Reducing medicines administration errors on dementia units

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Dr Dawson describes her audit cycle carried out on two NHS dementia assessment units to assess the frequency of drug administration errors and the subsequent improvements made following simple interventions, including training sessions for nursing staff, clear coding of medication and encouraging the reporting of empty boxes as medication errors.

<table>
<thead>
<tr>
<th>Medication charts</th>
<th>Regular prescriptions</th>
<th>Number of medication errors</th>
<th>Error rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dementia Ward A</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Audit 1 (February 2012)</td>
<td>20</td>
<td>264</td>
<td>395</td>
</tr>
<tr>
<td>Audit 2 (July 2012)</td>
<td>21</td>
<td>309</td>
<td>166</td>
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<td>Audit 3 (June 2013)</td>
<td>21</td>
<td>250</td>
<td>56</td>
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<tr>
<td>Dementia Ward B</td>
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<tr>
<td>Audit 1 (February 2012)</td>
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<td>214</td>
<td>102</td>
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<tr>
<td>Audit 2 (July 2012)</td>
<td>17</td>
<td>270</td>
<td>128</td>
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<tr>
<td>Audit 3 (June 2013)</td>
<td>14</td>
<td>171</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 1. Number of prescriptions and medication errors on dementia Wards A and B at the time of the three audits

Often patients will lack capacity to give informed consent to medications due to their dementia, and on occasion they can be non-compliant or even verbally or physically aggressive. In addition, elderly inpatients are often frail and multiple physical comorbidities are prevalent. Specific medical conditions have a higher prevalence in the elderly, for example atrial fibrillation, hypertension and ischaemic heart disease. This in turn leads to the increased likelihood of complex medication regimens.

By undertaking this audit, I aimed to identify the frequency of drug administration errors on two dementia units, to institute changes in light of the findings, and to re-audit to assess the efficacy of the changes.

Methods

Audit setting

The audit was conducted on two NHS dementia assessment units in Holywell Hospital, Antrim, Northern Ireland. Ward A is a 21-bed unit for assessment of dementia patients with recent onset behavioural problems. Ward B is a 14-bed unit, which traditionally has been a longer stay unit for patients with more complex behavioural problems related to dementia. All patients were elderly and mostly physically frail, requiring medication for both physical and mental conditions.
Medication administration

An eight-week joint prescription and administration record has been used throughout Holywell Hospital since 2009. This allows easy comparison of both records. Regional hospital policy dictates that the administering nurse must sign the administration chart each time a medicine is administered.\(^{11}\) If the nurse is unable to administer medication, they must record a specified omission code. For example ‘R’ for patient refused or ‘D’ for drug not available. Two trained staff nurses are responsible for jointly carrying out medication administration. Often one nurse will be responsible for bringing medication to patients who are unable or unwilling to walk to the medicines trolley.

Audit standards

Audit standards were based on Department of Health and Public Safety Northern Ireland (DHPSNI) guidance on medicines safety.\(^ {11}\) An administration error was deemed to have occurred if the administration of a medication failed to be correctly recorded.\(^ {7}\) Therefore, the expected standard was to have no empty boxes on the administration record.

Audit cycle

One initial audit and two re-audits were undertaken between the period of February 2012 and June 2013. All inpatient medication charts on the two Holywell dementia assessment units (Ward A and Ward B) were included. Some variation was noted between medication chart and prescription quantities between audits due to variation in inpatient numbers (see Table 1). Initial data was gathered over two weeks in February 2012. The numbers of empty boxes in the administration section were recorded for each regular prescribed medication. Medication types were then broken down into the categories used in the British National Formulary for further analysis.

Results

Results of the initial audit highlighted many drug administration errors on both wards (see Figures 1a and 2a). In response, I arranged to meet with the old age psychiatry consultant group, ward managers and pharmacy to discuss methods of implementing improvement. A number of strategies were implemented:

- In conjunction with Holywell pharmacy, interactive teaching sessions for all nursing staff were arranged
- Laminated instructions for appropriate coding of medication were placed on medication trolleys on the dementia units
- Medical and nursing staff were
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encouraged to report empty boxes as medication errors on the Trust critical incident reporting forms.

Intervention was first put in place in May 2012. Audit 2 was carried out over a two-week period in July 2012. Outcomes improved on Ward A, but not on Ward B initially. Further initiatives with pharmacy were than undertaken on both wards. Data for audit 3 was gathered over a two-week period in June 2013, with good results on both wards.

In both dementia units, there was improvement in medicines recording over the timeframe of the audit cycle. After audit 3, a total reduction of 4.5 percentage points in error rate was noted in Ward A. In Ward B, a total reduction in error rate of 1.5 percentage points was achieved (see Table 1). On Ward B, the error rate substantially reduced from 1.7 per cent in audit 2 (July 2012) to 0.2 per cent in audit 3 (June 2013). This could be attributed to a change in ward management during this time period, and improved on-site pharmacy presence for medication review, as Ward B began to implement a new behavioural science-based model for dementia. In addition, nursing staff were recruited from Ward A and B to assist with data collection in audits 2 and 3. This appeared to improve attitudes towards the audit, and further highlighted the problem to nursing staff.

There was a general trend for improvement across all categories of medication. Notably the most frequent administration recording errors occurred in the nutritional supplement group in both wards. At initial audit, this group comprised 151/395 (38.2 per cent) of all errors in Ward A and 29/102 (28.4 per cent) of all errors in Ward B. This is considered a low risk error as limited adverse outcomes would be expected. However, errors were also noted for other higher risk medications, such as cardiac medication and analgesia (see Figures 1b and 2b).

Discussion

Nursing staff on our dementia units identified interruptions during drug administration, frequent turnover of ward staff and staff shortages as substantial contributors to medicines administration errors. Another study found that each interruption was associated with a 12.1 per cent increase in procedural failures, including failure to record medication administration, on the medication chart.\(^\text{12}\) Research carried out in a paediatric hospital also identified that error rates varied significantly between nurses. Error rates were higher for student nurses and for nursing staff who did not regularly
work on the unit.\textsuperscript{13} The two most common factors cited by nurses as contributing to making errors were a busy, noisy environment and personal factors, such as feeling tired or unsupported. Physicians were also cited as having contributed to some errors through interruptions.\textsuperscript{14}

There is also much evidence to support the under-reporting of medication errors, largely attributed to the perception of a ‘blame culture’.\textsuperscript{15-18} The success of this audit may partially be attributed to the more open identification and reporting of administration errors by both medical and nursing staff. There is certainly good evidence for the role of increased clinical reporting in reducing medication errors in other studies.\textsuperscript{15,19}

With regard to educational initiatives, these were welcomed by the majority of nursing staff, and positive feedback was mostly attained. However, there have been less favourable findings in other studies which have found limited efficacy for nursing educational interventions alone in reducing medication administration errors.\textsuperscript{19,20}

Overall, this audit cycle has demonstrated the efficacy of simple interventions in minimising drug administration errors. Similar interventions could easily be generalised across all medical settings where paper medication charts are utilised.

**Declaration of interests**

None declared.

**Acknowledgement**

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**References**