# Medicines reconciliation: a patient safety priority

**Chetan Shah** and **Nina Barnett**

**Medicines reconciliation is critical to safe, effective patient care and was identified as a key priority in the recent NICE guidance on *Medicines Optimisation.*[1] Here, Dr Shah and Dr Barnett provide advice on conducting a complete and accurate medicines reconciliation.**

Medicines reconciliation is recognised globally as a process that supports patient safety. The Institute for Healthcare Improvement defines medicines reconciliation as: "The process of identifying the most accurate list of a patient's current medicines – including the name, dosage, frequency and route – and comparing them to the current list in use, recognising any discrepancies, and documenting any changes, thus resulting in a complete list of medications, accurately communicated."

The World Health Organization (WHO) has identified medicines reconciliation as a priority for action as part of its High 5s project, which was launched in 2006 to address major concerns about patient safety around the world. In line with WHO, many national organisations such as NICE, the Joint Commission in the USA (National Patient Safety Goals), the Patient Safety Institute and the Institute for Safe Medication Practices in Canada have all issued guidance and directives to support/implement robust medicines reconciliation practices.

The most recent NICE guidance, *Medicines Optimisation,*[1] which was published in March 2015, identifies medicines reconciliation as one of its key priorities for implementation; the specific recommendations are outlined in Table 1.

| |
|---|
| **Recommendation 1.3.1.** In an acute setting, accurately list all of the person's medicines (including prescribed, over-the-counter and complementary medicines) and carry out medicines reconciliation within 24 hours or sooner if clinically necessary, when the person moves from one care setting to another; for example, if they are admitted to hospital |
| **Recommendation 1.3.2.** Recognise that medicines reconciliation may need to be carried out on more than one occasion during a hospital stay; for example, when the person is admitted, transferred between wards or discharged |
| **Recommendation 1.3.3.** In primary care, carry out medicines reconciliation for all people who have been discharged from hospital or another care setting. This should happen as soon as is practically possible, before a prescription or new supply of medicines is issued and within one week of the GP practice receiving the information |
| **Recommendation 1.3.4.** In all care settings, organisations should ensure that a designated health professional has overall organisational responsibility for the medicines reconciliation process |
| **Recommendation 1.3.5.** Organisations should ensure that medicines reconciliation is carried out by a trained and competent health professional – ideally a pharmacist, pharmacy technician, nurse or doctor – with the necessary knowledge, skills and expertise |
| **Recommendation 1.3.6.** Involve patients and their family members or carers, where appropriate, in the medicines reconciliation process |
| **Recommendation 1.3.7.** When carrying out medicines reconciliation, record relevant information on an electronic or paper-based form |

**Table 1.** NICE Medicines Optimisation guidance: recommendations relating to medicines reconciliation[1]

In line with recommendation 1.3.3, NHS England issued a Stage One Patient Safety Alert in August 2014[2] concerning risks arising from breakdown and failure to act on communication during handover at the time of discharge from secondary care. This recommendation poses a challenge for GPs for a variety of reasons as evidence shows that discharge information provided by secondary care can be of variable quality,[3] provision of discharge

information is often delayed[4,5] and GPs do not always integrate discharge information into their primary care records accurately. In view of recommendation 1.3.3 and the Patient Safety Alert, it would be prudent for GPs to review their procedures regarding how they manage and process discharge information received from secondary care. Pharmacists in GP practices can support this through liaison with secondary care and through the introduction of mechanisms to ensure that the information provided within discharge summaries is accurate, complete and provided in a timely fashion.

As this is an emerging area of concern, a national audit will be conducted by the Medicines Use and Safety Division

| Source | Standards | Helpful hints, comments and limitations |
|---|---|---|
| Patients, carers or people managing the medicines | Ensure where possible that patients or the people managing the medicines are one of the sources of information<br>Ensure patients have cognition and capacity<br>If there are translation difficulties, consider using NHS translation services<br>Ensure patients are asked about medicines: inhalers, nebulisers, recent antibiotics, steroids, weekly meds, eye drops, patches, emergency use drugs, *etc*.<br>Ensure patients are asked about recently started or stopped medicines and recent changes in dose | First check with patients how they manage their medicines and whether they take their medicines as prescribed or differently<br>If it is not the patient managing the medicines, consider liaising with the family member, carer, care home staff, district nurse or whoever else is doing so<br>Document if patients are temporarily unable to confirm medication history, *eg* due to confusion, so that other staff are aware, and leave a prompt for them to try later when the patient's condition may have improved. This is important because medicines are not always taken as prescribed<br>Check for hospital outpatient clinic letters, and for any hand-held medicines-related documents, such as methotrexate or warfarin books, or insulin or medication passports, as well as medication apps on patients' smartphones, compliance charts, medicines that patients have with them, and "green-bag", clinical-trial or detox-unit medicines |
| Repeat prescription tear-off slips | Ensure you have all the pages of the repeat tear-off slips<br>Cross-check these with patients or the people managing the medicines to ensure they are up to date<br>Check when prescriptions were last issued | Tear-off slips do not include information about acute prescriptions<br>Prescription may not have been collected or taken<br>Some medicines may have been stopped recently |
| Summary Care Records (SCR) | Ensure that staff members utilise SCR and have undertaken the relevant face-to-face or eLearning training available on the use of SCR<br>Obtain and document patient consent prior to accessing SCR (check local policy and guidance)<br>Check the date the record was updated (should be updated daily)<br>Print off the information and place in the patient's notes | SCR is especially useful for doctors working in A&E, acute admissions units, urgent care centres, walk-in centres or in hospital wards where a pharmacy staff member may not have conducted a full medicines reconciliation<br>The SCR does not always state the last date the prescription was issued<br>SCR sometimes states "date prescribed", which could be some time ago therefore clarify if patient is still taking the medication |
| Nursing or care home Medication Administration Record (MAR) charts | Ensure that all the pages of the MAR chart are available<br>Check with the patient or care home staff when the last when-required (prn) medications were taken if relevant | Check for any potential transcription errors<br>Printed charts from community pharmacies may be more accurate; however, be mindful of medicines that may not be documented on the MAR chart, *eg* if a recent hospital discharge has taken place or an acute prescription has been supplied by a GP/dentist/walk-in Centre, *etc*. |

**Table 2.** Medicines reconciliation sources and their limitations

in early 2016 to investigate the current status regarding the quality of medication-related information provided within secondary care discharge summaries and the integration of this information into primary care systems.

## Evidence underpinning medicines reconciliation as a patient safety issue

It is critical for the prescriber (both in primary and secondary care) and the wider multidisciplinary team to be aware of the medications the patient is taking in order to deliver safe care. Miscommunication and/or information gaps may occur when doctors and other healthcare professionals do not have knowledge of, or access to, a complete, accurate record of the patient's prescription and nonprescription medications. Consequently, clinical judgments based on incomplete, inaccurate, poorly documented or unavailable information may lead to medication errors or adverse events for the patient.

Several national European studies of adverse events have revealed that between 6.3 and 12.9 per cent of hospitalised patients have suffered at least one adverse event during their admission and that between 10.8 and 38.7 per cent of these adverse events were caused by medication errors that were preventable.[6] Similar research suggests that the average hospitalised patient is subject to at least one medication error per day,[7] which confirms previous research findings that medication errors represent one of the most common patient safety breaches.[8] It is also relevant to consider that more than 40 per cent of medication errors are believed to result from inadequate reconciliation in handovers during admission, transfer and discharge of patients, of which approximately 20 per cent are believed to result in patient harm.[9,10]

In the UK, the Medicines Use and Safety Division[11] conducted a collaborative audit centred on medicines reconciliation in 56 NHS trusts across East and South East England covering 33 120 beds. Of the 8621 medicines reconciliations audited, including 49 099 admission drugs (mean 5.7 drugs per medicines reconciliation), approximately 11 366 unintentional discrepancies were identified (mean 1.32 per medicines reconciliation) between the medications charted at admission and what should have been charted.

## Tips on conducting an effective medicines reconciliation

The process of medication reconciliation aims to promote patient safety by providing a structured process for doctors and multidisciplinary staff. This supports prescribers in acquiring and transferring accurate, detailed information about current prescribed medication and nonprescription (over-the-counter, herbal, homeopathic, illicit and alternative) medication that the patient may be taking or using. A robust medication reconciliation process can reduce the rate of medication errors and adverse drug events, can reduce work or subsequent duplication of efforts and ensure that clinical decisions are made based on a full appreciation of the patient's medical history.

When completing a robust and accurate medicines reconciliation, a patient's medication history should be obtained from the most recent, accurate and reliable sources. These may include information directly from the patient or person managing their medicines, repeat-prescription tear-off slips, the patient's GP records and hospital records. Information should be cross-checked and verified using, if possible, at least two sources. Where sources conflict, confirmation from a third source is required and this should include the patient if not already approached. The accuracy and limitations of each source should be considered before making a clinical judgement to create the best medicines reconciliation record available. Hard copies of the information sources, where available, should be stored with the patient's medical notes. Some examples of medicines reconciliation sources and their limitations are given in Table 2.

While there is no specific approach to obtaining an accurate medicines reconciliation, an up-to-date list and/or physical viewing of the patient's medication is very helpful for use in conjunction with a patient consultation to discuss medicines actually used and taken.

The following questions can help start a conversation with patients about medicines:

- What medications do you take?
- What other medicines do you take, for example, ones you buy, herbal medicines or medicines given to you?
- Who administers eye or ear drops, inhalers, creams or ointments for you?
- Have you had any antibiotics in the past two or three weeks?
- Are you wearing any medication patches?
- Is there anything else you take or use to improve your condition(s) that has not been mentioned?

To assess for allergies, clinicians might ask: "What allergies to medications and food do you have?" and add "What happens when you take that medication?" Finally, where appropriate, patients should be asked about the following:

- If they are on warfarin and, if so, do they have a "yellow book"?
- If they have diabetes and, if they do and are on insulin, do they have an "insulin passport"? Clinicians should also confirm insulin doses and type of administration device.
- What once-weekly medications do they take, such as methotrexate or bisphosphonates, and on which day of the week?
- What medicines sourced via the internet or "recreational" drugs do they take?

## Summary

Medicines reconciliation is critical to safe, effective patient care. If conducted well, it provides an opportunity for clinicians to understand what medication a patient is taking and using and consider how this can be optimised to improve patient care. If ignored, at best it can lead to patients receiving suboptimal care and at worst it places patient at risk of adverse events. Implementation of policies to support medicines reconciliation as part of everyday clinical practice mitigates this risk and provides patients with the opportunity for medication optimisation at each transfer of care.

## References

1. NICE. *Medicines optimisation: the safe and effective use of medicines to enable the best*

*possible outcomes.* March 2015. Available at: https://www.nice.org.uk/guidance/ng5 (accessed 28 March 2015).
2. NHS England. *Risks arising from breakdown and failure to act on communication during handover at the time of discharge from secondary care.* Patient Safety Alert. August 2014.
3. Grimes TC, *et al*. Medication details documented on hospital discharge: cross sectional observational study of factors associated with medication non-reconciliation. *Br J Clin Pharmacol* 2011;71(3):449–57. doi: 10.1111/j.1365-2125.2010.03834.x.
4. Barber ND, *et al*. Care homes' use of medicines study: prevalence, causes and potential harm of medication errors in care homes for older people. *Quality and Safety of Healthcare* 2009;18:341–6.
5. Avery T, *et al*. Investigating the prevalence and causes of prescribing errors in general practice: The PRACtICe Study. Nottingham: General Medical Council, 2011.
6. Council of Europe. *Creation of a better medication safety culture in Europe: building up safe medication practices.* Expert Group on Safe Medication Practices (P-SP-PH/SAFE), 2006.
7. Institute of Medicine. *Preventing medication errors*. Washington, DC: National Academies Press, 2006.
8. Bates DW, *et al*. The costs of adverse drug events in hospitalized patients. *JAMA* 1997;277:307–11.
9. Rozich JD, *et al*. Patient safety standardization as a mechanism to improve safety in health care. *Jt Comm J Qual Saf* 2004; 30(1):5–14.
10. Gleason KM, *et al*. Reconciliation of discrepancies in medication histories and admission orders of newly hospitalized patients. *Am J Health Syst Pharm* 2004;61:1689–95.
11. Dodds L. *Results of a collaborative audit of pharmacy-led medicines reconciliation (MR) in 56 trusts across E and SE England.* Medicines Use and Safety Division, East and South East Specialist Pharmacy Services, 2010. Available at: http://www.acutemedicine.org.uk/wp-content/uploads/2014/04/Report_Collaborative_MR_Audit_Results_May_2010.pdf (accessed 23 September 2014).

## Declaration of interests

Chetan Shah has none to declare. Professor Barnett has received payment from Bayer for a healthcare coaching lecture at their June 2014 conference.

*Chetan Shah is an associate director at the Medicines Use and Safety Division, NHS Specialist Pharmacy Service and principal pharmacist at London Northwest Healthcare NHS Trust, and Professor Barnett is a consultant pharmacist, Care of Older People, Medicines Use and Safety Division, NHS Specialist Pharmacy Service, Northwick Park Hospital, London Northwest Hospitals NHS Trust*

# POEMs

ESSENTIAL EVIDENCE PLUS

## Clopidogrel plus aspirin superior to aspirin alone following TIA or minor stroke

**Clinical question:**
Does adding clopidogrel to aspirin improve outcomes at one year in patients with transient ischemic attack (TIA) or minor stroke?

**Bottom line:**
Adding clopidogrel to aspirin reduces the likelihood of ischemic stroke at one year in patients with minor stroke or TIA. Most of the benefit occurred in the first week or so of the study. (LOE = 1a)

**Reference:**
Wang Y, *et al*, for the CHANCE Investigators. Clopidogrel with aspirin in acute minor stroke or transient ischemic attack (CHANCE) trial: One year outcomes. *Circulation* 2015;132(1):40–6.

**Study design:** Randomised controlled trial (double-blinded). **Funding:** Government. **Setting:** Inpatient (any location) with outpatient follow-up. **Allocation:** Concealed.

**Synopsis:**
The authors of this large multicentre study randomised 5170 Chinese patients 40 years and older with minor stroke or "high-risk TIA" to either clopidogrel plus aspirin (clopidogrel 300mg on day 1, then clopidogrel 75mg for 90 days, plus 75mg aspirin daily for the first 21 days) or aspirin 75mg alone for 90 days. High-risk TIA was defined as neurological deficit for less than 24 hours, but with an ABCD$^2$ score indicating at least moderate risk of stroke. The authors excluded patients with evidence of haemorrhage, vascular malformation or minor symptoms, and enrolled all patients within 24 hours of the onset of symptoms. All patients received open-label aspirin on day 1 of the study.

Groups were balanced at the beginning of the study, and analysis was by intention to treat. The median age of participants was 63 years, 34 per cent were women, and approximately 25 per cent had a previous history of stroke or TIA. Most patients (72 per cent) had a minor stroke, defined as a National Institutes of Health Stroke Scale score of 3 or lower. After three months, patients and their physicians could choose any antiplatelet therapy they wanted, but there was no significant difference in treatment decisions or outcomes.

At one year, stroke had occurred in 14 per cent in the aspirin-only group and 10.6 per cent in the clopidogrel plus aspirin group ($p$ = 0.006, number needed to treat = 29). Most of the benefit was from a reduction in the likelihood of ischemic stroke, and there was no significant increase in the risk of haemorrhagic stroke or moderate-to-severe bleeding complications. There was no difference in cardiovascular death, all-cause mortality, or the likelihood of TIA. A sensitivity analysis that accounted for the 197 patients lost to follow-up did not change the findings.