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Clinical and cost-effectiveness of interventions in medicines reconciliation at the point of admission: consultation

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NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

in collaboration with the

NATIONAL PATIENT SAFETY AGENCY

Patient safety consultation document

Technical patient safety solutions for improving medicines reconciliation at hospital admission

The National Institute for Health and Clinical Excellence in collaboration with the National Patient Safety Agency is examining three potential technical patient safety solutions for improving medicines reconciliation at hospital admission: (1) pharmacist-led interventions, (2) packages for medicines reconciliation and (3) IT based information transfer initiatives and will publish guidance on these to the NHS in England. The Patient Safety Advisory Committee has considered the available evidence and the views of Specialist Advisers, who are clinical specialists with knowledge of this topic. The Advisory Committee has made provisional recommendations about technical safety solutions for improving medicines reconciliation at hospital admission.

This document summarises the evidence on the technical patient safety solutions and sets out the provisional recommendations made by the Advisory Committee. It has been prepared for public consultation. The Advisory Committee particularly welcomes:

- comments on the provisional recommendations
- the identification of factual inaccuracies
- additional relevant evidence including evidence from non-healthcare settings
- comments relating to implementation of the guidance.

Note that this document is not the Institute's formal guidance on these technical patient safety solutions. The recommendations are provisional and may change after consultation.

The process that will be followed after the consultation period ends is as follows.

- The Advisory Committee will meet again to consider the original evidence and its provisional recommendations in the light of the comments received during consultation.
- The Advisory Committee will then prepare draft guidance which will be the basis for the guidance on the use of the technical patient safety solutions in the NHS in England.

For further details, see the Patient Safety Pilot Interim Methods Statement, which is available from the NICE website.

Closing date for comments: **10 October 2007**
Anticipated publication date: **December 2007**

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1 Action

1.1 All hospital admitting units should put in place a policy for improving medicines reconciliation. In addition to specifying standardised systems for collecting and documenting information about current medications, the policy should ensure that:

- a pharmacist is involved in medicines reconciliation as soon as possible after hospital admission
- the responsibilities of pharmacists and other staff in medicines reconciliation are clearly defined; these responsibilities may differ between clinical areas
- strategies to assist those with communication difficulties in giving details of their medications are

incorporated.

Section 1 – Action:

The group is whole supportive of this patient safety initiative both in terms of the importance for safety but also the potential clinical benefits for patients and opportunities for improving interface information transfers across the care boundaries

Change

2 Additional information

2.1 A number of different packages of care have been specifically developed to reduce medicines reconciliation errors at the time of admission. However, the combinations of individual components of the packages have not been adequately evaluated. If packages are to be used then strategies need to be developed to ensure that they are implemented fully. Further research is required on well-defined packages and their implementation.

2.2 It is likely that any intervention that improves communication between primary and secondary care, including IT-based initiatives, will reduce the frequency of medicines reconciliation errors. However there is currently insufficient evidence to recommend the implementation of any particular method.

Section 2 – Additional information:

The HPG agree that there is limited research on benefits of such an approach though recent published work from Michael Scott in Northern Ireland and the major work being undertaken within the auspices of the Safer Patients Inititive lends support both to the concepts and application of the development.

It is essential that the communications between primary and secondary care AND the interfaces within secondary care (Admissions ward to theatre, theatre to ward, ward to ward etc) benefit from this opportunity.

The likely benefits of electronic communications remain very distant and with the "fragmentation" of the NPfIT/CfH programmes means that there is little likelyhood of universal communication within the next 4 - 6 years

Change

3 The patient safety problem or harm

3.1 Medication errors are an important potential cause of injury to hospital patients leading to increased morbidity, mortality and economic burden to health services. Errors occur most commonly at the interfaces of care and particularly at the time of admission.

3.2 Two recent literature reviews reported unintentional variances of 30–70% between the medication patients were taking before admission and their prescriptions on admission.

3.3 Medicines reconciliation means correctly identifying the patient's pre-admission medication and transcribing this information (including drug name(s), dosage(s), timings, frequency, and route of administration) to the clinical record, or the hospital prescription charts.

3.4 Errors may occur at a number of stages during the admission process when:

- determining the medication the patient is currently taking, from written records or the accounts of the patient and/or those accompanying them
- transcribing details of the patient's medication to the hospital clinical record
- prescribing medication for the patient after admission.

3.5 Factors that may contribute to medicines reconciliation errors include:

- no access to the prescription list for the patient from primary care
- discrepancies between the primary care prescription list and the medications the patient is taking. This may happen because the patient is no longer taking prescribed medications, because they are taking medications they have obtained themselves (for example, over-the-counter or herbal medicines), or because they are taking the incorrect dose
- difficulties in obtaining an accurate account of a patient's medication, which may be caused by an acute condition, a sensory or cognitive disability, lack of access to family or carer support or language barriers
- errors in transcribing medication details to the hospital clinical record.

3.6 Admission to hospital provides an opportunity to make appropriate changes to medication. Medicines review is beyond the scope of this guidance, as is medicines reconciliation on transfer to other units or discharge.

Section 3 – The patient safety problem or harm:

As indicated above the risks are not just between healthcare sectors but within acute organisations - sometimes because of size some times because of professional and cultural boundaries

The SPI program (of which I am Director of Pharmacy in one of the couplets) is showing day in day out evidence of patient benefits, opportunities for financial benefits and re-enforcement of professional communication routes.

The "fringe" benefits of a universal pharmacist led reconcilliation program includes opportunities for re-inforcing public health messages (smoking/cholesterol/excercise) in addition to all the recognised concordance benefits

Change

4 Current practice

4.1 The taking of a medication history and prescribing of medication on admission is traditionally done by junior (foundation) doctors, during the assessment and initial care of the patient.

4.2 In some units pharmacists are involved in medicines reconciliation at the time of admission or shortly afterwards, but practice varies, and pharmacists may not be readily available, particularly out-of-hours.

4.3 Some units have developed processes to minimise medicines reconciliation errors. However, variations in care settings, staffing structures and admission times all make standard solutions difficult to establish.

Comment on Section 4 – Current practice :

Evidence from competency based assessments of junior medical staff shows that they are least best placed to identify appropriate medication (as reported from Northern Ireland and from practice evidence within the SPI program) Junior medical staff do not receive education on the sources or ways of validating medication needs of patients

There is a major issue with times pharmacy services are available though SPI practice research show the window of 8:00am - 20:00 Monday to friday and 8:00 - 12:00 on Sat/Sun cover the majority of patients

Problems are also reduced in units where patients have a single "point of entry" eg admissions unit

Change

5 Basis for recommended action

5.1 ***Pharmacist-led interventions***

5.1.1 Additional involvement of pharmacists was examined in one randomised controlled trial (RCT), two before-and-after trials, and five observational studies, presented in the systematic review. The RCT reported a reduction in the number of discrepancies per 100 patients after pharmacist involvement compared with standard care (nurse-conducted history and surgeon-generated orders) from 44% (68/156) to 20% (30/154, relative risk [RR] 0.47, 95% CI 0.31 to 0.65). The before-and-after studies reported that additional pharmacist input improved the proportion of medication errors identified from 35% (182/526) to 78% (393/506, RR 2.25, 95% CI 1.98 to 2.58), and increased the number of changes to the recorded medication history from 38% to 56% (absolute figures not reported, RR 1.48). The observational studies found that pharmacist-led interventions resulted in rates of medication omission of between 5 and 137 per 100 patients. Interpretation of these studies is hampered by varying definitions of medication error, lack of a gold standard of correct medications, and other methodological flaws.

5.1.2 In general the Specialist Advisers supported the increased involvement of pharmacists in medicines reconciliation. The most commonly cited obstacles to medicines reconciliation were lack of time and availability of staff. Advisers commented that providing out-of-hours pharmacist support might be difficult.

5.1.3 Involving a pharmacist was considered to offer benefits with respect to medicines review, over and above medicines reconciliation.

5.2 ***Packages for medicines reconciliation***

5.2.1 Three studies were identified that compared medication errors before and after the introduction of packages specifically developed to reduce medicines reconciliation errors at the time of admission. Each study described a different package of care for medicines reconciliation. All included the use of a specially designed medicines reconciliation template and involved a trained member of staff responsible for data collection (a nurse, pharmacy technician, or a member of staff according to hospital policy). The number of discrepancies compared to baseline (reconciliation by a physician only) fell from 145 to 76 per 100 patients in one study (n = 767), and from 213 to 80 per 100 patients in another study (total number of patients not stated). In a third study the rate of discrepancies per patient fell by 53% (total number of patients not stated). None of the studies were carried out in the UK, so their applicability to UK practice is uncertain. All the studies were of poor methodological quality. It was therefore not possible to make any recommendation concerning procedures or packages of care for medicines reconciliation.

5.2.2 The Specialist Advisers were unanimous in their opinion that packages of care for medicines reconciliation were efficacious in preventing medication errors at the point of hospital admission, and the majority thought that they should always be used. The Specialist Advisers commented that these packages of care need to be implemented in full in order for their benefits to be realised. The packages also need to be piloted and audited, because a diverse range of solutions is likely to be required to be effective in different clinical settings. In the past medicines reconciliation packages have not been implemented in full because of a perception that they are prohibitively time-consuming.

5.3 ***IT-based information transfer initiatives***

5.3.1 Little evidence was found relating to IT systems for improving medicines reconciliation. One before-and-after study was identified that compared usual care with the use of a template faxed between the admitting ward and GP practices (total number of patients not stated). This reduced the number of incorrect medication sheets from 55 to 17 per 100 patients. This study was presented as a conference abstract and full methodological details were not available.

5.3.2 It is likely that any kind of improvement in communication will reduce the frequency of transcription errors but there is insufficient evidence to recommend any particular method.

5.3.3 The Specialist Advisers considered that data on the effectiveness of IT solutions were sparse and highlighted lack of equipment and training as barriers to introduction. They commented that IT interventions may be difficult to distinguish from pharmacist-led programmes when these include an IT element. They also noted that new technologies themselves may have risks as well as benefits.

5.3.4 Electronic methods of communication between primary and secondary care are developing rapidly. While such developments are likely to reduce transcription errors, they will not reduce the need to involve a trained expert to check what medication the patient is actually taking and to prescribe accurately.

5.4 ***Cost effectiveness***

5.4.1 The economic evaluation estimated the incremental costs and quality adjusted life years (QALYs) of five technical patient safety solutions. These potential solutions aim to improve the medicines reconciliation process through the use of pharmacist-led interventions, IT-based information transfer initiatives using fax machines, or three different packages of care for medicines reconciliation. QALY gains were derived from reduction in the number of preventable adverse drug events. The results showed that pharmacist-led interventions are likely to prevent the most medication errors. All five interventions are likely to be highly cost-effective when compared to the baseline scenario of current practice but there was insufficient evidence of effectiveness to recommend an optimal strategy.

For further information please see the systematic review for improving medicines reconciliation at hospital admission (http://guidance.nice.org.uk/page.aspx?o=448512).

Section 5 – Basis for recommended action:

The HPG of the RPSGB fully supports the aims and objectives of this novel and innovative development. The group would welcome the opportunity to provide structured input on this issue to NICE/NPSA and would very much wish to be involved in promoting and facilitating any implementation.

There will remain major issues associated with NHS resource challenges and this may be aided by extending the proposal to be pharmacist led but Medicines Management Technician supported interventions

Change

6 Implementation

6.1 ***Assessing the impact of the guidance***

The impact of the action alert will be tracked in England through the safety alert broadcast system (SABS) (http://www.info.doh.gov.uk/sar/cmopatie.nsf). In addition, healthcare organisations are expected to use indicators, audit tools and patient safety incident reports to monitor the continued implementation of the patient safety recommendations. Clinical governance groups in organisations should review these data annually and take appropriate action to ensure patient safety. Healthcare commissioners and performance management groups should also review these data and any resulting actions taken by the organisation annually. The NPSA will also review these data to gain feedback on the impact of the patient safety guidance.

6.2 ***Tools to support implementation of the guidance***

NICE will develop tools to help organisations implement this guidance (examples are listed below). These will be available from http://www.nice.org.uk/page.aspx?o=280304. NICE will amend this list to indicate which tools will be available at the time of publication.

- Slides highlighting key messages for local discussion.
- Local costing template incorporating a costing report to estimate the savings and costs associated with implementation.
- Implementation advice on how to put the guidance into practice and national initiatives which support this locally.
- Patient safety indicators and audit tools.
- Use of patient safety incident reports to assess the impact of the guidance.

Comments on the guidance and feedback on implementation tools are actively sought.

Section 6 – Implementation :

As indicated above the HPG feels it would be a valuable implementation route - the HPG conference is in January!

Change

7 Research recommendations

7.1 ***Packages for medicines reconciliation***

The evidence reviewed by the Committee on packages of care for medicines reconciliation was insufficient for recommendations to be formulated on clinical effectiveness. Further research is required on well-defined packages of care and their implementation.

Section 7 – Research recommendations:

The SPI program is a ready made "test bed" of trusts engaged in reconcilliation, they are well versed in PDSA and use of small tests of change - Such a cohort would be a rapid assessment tool. In addition the greater body of hospital pharmacists - via the existing networks linked to the HPG could potentiall support such research (- The group also has DH MPI membership)

Change

8 Related NICE/NPSA guidance

Acutely ill patients in hospital. NICE clinical guideline 50 (2007). Available from: http://guidance.nice.org.uk/CG50

Actions that can make anticoagulant therapy safer . NPSA patient safety alert 17 (2007). Available from http://www.npsa.nhs.uk/health/display?contentId=5754

Improving compliance with oral methotrexate guidelines NPSA patient safety alert 13 (2006). Available from http://www.npsa.nhs.uk/health/display?contentId=5085

8.1 NICE is developing the following guidance (details available from www.nice.org.uk).

Medicines concordance. NICE clinical guideline (publication expected December 2008).

9 Proposed date for review of guidance

9.1 The review date for this patient safety guidance refers to the month and year in which the guidance should be considered for review. This decision will be taken in the light of information gathered by NICE and the NPSA, and in consultation with stakeholders.

9.2 It is proposed that this patient safety guidance is considered for review in December 2010 in the light of new data being available, and developments in electronic record management within the NHS. NICE and the NPSA would particularly welcome comment on this proposed date.

Professor Bruce Campbell
Chairman, Patient Safety Advisory Committee
September, 2007

Appendix: Sources of evidence

The following documents, which contain the evidence, were considered by the Patient Safety Advisory Committee when making its provisional recommendations.

Systematic review for clinical and cost effectiveness of interventions in medicines reconciliation at the point of admission (September 2007). Available from: http://guidance.nice.org.uk/page.aspx?o=448512

Economic model for interventions in medicines reconciliation at the point of admission (September 2007). Available from: http://guidance.nice.org.uk/page.aspx?o=452340

Specialist adviser comments on interventions in medicines reconciliation at the point of admission (September 2007). Available from: http://guidance.nice.org.uk/page.aspx?o=452343

Patient group feedback on interventions in medicines reconciliation at the point of admission (September 2007). Available from: http://guidance.nice.org.uk/page.aspx?o=452377

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