

Medication Safety Symposium– Reconciling the difference

Setting the Scene

Christopher Beer

Senior Lecturer & Consultant Physician



THE UNIVERSITY OF
WESTERN AUSTRALIA



MERCY HOSPITAL
MOUNT LAWLEY

Overview

1. What is medication reconciliation?
2. Why is reconciliation thought to be important?
3. Does medication reconciliation “work”?
4. What is the recommended standard of care?
5. Local initiatives
6. Discussion

1. What is medication reconciliation?

'The formal process of obtaining a complete and accurate list of a patient's current home medications and comparing the medical officer's admission, transfer or discharge orders to that list'

- Medication History
- Confirmation (eg GP, pharmacist)
- Reconciliation
- Liaison



Pharmaceutical Review

Medication reconciliation is a component of pharmaceutical review:

‘The systematic appraisal of all aspects of a patient’s medication management to optimise patient outcomes.’



2. Importance of Complete and Accurate Medication History

- 0.5+1.0 drugs unintentionally omitted from admission lists¹
- 1.38+2.04 drugs unintentionally omitted at discharge¹
- 1.6% of admissions associated with an adverse medicines event²
- Medicines cause 10% all hospital adverse events²
- Majority of GPs not directly informed of their patient's admission or in receipt of discharge summary^{3,4}
- 12 per cent of patients had an error in their discharge prescription⁵

1. Stowasser DA et al. Australian J Hosp Pharm 1997;27(5):362-6

2. Wilson RMcL et al. Med J Aust 1995;163:458-71

3. Mant A et al. Med J Aust 2002;177: 32-34

4. Mant A et al. Med J Aust 2001; 174: 277-280

5. Duguid M et al. Journal of Pharmacy Practice and Research 2002; 32:94-5

Medication errors common in WA

- In WA medication errors the 2nd most common (23%) AIMS incident
 - omission 35%
 - overdose 18%
- Average of 2.1 errors in the medication history of 106 high-risk patients at Royal Perth Hospital.¹

1. Dias LM et al. Medication management in the emergency department: How accurate is the medication history? (unpublished) Proceedings of the 2nd Annual Medication Safety Symposium; 14 Sept 2006; Perth, Western Australia: WA Medication Safety Group.

Medication errors are clinically important

- omission of medicine from the discharge summary list sent to community health care professionals was associated with an increased risk (by a factor of 2.3) of hospital readmission or adverse medicine event ^{1,2}

1. Stowasser DA et al. JPPR 2002; 32:221–226

2. Stowasser DA et al. JPPR 2002; 32:133–40

3. Does reconciliation “work”?

- Reducing errors?
- Improving outcomes?



Data to 2005 have been systematically reviewed

Kaboli, PJ. Clinical Pharmacists and Inpatient Medical Care. Arch Intern Med. 2006;166:955-964

- Controlled studies evaluating effect of a clinical pharmacy specific intervention on health outcomes
- Thirty-six studies
 - 10 evaluating pharmacists' participation on rounds
 - 11 medication reconciliation studies
 - 15 on drug-specific pharmacist services

Admission or Discharge Medication Reconciliation Services

Mester and Hale, ²³ Admission	Randomized (N = 100) I = 50 C = 50	Herbal and nonprescription medications per patient, No. Patients with incorrect allergy information identified, No. Time from admission to entry of allergy information, min Medication histories clarified by community pharmacists, % Readmissions per subject at 30 d, No. Health care professional visits at 30 d, No. Patients with > 1 pharmacist intervention, % Patients with > 1 medication change, % Health status, SF-36 Medication adherence, I vs C	5.1 (I) vs 1.5 (C); P < .001 4/50 (I) vs 0/50 (C); P < .001 69 (I) vs 156 (C); P < .005 24 (I) vs 4 (C); P < .001 0.12 (I) vs 0.46 (C); P = .06 7.54 (I) vs 9.94 (C); P < .05 69 (I) vs 44 (C); P < .05 97 (I) vs 90 (C); P < .05 No change; P > .05 Better medication adherence; P < .01 Less counseling required; P < .01 75 (I) vs 96 (C); P = NR
Stowasser et al, ²⁴ Admission and discharge	Randomized (N = 240) I = 113 C = 127	Discrepancies between discharge instructions and patients' medication behaviors, % Mismatch between discharge and home drug list Drug name, % Drug dose, % Dosage frequency, % Errors in drug therapy knowledge Drug name, % Drug dose, % Dosage frequency, % Readmission at 30 d Medication knowledge compliance score	1.5 (I) vs 7 (C); P < .005 10 (I) vs 17 (C); P < .07 11 (I) vs 18 (C); P < .004 15 (I) vs 43 (C); P < .001 14 (I) vs 39 (C); P < .001 15 (I) vs 39 (C); P < .001 P > .05 (NS) 90.7 (I) vs 75.4 (C); P = NS
Smith et al, ²⁵ Discharge	Randomized (N = 53) I = 18 C = 25	Medical care use (charges and hospital), d Medication compliance score Assessment 1 Assessment 2 Assessment 1 Assessment 2 Polypharmacy at assessment 2 (12-14 wk), No. Long-term medications Total daily doses of medications Length of stay, d Medication appropriateness Correct dosage Fewer prescribing problems in any of 6 categories Medication knowledge score, %	P = NS 94.4 (I) vs 91.4 (C); P = .04 94.4 (I) vs 92.3 (C); P < .001 92.7 (I) vs 84.6 (C); P = .02 95.7 (I) vs 85.9 (C); P < .001 5.16 (I) vs 6.75 (C); P < .001 8.30 (I) vs 12.04 (C); P < .001 7.2 (I) vs 8.2, d (C); P = .06 P = .02 P = .05 P = .05 93 (I) vs 77 (C); P = .02
Willford and Johnson, ²⁶ Discharge	Randomized (N = 60) I = 31 C = 29	Readmission at 3 mo, % General practitioner visit at 3 mo, % Mortality at 3 mo, % Drug knowledge, % Readmission at 2-3 wk, % General practitioner visit at 2-3 wk, % Medication compliance, % ADEs, % Preventable ADEs, % Readmission or emergency department visit at 30 d, % Medication compliance score	39 (I) vs 39.2 (C); P = NS 77.7 (I) vs 75 (C); P = NS 6.1 (I) vs 2.8 (C); P = NS 57 (I) vs 55 (C); P = NS 11.6 (I) vs 32.5 (C); P < .05 44.2 (I) vs 67.5 (C); P < .05 48.4 (I) vs 15.9 (C); P < .001 16 (I) vs 16 (C); P = 99 1 (I) vs 11 (C); P = .01 30 (I) vs 30 (C); P = 99 88.9 (I) vs 87.5 (C); P = .91
Lipton and Bird, ²⁷ Discharge and telephone follow-up	Randomized (N = 706) I = 350 C = 356		
Lipton et al, ²⁴ Discharge and telephone follow-up	Randomized (N = 236) I = 123 C = 113		
Johnston et al, ²⁸ Discharge	Randomized (N = 27) I = 14 C = 13		
Hazareh et al, ²⁹ Discharge and Outpatient Coordination	Randomized (N = 362) I = 181 C = 181		
Al-Rashed et al ²⁷ Discharge and Outpatient Coordination	Randomized (N = 83) I = 43 C = 40		
Schröpper et al ²⁸ Discharge and telephone follow-up	Randomized (N = 176) I = 92 C = 84		

11 Medication Reconciliation studies included in systematic review

- 2 admission intervention
- 9 discharge
- Generally suggest
 - Less discrepancies
 - Improved adherence
- Some data to support improved outcomes (readmission, preventable ADE)

Observational data suggest reconciliation is feasible and effective

Lizer, M. Medication history reconciliation by pharmacists in an inpatient behavioral health unit. Am J Health-Syst Pharm. 2007; 64:1087-91

- 54 patients admitted to a behavioral health unit from 0600-2400 M-F
- Nurse history, technician review, pharmacist review
- Pharmacist saw 91% of patients within 18h of admission (mean 11.6 ± 5.1 h)
- Pharmacists spent a mean of 13.9 min per patient
- The mean number of medications identified by nursing on admission was 4.0 ± 3.2 , compared with 5.3 ± 3.7 identified by pharmacists ($p < 0.05$).
- The mean number of medication discrepancies identified per patient was 2.9.
 - 48% were related to an omitted or incorrect medication
 - 31% to an omitted or incorrect dose
 - 13% to an omitted incorrect frequency;
 - 8% were categorized as miscellaneous.

Various methodologies appear effective

Varkey P. Multidisciplinary approach to inpatient medication reconciliation in an academic setting. Am J Health Syst Pharm. 2007 Apr 15;64(8):850-4.

- 102 patients
- nurses, pharmacists, and physicians used an admission medication reconciliation form
- form used by pharmacist & physician to reconcile discharge medications
- Pharmacists categorized medication discrepancies by the potential severity of the error.
- reconciled admission and discharge lists included in the hospital summary.
- admission discrepancies decreased from 0.5 to 0 per patient per patient.
- discharge discrepancies decreased from 3.3 to 1.8 per patient
- The percentage of potentially significant discrepancies fell from 47.7 to 20.9%

Vira, T. Reconcilable differences: correcting medication errors at hospital admission and discharge. Qual Saf Health Care. 2006 Apr;15(2):122-6.

- Sixty patients at a Canadian community hospital.
- Admission and discharge reconciliation
- Variances discussed with prescriber physician and classified as intended or unintended
- 60% (95% CI 48 to 72) of patients had at least one unintended variance
- 18% (95% CI 9 to 28) had at least one **clinically important** unintended variance.
- None of the variances detected by usual clinical practice
- 75% (95% CI 56 to 94) of the clinically important variances were intercepted by medication reconciliation

Randomized data confirm effectiveness

- **Kwan, Y. Pharmacist Medication Assessments in a Surgical Preadmission Clinic** *Arch Intern Med.* 2007;167:1034-1040
- Combined intervention of structured pharmacist medication history interviews with assessments in a surgical preadmission clinic and postoperative medication order form.
- randomly assigned to
 - intervention arm (structured pharmacist medication history interview with assessment and generation of a postoperative medication order form)
 - standard care arm (nurse-conducted medication histories and surgeon-generated medication orders).
- Primary end point was the number of patients with at least 1 postoperative medication discrepancy related to home medications.

- 464 patients
- At least 1 postoperative medication discrepancy in 20.3% of intervention patients (compared with 40.2% of standard care patients; $P.001$).
- At least 1 postoperative medication discrepancy with the **potential to cause possible or probable harm** in 12.9% of intervention patients (compared with 29.9% of standard care patients; $P.001$).
- Mostly omissions of reordering home medications.

but does detecting discrepancies
improve patient outcomes?



Reconciliation can reduce ADE

Boockvar KS. Medication reconciliation for reducing drug-discrepancy adverse events. Am J Geriatr Pharmacother. 2006 Sep;4(3):236-43.

- 168 nursing home residents with 259 hospital stays and 696 discrepancies
- pharmacist-conducted medication reconciliation on return to NH
- Pre/post intervention
- 1 discrepancy-related ADEs in the postintervention group (compared with 10 in the preintervention group; , relative risk, 0.16; 95% CI, 0.02-1.2; P = NS).
- Odds of having a discrepancy-related ADE were significantly lower in the postintervention group compared with the preintervention group (odds ratio, 0.11; 95% CI, 0.01-1.0; P = 0.05) after adjustment for baseline ADE risk
- most commonly pain from the omission of an analgesic (27.3%)

and presentations

Stowasser DA et al. Controlled trial of medication liaison services, I: patient outcomes. J Pharm Pract Res. 2002;32:133-140.

Randomized 240 patients to admission and discharge reconciliation or usual care

- 0.12 vs 0.46 ($P = 0.06$) readmissions per subject at 30d
- 7.54 vs 9.94 ($P < 0.05$) health care prof visits at 30 d

Reconciliation Quality

Suboptimal prescribing includes

- Underutilisation
- overutilisation
 - polypharmacy
 - excessive treatment duration
- potentially inappropriate prescribing
 - inappropriate drug choice or combination
 - excess dosage
 - drug-disease interaction

Reconciliation Medication History

- Recording history in uniform fashion across services is first step

"Hospital care is like a giant game of telephone in which providers pass along information about patients from one person to another on a daily basis,"

Leora Horwitz, MD (Yale University Medical School)

4 Standard of Care

■ APAC Guidelines

- 1 Leadership for medication management
- 2 Responsibility for medication management
- 3 Accountability for medication management
- 4 Accurate medication history
- 5 Assessment of current medication management
- 6 Medication Action Plan
- 7 Supply of medicines information to consumers
- 8 Ongoing access to medicines
- 9 Communicating medicines information
- 10 Evaluation of medication management



WA Health Pharmaceutical Review Policy

Five standards.

- Chart review - all inpatient medication charts are to be reviewed, ideally on a daily basis, by an appropriately credentialed professional, such as a clinical pharmacist.
- Medication reconciliation on admission - medication reconciliation, including an accurate medication history, is to be conducted for all inpatients by an appropriately credentialed professional, ideally within 24 hours of admission for high-risk patients.
- Medication education during hospitalisation and on discharge - patients and/or their carers are to be provided with medication education during their hospitalisation to ensure that they have an understanding of their medications, and ideally be given a medication profile on discharge.
- Discharge process: communication with general practitioners and other health professionals - a patient's medication-related information is to be provided to his or her general practitioner and other health professionals upon discharge.
- Quality initiatives promoting medication safety – health services are to be involved in medication-related safety and quality initiatives

Challenge is to operationalise these recommendations

- Results from the ambulance service in NSW showed that the use of **multiple strategies** increased the proportion of patients arriving to hospital with their medicines from 0 to about 75%.

TABLETS, Ambulance Service of NSW, October 2006.

5. Local Initiatives



WAMSG Medication History Working Group
Draft recommendations for
Recording a Medication History in WA Hospitals

- A complete and accurate medication history is a key component of the process of medication reconciliation.
- Facilitated by access to a patient's medications and/or medication list.
- Ensuring patients bring their medications or medication list to hospital requires engagement with consumers, professionals and agencies in the community.

Engaging with the community

- All patients transported to hospital from their home should be accompanied by their medicines.
- Medicines should be carried in a Patient's Own Medicines Bag (POMB)
- Requires state-wide so-ordination and funding

- All patients transported to hospital from residential care facilities should be accompanied by a copy of their medication profile and a copy of the current drug administration chart

- Patient empowerment central
 - responsibility for awareness of the medicines they use and to be active partners in achieving safe use of medications.
 - ·The importance of having an up-to-date medication list.
 - ·The need to take the medication list and medications with them when they present to hospital and other HealthCare facilities.

Patient First

Patient First

Managing your medications safely

One of the common causes of adverse incidents (unintentional harm) is when medications are prescribed, administered or taken incorrectly. Medication errors can happen while you are in hospital or at home. Medication errors may be caused, for example, by your medications having the same or similar brand names or packaging, or one medication interfering with another. A medication error may also occur if you miss a dose, take the wrong dose, or misunderstand written and oral instructions. Your health condition may also increase the possibility of side effects from your medication.

To manage your medications safely, you should:

1. Keep a written record of the medications you take at home, including complementary and non-prescription medicines and inform hospital staff of them as soon as possible.
2. Ask your doctor what your new prescription medication is for, what the side effects or complications are, and whether it is safe to mix it with your other medications.
3. Write down the medications you are receiving in hospital and what time you normally get them, including intravenous (IV) fluids. If you don't get your medications at the right time, if the IV fluids run too fast or slow, or you are given different medications to those you have written down, ask your nurse before taking them.
4. Tell hospital staff immediately if you feel unwell after taking medication.
5. Make sure that you understand all of the instructions you have been given about your medications before you leave the hospital. This includes any instructions about whether you should continue to take the medications you were taking before coming into hospital.
6. Use a dosage box to reduce the likelihood of mixing up your medication, making dosage errors or forgetting to take your medication. You can buy a dosage box from pharmacies or supermarkets. Alternatively many pharmacists will prepare a dosage box for you for a fee.
7. Speak to hospital staff about any medication that you believe you have been refused, or if your medication is delayed.
8. Get your medication from the same pharmacy every time, so your pharmacist can keep a record of the medication you are taking and alert you to any dangerous interactions.
9. Ask your health practitioner for any written consumer medicines information, called CMI, that you can refer to when required. If they are unable to provide it, you can download the information from the 'Consumers' page of the National Prescribing Service website at:

www.nps.org.au/consumers



Patient information

- one-page information sheet explaining the information the hospital seeks about their medicines is provided to patients prior to every hospital admission.
- The pilot form available

Patient's Own Medicines

- A patient's home use medications should be stored in a POMB (preferably at the patient bedside) during hospital episodes.
- if a current medication list or profile is not available, the patient's home medicines should be:
 - Used during the patient interview to determine the patient's medication regimen at the time of admission
 - Reviewed at the time of discharge and any discontinued medications removed and new medications supplied.

Recording medication history

- Hospitals should use a pre-printed template to record the Medication History.
- A sample form is provided.
- The medication history should be confirmed with the patient (or in the case where a patient is not able to, their proxy) and where appropriate a second source such as the GP or the community pharmacist.
- One person should be designated the primary responsibility for completing the medication history form and confirming the information.

Emergency admissions

- A medication history should be recorded as early as possible in the episode of care.
- Factors including the patients acute condition and the lack of prompts (medicines, medicine lists etc) may mean that the medication history takes longer to record.
- Therefore the medication history should be documented in a way that allows it to be readily accessed and amended or updated as necessary when new information becomes available.



Implementation

SQuIRe

Safety and Quality Investment for Reform (SQuIRe)
Clinical Practice Improvement Program (CPI)

- Cluster 1 – Evidence-Based Clinical Practice
 - AMI
 - VTE/DVT
 - Pressure Ulcer Prevention
 - Falls
- Cluster 2 – Medication Reconciliation
- Cluster 3 – Infection Control Practices
 - Central Lines
 - Surgical Site
 - Hand Hygiene

E-initiatives
Transitions of
Care

Conclusions

- Medication reconciliation is the formal process of obtaining a complete and accurate list of a patient's current medications *and comparing the medical officer's admission, transfer or discharge orders to that list*
- Reconciliation is important because of the frequency and clinical impact of medication errors
- Medication reconciliation reduces medication discrepancies. Current data suggest the reducing medication discrepancies translates into clinically meaningful improvements in patient outcome.
- Comprehensive pharmaceutical review is recommended.
- Much local work is ongoing to achieve pharmaceutical review in routine clinical practice