Auditing safe and secure handling of medicines can help improve working practices

Abstract

Aim: To audit the level of compliance to standards set out in the 2005 revised Duthie report and highlight areas of high risk.

Objectives:

- ☐ To assess compliance to standards on all wards and clinics.
- ☐ To highlight areas of high risk.
- ☐ To identify risk-reduction strategies.

Method: Ward pharmacists were assigned individual areas to evaluate. Data was collected on 19 wards and 38 clinics for two weeks, focusing on nine areas (storage keys, fridge, bedside medication lockers, medicine trolley, IV fluids, drug cupboards, CD cabinet, emergency drug boxes and storage conditions). Where standards were not met, pharmacists stated the details of the problem and assigned a risk-assessment (RA) score for each standard.

Results: The combination of percentage compliance data and RA scores helped identify the highest risk areas. These were fridge security and temperature monitoring; expired drugs in various locations; storage of intravenous potassium fluid bags and lack of metal cupboards for flammable liquids and gases.

Conclusion: RA scores were useful to highlight areas of high risk and can be used as a measurement tool for improvement in the next audit cycle. As a result of specific steps taken to improve compliance to the standards it is expected that the next audit in 2008 will show improvements. Multidisciplinary teamwork and regular re-auditing will help to implement the changes required and maintain good practice.

Introduction

The Duthie report was first published in 1988 to provide guidance for the safe and secure handling of medicines. The revised version in 2005 takes into account changes in legislation and outlines the 'medicines trail' as well as provides specific advice for different areas.[1] The document *Standards for better health*[2] reiterates this in core standard in section C4(d), which states: 'Health care organisations keep patients, staff and visitors safe by having systems to ensure that medicines are handled safely and securely.'[2] Therefore, the safe and secure handling of medicines requires appropriate policies and procedures to be in place because it affects the whole organisation and this area is part of the performance assessment by the Healthcare Commission.

© Dr. Heinz Linkel istockphoto

A similar in-house audit to this audit was conducted in August 2006. Although our study differs in some aspects of its design and analysis from the earlier study, making the two not strictly comparable, we were able to use data from the earlier study as a rough guide to the level of compliance by wards and clinics to set standards.

We decided to use risk assessment (RA) scores in conjunction with the compliance data to highlight any areas of high risk to prioritise risk-management strategies.

Aim

Our intention was to assess the level of compliance to the standards set out in '*The safe and secure handling of medicines: A team approach*'[1] — a revision of the Duthie report (2005) — as part of a regular six-monthly audit. We also aimed to highlight areas of high risk.

Objectives

Our three objectives were:

- ☐ To assess compliance to standards on all wards and clinics.
- ☐ To highlight areas of high risk.
- ☐ To identify risk reduction strategies.

Method

Ward pharmacists were assigned different areas to conduct their evaluation. They were given a data collection form based upon one used in an earlier audit to collect the relevant information. Data were collected on 19 wards and 38 clinics/departments for two weeks in September 2007.

Wards were defined as areas in which inpatients stayed overnight. All other areas were grouped under clinics or departments. A total of 49 standards in nine areas were assessed. The areas evaluated included storage keys, fridge, bedside medication lockers, medicine trolley, IV fluids, drug cupboards, CD cabinet, emergency drug boxes and storage conditions.

Box 1. Calculation of the risk-assessment score

Risk Assessment (RA) score = F x S
where:
F = Frequency of risk (scored 1–5 with 1 being low frequency and 5 high frequency)
S = Severity of risk (scored 1–5 with 1 being low risk and 5 high risk)

The safe and secure handling of medicines requires appropriate policies and procedures to be in place because it affects the whole organisation and this area is part of the performance assessment by the Healthcare Commission.

The main standards involved tidiness, storage temperature, stock management and whether drugs were stored in the appropriate place. The set standard was 100% compliance in all areas assessed. Where standards were not met, pharmacists stated the details of the problem and assigned a risk-assessment (RA) score for each standard. The RA score was obtained as shown in Box 1. Using this system, the minimum RA score is 1 and the maximum RA score is 25. Before the audit was carried out, pharmacists received training on how to assign RA scores.

The following example illustrates how RA scores were assigned. The ward pharmacist found that there were loose normal saline ampoules in the drug cupboard. The frequency, F, is 1 because it was the first time the pharmacist had found loose ampoules. The severity, S, is also 1 because normal saline ampoules are low-risk. This makes the RA score 1. However, if the pharmacist were to repeat the audit and still find loose normal saline ampoules in the drug cupboard, then F would increase to 2. If the loose ampoules turned out to be potassium chloride 15%, then S would go up to 5 because if it was mistakenly injected the patient might suffer severe harm or death from cardiac arrest.

It follows from the above that, as a general rule, the higher the RA score, the higher the risk. A score that is a multiple of 5 (5, 10, 15 and so on) needs to be looked at more closely because this could mean either that the incident occurs frequently or the risk is severe. However, an RA score of 16 would also be quite serious because this could be a combination of a frequency of 4 and a severity of 4.

After carrying out the audit, the pharmacist met with the relevant ward/clinic manager to agree an action plan that addressed the problems identified and specified deadlines and targets to achieve the necessary compliance. It was decided to analyse ward and clinic/department data separately because the handling and storage of medicines are slightly different for each area. For example, clinics/departments do not usually have bedside medication lockers (BMLs) or medicines trolleys.

Results

This report will concentrate on the five standards that scored the lowest percentage in terms of compliance by wards and clinics/departments (see Figures 1 and 2).We will also focus on the highest risk areas based on the number of incidents where the RA score was a multiple of 5 (see Table 1). A total of 84 incidents where the RA score was a multiple of 5 were reported. The 7 standards in which the greatest number of incidents were found — i.e. 6 or 7 — are indicated in Table 1.

Discussion

As seen from Figures 1 and 2 the main issues for wards related to storage of medicines in various areas, whereas for clinics/departments, the main issue related to the fridge. We decided to use those standards where we recorded the greatest number of incidents and where the RA score was a multiple of 5 as a means to highlight the highest risk areas. Table 1, therefore, shows that fridge temperature, expired drugs and potassium bags are the higher risk areas for wards.

Low compliance to a standard does not automatically indicate a high risk — this depends on the standard assessed. For example, although only 11% of wards had no medicines stored on the medicine trolley base, there were just three incidents where the RA score was a multiple of 5. This indicates that the risk scores were judged to be lower because as a general rule, most medicines stored on the medicines trolley base are bulky items such as nutritional supplements and sachets. However, for the standard 'daily monitoring of fridge temperatures', low compliance indicates high risk because any deviations from the normal range of 2–8ºC would not be picked up. There were 7 of these incidents (Table 1). The high risk areas are discussed in further detail below with specific risk reduction strategies. We did not look into whether there was a connection between low compliance and specific standards, for example, whether a ward that had poor fridge temperature monitoring also had problems with expired drugs in the fridge.

a) Fridge

This audit has highlighted problems with daily temperature monitoring, ensuring the temperature is in range, security, expired

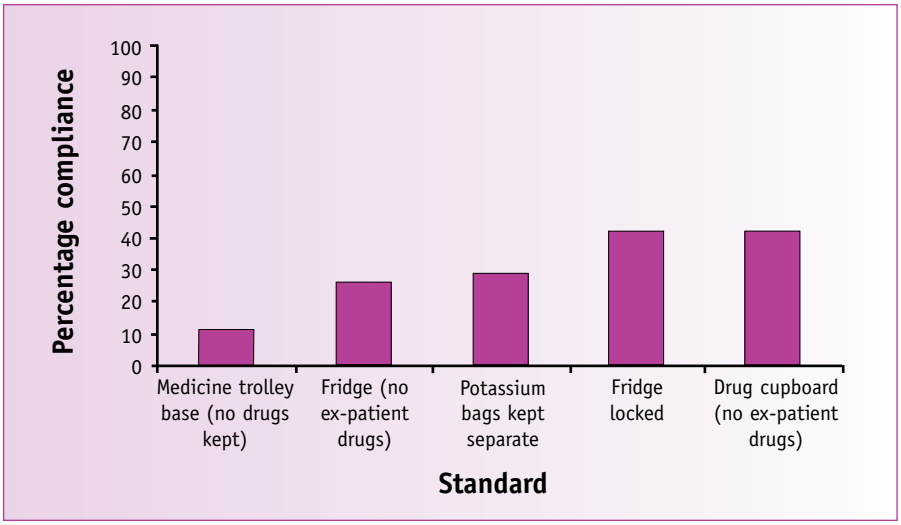

Figure 1. The five lowest standards recorded for wards in terms of percentage compliance

Table 1. The standards with the greatest number of incidents where RA score was a multiple of 5

Area	Criterion	Standard	Number of incidents where RA score = multiple of 5
Fridge	Temperature	Within range	7
		Daily monitoring done	7
		Auto-defrost	6
	Stock	No expired drugs	6
Medicines trolley	Stock	No expired drugs	6
i.v. fluids	Potassium	Kept separate	7
Drug cupboard	Stock	No expired drugs	6

drugs and that not all fridges have an auto-defrost function. As a result of the audit pharmacists have been more proactive in educating ward and clinic staff on how to check the minimum/maximum temperature of fridges and to keep daily monitoring records. The trust also has a drug refrigerator policy,[3] which provides guidance on these standards and includes a monitoring form in the appendix. Old fridges with no auto-defrost function have been replaced and this has helped with fridge temperature control. Ward pharmacists are working with the ward/clinic managers to ensure fridges are locked at all times, daily temperature monitoring is carried out and ex-patients' drugs are removed when they are discharged.

b) Expired stock

There were 18 instances of expired stock found in medicines trolleys, drug cupboards and fridges. It would be useful to know if the nine wards/departments that currently receive a top-up technician service performed better than other similar wards/departments that do not have the service. In cases where there are no top-up technicians, nurses are responsible for ordering and organising the ward stock.

There is evidence in the literature that having a top-up technician or ward-based technician can help cost-savings through better stock control, reduced time spent by nurses and pharmacists on stock issues and can reduce the incidence of missed doses.[5] Therefore, during our next audit cycle we will be looking into whether top-up technicians reduce the incidence of expired stock and ex-patient's medication in drug cupboards and fridges. There is also the risk management aspect to be considered where having a top-up technician could reduce the risk of having expired medication in wards/clinics, and of ex-patient's medication in medicines trolleys, drug cupboards and fridges, which fits in with this audit.

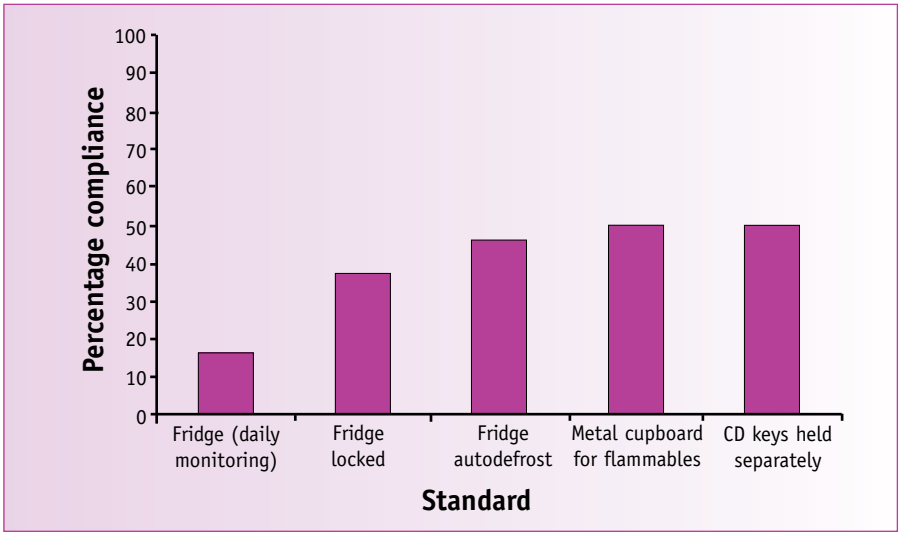

Figure 2. The five lowest standards recorded for clinics/departments in terms of percentage compliance

c) Storage of i.v. potassium fluid bags

There were 7 incidents of i.v. potassium bags not being stored separately from other i.v. fluids and this was confirmed by low compliance (29%) on wards. This is against the trust potassium policy[4] and resulted in a review of the storage conditions in those areas. The trust has invested in i.v. fluid racks, which have made storage easier and safer, and we anticipate that this should be reflected in the next audit.

d) Medicines trolley

On many wards medications are stored at the base of trolleys. Often, these are bulky items, but tablets and injections have been found there. No medication should be kept at the base of trolleys because they are not lockable. The implementation of patient own drug lockers will help reduce the quantity of medications being kept in drug trolleys making them tidier and simplifying drug administration rounds.

e) Metal cupboards for storage of flammable liquids and gases

The lack of sufficient metal cupboards has been highlighted to senior trust managers and is on the trust risk register for consideration. Although this report highlights common themes, each ward/department received an individual action plan with appropriate targets and deadlines agreed by both the manager and ward pharmacist.

We acknowledge that RA scores are subjective but they are useful in assessing risk and can be used as a measurement tool for improvement in a subsequent audit cycle. Ideally, the same pharmacist should assess the same ward/clinic/department in each audit cycle to encourage building a rapport with the staff. Because the RA scoring system is subjective it is also hoped that by having the same pharmacist assess the same wards in subsequent audits this will minimise any possible skewing of the data that could result from different interpretation of the scoring system.

This audit has helped to raise awareness of drug storage issues among senior nurses and staff working in the areas. They have taken the action plans on board and are supportive of the on-going initiative to improve standards in the trust. The trust is repeating this audit later this year and it is expected that there will be some improvement across all wards, clinics and departments.

Conclusion

RA scores were used to highlight areas of high risk and can be used as a measurement tool for improvement in the next audit cycle. As a result of specific steps taken to improve compliance to the standards it is expected that findings from the next audit in 2008 will show an improvement. Multidisciplinary teamwork and regular re-auditing will help to implement the changes required and maintain good practice. ✣

Declarations of interest

The authors have no interests to declare.

May Khaw, lead pharmacist women's health, **Tejal Patel,** deputy chief pharmacist, **Stuart Dark,** lead pharmacist general medicine, **George Wang,** pre-registration pharmacist, North Middlesex University Hospital NHS Trust.

Correspondence to: stuart.dark@nmh.nhs.uk

References

1. Royal Pharmaceutical Society of Great Britain. *The safe and secure handling of medicines: a team approach.* A revision of the Duthie Report (1988) led by the Hospital Pharmacists' Group of the Royal Pharmaceutical Society. March 2005. Accessed at: http://www.rpsgb.org.uk/pdfs/safsechandmeds.pdf in April 2008.
2. Department of Health. *Standards for better health.* Gateway reference 3528, updated version 6405. July 2004. Accessed at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4086665 in April 2008
3. North Middlesex University Hospital NHS Trust. *Drug refrigerator policy for wards.* Review date January 2007. Accessed at: http://nmh-intranet/POLICIES/PHA/PHA186.pdf in April 2008.
4. North Middlesex University Hospital NHS Trust. *Policy for the storage, handling, ordering, supplying, prescribing, preparation, checking, documentation, administration, monitoring and disposal of potassium chloride concentrate and other strong potassium injectable solutions.* Review date March 2008. Accessed at: http://nmh-intranet/policies/pha/Strong%20Potassium%20Concentrate%20Solution%20Policy%20March%2006%20%201.pdf in April 2008
5. Langham JM, Boggs KS. The effect of a ward-based pharmacy technician service. *Pharm J* 2000; **264(7102):** 961–3.

Access to cancer services meeting invitation

Improving access to cancer services — supporting stronger cancer commissioning

There have been groundbreaking advances in cancer care in recent years, but there are still a number of challenges facing cancer services across the UK. This includes variations in the uptake of cancer drugs, variations in access to treatment and the slow uptake of new medicines in the UK in comparison to the rest of Europe. In 2005 the Pharmaceutical Oncology Initiative (POI) was set up to '…work with the NHS to support the implementation of the *Cancer Reform Strategy* and to ensure that cancer patients get access to services and treatments in the UK that are comparable to the best in Europe'.

Two meetings are to be held, sponsored by Bristol-Myers Squibb, one in London and the other in Birmingham, on improving access to cancer services — supporting stronger cancer commissioning. The aim of the meetings is to inform the audience about the role of the POI in improving access to local cancer services, and to describe how the cancer commissioning toolkit has provided Primary Care Trusts, collectively with Cancer Networks, with the support to develop their local strategies for implementing the *Cancer Reform Strategy*. Presentations will be given by Teresa Moss, Director of the National Cancer Action Team and Professor Charles Craddock, Consultant Haematologist, Queen Elizabeth Hospital, Birmingham, who will describe the implications of the POI for patients with chronic myeloid leukaemia. The presentations will be followed by a workshop on the cancer commissioning toolkit with case studies and demonstrations.

The meetings will be held at:
Chandos House, Central London, *Tuesday 13 January 2009*, chaired by Professor Jane Apperley*
Malmaison Hotel, Central Birmingham, *Tuesday 20 January 2009*, chaired by Professor Charles* Craddock

**Registration, with tea and coffee is from 16:00 and the meetings will run from 16:30 to 18:30 followed by a buffet and drinks. If you wish to register for one of these free meetings or receive further information, please either email your details to ysantibhut@medicomgroup.com or telephone Yada Santibhut at Medicom Group on 020 8481 8100.*