Auditing medication history-taking can help demonstrate improved pharmacy services

With an aim to share best practice on quality assessment of clinical pharmacy services, Reena Mehta and Raliat Onatade explain how they audit medication histories as a quality indicator at King's College Hospital.

Introduction

This is the second in a series of articles looking at how the quality of the clinical pharmacy service at King's College Hospital, London is measured and monitored. The first article discussed the measurement of quality in health care and clinical pharmacy and described how our four quality statements were devised.[1] This article will discuss our first standard, and how a target figure was established and the serial audits undertaken. We also describe changes and other actions that we have undertaken to improve the service including the impact of the new NICE/NPSA guidance.[2]

The first statement is: '*Each patient will have an accurate medication history within two working days of admission*'.

Background

In the first article we mentioned that previously published indicators were adopted as a basis for our quality statements.[3] Medication history-taking was adopted as a quality indicator for a variety of reasons, as outlined below.

An accurate medication history at the time of hospital admission is an important part of the initial patient assessment and an important element of medication safety. An incomplete or inaccurate medication history can lead to inappropriate drug therapy during hospitalisation and may affect patient safety.[4] The Audit Commission's *Spoonful of sugar* report states that in some hospitals in England 30 per cent of patients have incorrect or incomplete medicines recorded on admission and that reviewing medication needs on admission should be a major focus for pharmacy services.[5] Several studies have shown that pharmacists can elicit more complete medication histories compared to other health care professionals, and can devote more time to this activity.[4,6–9] The Department of Health also recommended that clinical pharmacy activities are extended to pharmacists taking patients' medication histories.[10] There has been much published work comparing medication histories taken by pharmacists and physicians[11–15] with a consensus that pharmacist-acquired medication histories are more accurate and comprehensive. The recent NICE/NPSA guidance on medicines reconciliation supports our decision to use medication histories as a quality indicator.[2]

The lapse in time for a medication history to be taken can be crucial because this can uncover reasons for a patient's illness, such as an adverse drug event or non-adherence to drug therapy. Also, medication history errors, which are not detected early enough may result in interrupted or inappropriate drug therapy during and after a hospital stay.

Medication history-taking by pharmacy staff has been audited at our trust four times between 2005 and 2008 as part of the annual clinical services quality programme. The methodology has changed slightly over the years as we learned from previous mistakes, but we have been able to track the impact of service developments and other improvements on our performance.

Audit 1 (Baseline, July 2005)

The aims of the first audit were:

- ☐ To establish a baseline figure of attainment.
- ☐ To aid in setting a target figure.
- ☐ To establish barriers to practice so as to remove them.

This first audit was carried out in two parts. Part one was to assess the percentage of medication histories that were obtained and documented. This took place over one week. All patients admitted to a ward 48–72 hours before the data collection day were identified through the electronic patient record (EPR) system. Each drug chart was checked to see if a pharmacist-obtained medication history was documented. If not the ward pharmacist was contacted to establish whether one had been documented elsewhere, or to explain why he/she had decided not to take a history. It was also noted whether the medication histories were signed and a contact number left. Data were collected from each ward once only over the data collection week. If there were no admissions to a ward during its allocated data collection period every attempt was made to re-visit it on subsequent days.

Excluded units were: rehabilitation (because all patients are transfers from other wards); intensive care (because few medication histories can be obtained); neonatal, antenatal and postnatal areas, and patients who had already been discharged or whose charts could not be located. A total of 37 wards and 808 beds were included.

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We subsequently recognised that information about how long after admission medication histories were taken would be valuable. Therefore, a second arm took place on a single day in the following week to assess this. Patients admitted within 72 hours before data collection were identified from the EPR system. Their drug charts were reviewed and a record made of how soon after their admission to the trust a pharmacist-obtained medication history was recorded. For undated histories the time elapsed between date of admission and date of data collection was calculated. For this arm of the study 790 beds were surveyed.

Results

Baseline audit: *Part 1*

We found that 34/37 wards (715 beds) had eligible patients. The drug charts of 60 patients were seen and 33/60 (55%) had their medication histories recorded by a pharmacist. Of these, 85% were signed, 79% were dated and 33% had a contact number included.

Where medication histories were not documented reasons were sought and these are presented in Box 1. On review, the Clinical Pharmacy Services team concluded that the only justifiable reasons for not taking a medication history were cases of communication barriers or frequent readmissions — this amounted to three patients in total.

Part 2

The drug charts of 108 patients were seen. Of these 42% of patients had a medication history documented within 48 hours and 61% were dated.

After discussion with our lead specialist clinical pharmacists, taking into account the fact that most medication histories were taken in the first 48 hours, results varied significantly between specialties (range from 0–64%) and the majority of reasons for not recording a medication history were not felt to be justified. The quality statement was translated into the following standard:

For all eligible patients 75% of medication histories should be obtained within 2 working days after admission.

The target for signing, dating and leaving a contact number was set at 100%. Before the next audit, the following actions were undertaken:

- ☐ A training package was written explaining how to take medication histories, including what information sources to use and what to document. Training was delivered to all ward-based pharmacy technicians and newly qualified pharmacists during their induction.
- ☐ An existing page on the drug chart was re-designed and became a dedicated area for documenting medication histories.

Additionally, as part of an overall strategy, the philosophy and concept of the Clinical Services Quality Programme and future plans were presented to the whole department. More technicians also took up full-time or part-time ward roles.

Follow-up audits 2 (December 2006), 3 (June 2007) and 4 (June 2008)

In 2006 the methods from the two arms of the baseline audit were combined into one and refined. Subsequent audits used the same method. In 2007, a regular annual June programme of audits began so from that time onwards audits were undertaken in June. All new patients admitted within the previous three working days (72 hours) were identified from the trust's EPR system. Exclusion criteria were the same as for the baseline audit except that level 2 intensive care beds were no longer excluded. Each eligible patient's drug chart was checked to see if a pharmacy-obtained medication history was documented. In January 2008, the NICE/NPSA guidance on medicines reconciliation was released. Therefore, before carrying out the audit in June 2008 staff were informed of the implications of the new guidance. The importance of medicines reconciliation and its prioritisation were re-emphasised. Suggested changes to the medication history section on the drug chart to incorporate the recommendations in the NICE audit tool[2] were also presented and led to further evolution of the drug chart to that currently used (Box 2).

The following data were collected in all three audits:

- ☐ If the medication history was signed and who signed it.
- ☐ If the medication history was dated, and if so the date documented.
- ☐ If a contact number of the member of staff documenting the medication history was recorded.
- ☐ In addition, in 2008, as a result of the NICE/NPSA guidance[2] the various sources used to obtain the medication histories were also noted.

The findings from all audits undertaken between 2005 and 2008 are summarised together in Table 1. There will have been patients who were documented as not hav-

Box 1. Reasons given for non-documentation of medication histories

- ☐ Patient was taking few/no drugs so no medication history required
- ☐ Pharmacist was not aware of correct admission date
- ☐ Different pharmacist from normal was covering the ward
- ☐ Not enough time to document a full medication history
- ☐ Pharmacist did not feel patient required a medication history
- ☐ Language or other communication difficulties
- ☐ Patient has frequent admissions
- ☐ Other

Box 2. The currently used drug chart with a dedicated space for documenting medication histories

PATIENT MEDICATION HISTORY

Please check that the DRUG ALLERGY BOX has been completed

*MEDICATION HISTORY (Source e.g GP Name & No.....)
FOR FP10 INFORMATION, PLEASE STATE LAST ISSUE DATE

MEDICINE NAME	DOSE	FREQUENCY	COMMENTS/ FOLLOW UP DISCREPANCIES/ FOLLOW UP NEEDED

OTC/ ALTERNATIVE/COMPLEMENTARY MEDICINE

MEDICINE	DOSE/FREQUENCY	COMMENTS/RATIONALE

Compliance Aids — Is the patient currently using one? Yes/No
Name and number/fax of pharmacy

Type of compliance aid if known:

Other information/Follow up

DATE..... COMPLETED BY AND CONTACT No.....
*Please sign and date any amendments made to the original documented drug history

ing a medication history but at the time of data collection had not yet been in hospital for 48 hours and therefore could potentially have had a history taken and met the target timeframe.

Sources of medication histories

In 2008 the source(s) that had been used to take the medication histories were stated in 94% of medication charts. The stated sources and the number of times each source was used to obtain a medication history are listed in Table 2. A total of 214 sources were recorded and more than one source was used in obtaining 28% of the medication histories.

Discussion

The importance of obtaining medication histories on admission is embedded into our service and we now consistently exceed our target. Having an explicit time-frame for completion helps pharmacy staff prioritise their workload.

Our optimal time-frame, although largely arbitrary, is similar to those found in the literature.[13,16] Also, standard 23 of the 2003 Department of Health medicines management framework states that 'Patients should have a complete medication history review within 24 hours of admission'.[17] However, we decided a two working day target was more realistic for us because we do not provide a full clinical service at weekends. Although studies on medication histories and associated errors are plentiful, information on how soon after admission these histories are taken is not easily available. Our audits thus add to current knowledge by providing information, which other hospitals can benchmark against.

> There has been much published work comparing medication histories taken by pharmacists and physicians with a consensus that pharmacist-acquired medication histories are more accurate and comprehensive.

The improvements in results each year show the benefits of undertaking regular audits and making changes in between each audit. Factors that we believe have contributed include the increase in medicines management technicians on the wards, and having a dedicated medication history-taking space on the drug chart (illustrated in Box 2). A streamlined process, accessibility, standardisation and accuracy are other benefits of providing a standard place to document medication histories. Other organisations have also found this to be helpful.[18] Percentages of staff signing,

Table 1. Summary of all audit results

	2005 (baseline)	2006	2007	2008
Total no of patients identified	Not recorded	188	263	326
No of patients/drug charts seen (% total)	60*, 108**	165 (88%)	178 (67%)	213 (64.4%)
% who had a MH	55%*, 53%**	84%	89%	82%
% of MHs which were dated	79%*, 61%**	83%	79%	92%
% of MHs which were signed	85%*	83%	78%	92%
% of MHs with a contact number noted	33%*	80%	65%	87%
% of patients with a MH within 24 hours	31%** (60%)	62% (74%)	61% (68%)	70% (85%)
% of patients with a MH within 48 hrs***	42%** (79%)	78% (93%)	81% (91%)	79% (96%)
Significance of any differences in 48 hr results with preceding year (chi-square test)	—	$p < 0.001$	NS ($p > 0.5$)	NS ($p > 0.5$)

MH = Medication History; *Data from part 1 of the baseline audit; **Data from part 2 of the baseline audit; ***48 hours equated to 2 working days. Data in parentheses represent the number of patients with a MH within 24 hours or 48 hours as a percentage of all MHs taken.

Table 2. Sources of medication history information and frequency of use

Source	Percentage of times used (n=214)
Asking the patient	51%
Using of patients own drugs (PODs)	18%
Contacting the General Practioner	10%
Using of an old discharge letter/pre-assessment clinic/ other letters (unspecified)	7%
Using the medical notes	5%
Asking the patient's carer/parent	5%
Using a FP10 script	2%
Using transfer letters/transfer drug charts from other hospitals	1%
Doctor's note (unspecified)	0.5%
Contacting other specialist teams (community mental health)	0.5%

dating and leaving a contact number have improved but are still below the target. We will continue to reinforce the importance of these.

Regularly measuring medication history-taking on admission has had another, unexpected benefit. The 2007 audit showed that the number of patients admitted within a 72-hour period (and therefore needing a medication history) increased by 40% from 2006. The 2008 figure was up 24% from 2007. These figures provide confirmation of an anecdotal increase in clinical pharmacy activity, an area notoriously difficult to measure. Despite the increase in workload evident in the increase in patients admitted, the targets have still been met.

The main weakness of our medication history standard is that the need to follow up and resolve discrepancies is not included. A systematic review by Tam and colleagues of studies describing medication history errors demonstrated that errors occurred in up to 67% of cases.[18] Our pharmacy contribution/intervention data from 2007 also shows that 9.5% (129/1364) of documented contributions were focussed on discrepancies in medication histories, of which more than half were interventions because of omissions. (These findings were obtained from 7 consecutive days of monitoring and are unpublished). We plan to undertake a separate audit of how well we follow up identified discrepancies.

Our current methodology has some significant strengths in that it is simple to perform, easily reproducible — and because it is now undertaken at the same time each year, it gives us robust comparative data, both at trust- and specialty-level. The main limitation of the methodology is that we do not check the accuracy of the medication histories taken by pharmacy staff. Because of the resources required it would not be possible to double-check every medication history documented. A possible solution is to check the accuracy of a representative sample.

Although straightforward and reprod-

Box 3. Our newly designed medicines history form

MEDICINES RECONCILIATION

Please check that the DRUG ALLERGY BOX has been completed

*MEDICATION RECONCILIATION (Source e.g GP Name & No.....)
FOR FP10 INFORMATION, PLEASE STATE LAST ISSUE DATE

MEDICINE NAME (including OTC/herbal/complementary)	DOSAGE	FREQUENCY/ TIMING	COMMENTS/ FOLLOW UP DISCREPANCIES/ FOLLOW UP NEEDED	MEDICINES RECONCILED (please)

Compliance Aids — Is the patient currently using one? Yes/No
Name and number/fax of pharmacy
Type of compliance aid if known:

Other Info/ Follow-up e.g warfarin – dose & clinic contact, substance misuse, smoking history

DATE..... COMPLETED BY AND CONTACT No.....

*Please sign and date any amendments made to the original documented drug history

Tick:	
Pharm	
Ph tech	
Doctor	
Nurse	

Box 3. This is an illustration of how our medicines history-taking form has evolved to incorporate NICE guidance and to help us address the gaps in the audit data that we currently collect. We have included this to share our current best practice, which may help colleagues redesign their medicines history forms

ucible, the once-yearly audits are time-consuming and provide only a snapshot of information. We have considered alternative ways of collecting the same data, including changing the frequency of the audits by:

- carrying out the same audit two or three times per year
- auditing a smaller number of randomly chosen charts every month
- auditing one or two specialties every month.

To be able to double-check the accuracy of medication histories the best option would seem to be to audit fewer charts every month. However, at present all the quality indicators data is collected by pharmacy undergraduates undertaking vacational work with us during the month of June. Collecting data every month would involve investing more staff time. Changing to a smaller monthly audit would also mean losing the measures of activity described above. Nevertheless, we are considering piloting more frequent data collection.

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The future

Medicines reconciliation goes further than medication history-taking by specifying the need to action and communicate any discrepancies between the obtained history and the inpatient prescription.[2] Therefore, our quality statement, accompanying standard and data collection tools will be amended to reflect the new guidance (see Box 3)

Although there will be workload implications to fully implementing the guidance we already have a culture of obtaining medication histories as soon as possible after admission and we hope to minimise its impact. This will be monitored. We are currently drafting our medicines reconciliation policy, which will include parts of the training package originally written. Our proposed changes to the documentation will support the new requirements. We have also tried to reflect the guidance audit tool.

To further improve, we need to put strategies in place to obtain information from patients with communication difficulties. This will be helped by linking in with trust initiatives to remove communication barriers. Regular reinforcement of the importance of medicines reconciliation is also needed.

As more trusts move to towards using electronic prescribing systems the innovative use of IT should ensure that medicines reconciliation at the point of admission is more achievable, efficient and useful.[20,21] One hospital in the US described how using an electronic system improved their ability to reconcile medications throughout each patient's stay. Using the system, errors in medicines reconciliation were reduced from 45.8% to 2.4%[22] suggesting improvements are indeed achievable. ✣

> An accurate medication history at the time of hospital admission is an important part of the initial patient assessment and an important element of medication safety.

Declarations of interest

The authors have no interests to declare.

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