose from 65 per cent to 100 per cent.

Next steps

We are in the process of rolling the system out on a further five medical wards at Bassetlaw District General Hospital. We are

Table 1: Prescriber response to decision support warnings

Outcomes of warning	Cases (%)
Warning heeded (and product not prescribed)	9.1
Prescribing proceeded	90.9
Reason given	
Intended duplication	45.2
Benefit outweighs risk	14.9
Patient already stabilised on drug	20.1
Not clinically significant	6.4
Alternative route prescribed/PRN product	4.3

currently repeating this audit using much larger patient numbers, and expect results to be available by the end of the year or early next year.

Work is also under way to reduce “unnecessary” warnings in the decision support system, such as alternative routes of administration or when duplication of a drug was intended.

We want to introduce the routine use of decision support or formulary choice outcome data into clinical audit programmes.

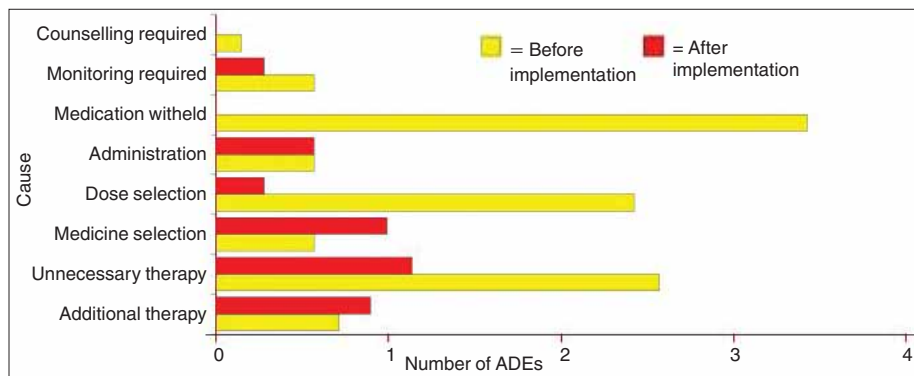


Figure 1: Potential adverse drug events (ADEs) per 100 items before and after introduction of electronic prescribing, classified by cause of potential error