

Preventing Adverse Drug Events Toolkit

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Version history

Date	Version	Author	Comments
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15 Nov 2005	2	Suzanne Norton	Incorporates comments and feedback resulting from the orientation sessions.
14 Dec 2005	3	Andrew Clarke	Final version prior to implementation includes amendments from expert panel consultation.
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Foreword

Safer Systems – Saving Lives is a national collaborative initiated by the Australian Council for Safety and Quality in Health Care. The aim of the Safer Systems – Savings Lives project is to provide tangible evidence on the impact of six key interventions when applied consistently and comprehensively in Australian hospitals. The interventions are based on scientific evidence and known to improve patient care and prevent avoidable deaths. The six interventions are:

- Preventing ventilator-associated complications
- Preventing surgical site infection
- Preventing central venous catheter related-bloodstream infections
- Implementing a rapid response system
- Preventing adverse drug events
- Improving care for acute myocardial infarction.

The interventions are based on implementing a formalised process or applying a 'bundle' of care components. The care bundle builds on the concept that, whilst each component is of value, if all elements of the 'bundle' are used, the prevention factor is increased.

The Quality and Safety Branch of the Department of Human Services in Victoria will provide organisational lead and overarching project management for the SSSL project. Commencing in early 2006 the project will be implemented in hospitals across Australia. More information on the project and the interventions can be found on the Safer Systems – Saving Lives website at www.health.vic.gov.au/sssl

Safer Systems – Saving Lives project is based on the 100,000 Lives Campaign, an initiative by the Institute for Healthcare Improvement (IHI). The IHI care bundles and measures have been adapted to suit the Australian context with the assistance of expert panels. Through the implementation of the six interventions the 100K campaign aims to avoid 100,000 deaths by June 2006, and every year thereafter. More information on the institute and the 100K campaign can be found on the IHI website (<http://www.ihl.org>).

Contents

Version history.....	1
Acknowledgements.....	1
Foreword	2
Introduction	4
What are adverse drug events?	4
What is the aim of preventing ADEs?	4
The case for preventing ADEs.....	4
The gap between reliable, evidence based-care and actual care.....	4
Potential impact of preventing adverse drug events.....	5
The components of care	6
Medication reconciliation.....	6
1. Medication history.....	6
2. Confirmation	7
3. Reconciliation.....	7
4. Medication liaison	7
Establishing the strategy	8
Establish the team.....	8
Establish the aim.....	8
Collection strategy.....	9
Data collection suggestions	9
Implementing the strategy	10
General considerations	10
Tips for interviewing patients.....	10
Barriers that may be encountered	12
Measurement.....	13
Compliance process measurement	13
Outcome measure	13
Abbreviations	14
References	15

Introduction

What are adverse drug events?

An adverse drug event (ADE) is harm as a result of the intrinsic nature of a medication as well as harm resulting from medication errors associated with distribution and use of medicines – including those that result from under-use of medicines or failure to prescribe a medicine when indicated¹.

What is the aim of preventing ADEs?

The aim of the preventing ADEs intervention is to reduce the incidence of unreconciled medications at admission.

The case for preventing ADEs

Medication errors are one of the leading causes of injury to hospital patients and chart reviews reveal that more than half of all hospital medication errors occur at the interfaces of care².

Experience from hundreds of organisations has shown that poor communication of medical information at transition points is responsible for up to 50 per cent of all medication errors in the hospital and up to 20 per cent of adverse drug events (ADEs).

A multidisciplinary check of medication orders for paediatric cancer patients revealed that 42 per cent of the orders being reviewed needed to be changed³.

Another study, also of paediatric cancer patients, revealed inconsistencies 30 per cent of the time⁴ between the medication orders, the information obtained from the patient or guardian and the details noted on the prescription container label.

An up-to-date and accurate medication list is essential to facilitate safe prescribing in any setting.

The gap between reliable, evidence based-care and actual care

Organisations face a number of challenges in managing medication.

- There is no clear ownership of the process. In some cases, the collection of medication history is completed by a nurse, in others by a pharmacist, and in others by a clinician. However, no one has been specifically assigned to complete this process.
- There is no standardised process to complete the collection of this information and ensure that it is available to the clinician who will be writing orders. This will be addressed by the use of the National Inpatient Medication Chart (NIMC). At present, nurses from different units, or within the same unit, may be using different processes. Medical officers do not have a defined process to communicate changes in doses or treatment plans using existing processes.
- There are many situations in which the patient is not in a position to provide a list of medications. Statements such as 'I take a blue pill' or 'I don't remember the name' are common. Accurate sources of information may be difficult to identify.

A major challenge is ensuring that the medication history is linked to the admission orders. Placing the medication list in a prominent location in the chart so that prescribers can easily access the information is a key to success.

Ultimately, the medication list must be consistent as patients move from one level of care to another. The goal is to develop a process that provides an accurate list that can be used as patients are admitted, transferred through the institution, and eventually transferred to another institution or into the community.

Potential impact of preventing adverse drug events

Preventing ADEs is the impetus behind medication reconciliation. Jane Justesen, a nurse at Luther Midelfort-Mayo Health System in the United States, developed the concept of medication reconciliation as part of an Institute for Healthcare Improvement (IHI) initiative. Among other things, Justesen's team pioneered the tools and forms needed to create, update and reconcile a patient's medication record during hospitalisation—starting at admission and continuing right through to returning home.

The adoption of medication reconciliation is already underway at healthcare services throughout Australia, in conjunction there are many tools being developed to support the medication reconciliation process. Examples of tools currently being used can be downloaded from the SSSL website.

As a means of reducing harm to patients due to medication errors, the Australian Health Ministers have agreed that by June 2006 all public hospitals will be using a standard medication chart. The NIMC is at different stages of implementation in Australian states and territories, and SSSL recommends participating hospitals consider using the NIMC to support the medication reconciliation process. The NIMC can be downloaded from <http://www.health.vic.gov.au/vmac/nimc.htm>

The components of care

Medication reconciliation

Medication reconciliation is the formal process of obtaining a complete and accurate list of each patient's current home medications—including medication name (generic), dosage, frequency and route—and comparing the clinician's admission, transfer or discharge orders to that list. Discrepancies are brought to the attention of the prescriber and, if appropriate, changes are made to the orders. Any resulting changes in orders are documented.

The process measurement for this SSSL intervention will require hospitals to document completion of four process steps. The methods employed by hospitals to complete these steps are not prescribed by the project. The following suggestions are based on the 'Medication History and Reconciliation on Admission Pilot' produced by the Queensland Health Safe Medication Practice Unit (QHSMPU)[∅].

Hospitals may already have developed medication reconciliation tools. For hospitals without a current tool the project recommends the use of the tool developed by the QHSMPU (the QLD tool).

The medication reconciliation process involves four steps. These are:

1. Medication history

A formal interview with the patient or the patient's representative is performed at admission by an appropriately trained healthcare professional to obtain a thorough understanding of the patient's medication history.

Information documented at this interview will include:

- GP and community pharmacy contact details
- details of all medications being taken by the patient at admission. Include generic and trade name, form, dose, frequency, duration and indication
- note the source of this information (i.e. patient, medication list, relative)
- note if the patient's own medications are available
- note any compliance issues, and
- other relevant information.

The 'Medication History & Reconciliation on Admission' form is part of the QLD tool developed by QHSMPU.

Medication Reconciliation Process

1. Medication history

A formal interview conducted at admission to obtain and document the patient's medication history.

2. Confirmation

Seeking to confirm with the patient and a second source that the information obtained at interview is correct.

3. Reconciliation

Checking that medication history and medications ordered by the admitting doctor match.

4. Medication Liaison

Ensuring that medication information is communicated between all involved in the patient's care – **including the patient.**

[∅] The QLD tool may be downloaded from the SSSL website at http://www.health.vic.gov.au/sssl/downloads/qld_tool.pdf

2. Confirmation

This process step is about confirming with the patient and (where possible) a second source that the information obtained at interview is correct. For high-risk patients it may be advisable to seek the confirmation of community health care providers. An example of a hierarchy for second source confirmation is displayed to the right.

An example of a fax message form for communication with community pharmacists and GPs is provided with the QLD tool.

To complete this step record:

1. Source and date of confirmation.
2. Admitting doctor's plan for each of the medications listed.
3. Signature and profession of person obtaining confirmation.



3. Reconciliation

Rozich and Resar (2001) noted that most ADEs occur at the 'interfaces of care'². These occasions in the patient's journey through the system have also been called 'transition points'⁵ where information is communicated as the patient moves from one point to another; across wards, departments, hospitals and geographic locations. At these transition points the patient is at risk of ADEs as a result of transcription of orders, omission of orders and duplication of therapy.

By comparing the various lists of medication that may exist, these ADEs may be prevented.

QHSMPU identify three such comparisons:

1. Comparing medication history with medication prescribed on the medication chart.
2. Comparing discharge prescriptions with the medication history and the medications prescribed.
3. Comparing discharge summaries with the medication history, medication prescribed and discharge prescriptions.

Where the medication is found to match then reconciliation is documented. For example, if the QLD tool is being used, tick the reconcile column (third from right) beside the reconciled medication.

Where there is a discrepancy then clarification must be sought from the prescribing doctor. The means of resolving the mismatch is documented.

4. Medication liaison

At different stages of the medication reconciliation process effective communication plays an important role. As part of the medication reconciliation process it is important to establish formal mechanisms that support the sharing of information between health professionals both within the hospital and in the community. It is also important to ensure those who support patients in a caring role are well informed about changes to the patient's medication regime.

It is important that whatever medication liaison occurs it is clearly documented.

Establishing the strategy

Successful implementation of a strategy is motivated by leadership and commitment to provide adequate resources and attention. Prior to the implementation of an ADE strategy, the following should be considered:

- engaging senior leadership support
- determining the best structure for a team
- providing education and training
- using a structured documentation tool
- establishing feedback mechanisms, and
- methods for measuring the strategy's effectiveness.

Establish the team

A team approach is needed to ensure that this process is completed successfully. It is recommended that the organisation identify a multidisciplinary team consisting of, at a minimum, a nurse, a pharmacist and a doctor.

Medication reconciliation involves a team effort that includes and empowers the patient. Patients can play a vital role in medication reconciliation by carrying a list of the medications they are taking. Having this information available can help make the reconciliation process more efficient and effective. The NIMC provides for the documenting of medication being used by the patient prior to admission.

The National Medication Safety Breakthrough Collaborative (ACSOHC, 2004) recognised the importance of empowering patients to participate in their own care, providing clear and timely advice regarding the nature of medication being received by patients, and changes or additions to pre-existing regimes and schedules.⁵

The National Prescribing Service (NPS) of Australia seeks to provide 'balanced, evidence-based information . . . to health professionals and the community on Quality Use of Medicines (QUM)' (NPS at www.nps.org.au). Resources available to consumers include a 'medicines list' that provides a wallet sized form on which consumers may record medicines, allergies and emergency contact details. The medicines list also provides the NPS independent information telephone number.

Establish the aim

The aim should be 'SMART':

- Specific
- Measurable
- Achievable
- Realistic and
- Timely.

Example ADE aims

'To have no unreconciled medications at admission, discharge or as a result of transferring the patient within the next 18 months.'

'Improve medication reconciliation by 75 per cent on each unit - both at admission and discharge within the next 12 months.'

'To reduce the incidence of unreconciled medications at admission by 50 per cent within three months.'

Collection strategy

Start at the admission process. As patients may be admitted to the hospital from a number of points, select one area (for example, pre-operative screening or the emergency department).

Using a simple flow diagram, determine the process in place at this time, for an example, see Queensland tool's work practice flowchart available via the SSSL website.

Compare the data collection form currently in use within your organization against others being implemented, to ensure it is reflective of best practice, for example, is documentation required of the reason that a medication has been discontinued or placed on hold. Tools* from healthcare services throughout Australia can be found on the SSSL website.

How healthy is your medication reconciliation process?

Evaluate how the forms and tools currently being used assist with:

- assisting in the collection of medication history
- sharing information with prescribers, and
- facilitate the medication reconciliation process.

Data collection suggestions

Teams from IHI collaborative and the Massachusetts Coalition for the Prevention of Medical Errors suggest the following tips:

- Divide the process into several steps and share responsibilities.
- Involve administrative support to identify/retrieve histories.
- Develop a quick audit tool and have nurses, doctors and pharmacists from the implementing unit retrieve the necessary data from the subset of charts each person reviews.
- Assign responsibility for aggregating the data and developing charts that can be displayed on the units to one person. Present reports to managers (for example, quality improvement representative or team leader).
- Engage the best available resources, based on your own organisation's resource constraints.
- Consider using an experienced pharmacy technician to collect the medication history.
- Consider using pharmacy pre-registrants to collect the medication history.
- Focus only on the parts of the chart that deal with your project. You should only need to review the reconciliation form and the admission orders.
- Limit your sample to 20 histories per month on the unit where you are testing the process.

* Please note the copyright notice on some of the material, for example the Queensland Department of Health tool has granted the SSSL project permission to use their material but not to amend or modify it in any way.

- Set a timer as a reminder to limit your review of each history to 15–20 minutes.

Implementing the strategy

Once a team has prepared the way for change by studying the current process and educating the affected parties, the next step is to begin testing the ADE bundle.

For the reporting period (weekly, fortnightly or monthly), collect a random sample of 20 closed patient records from patients with a minimum two-day length of stay.

Collect baseline data as described in the measurement section. This information will help you to determine how effective your current process is and help you make the case for implementing medication reconciliation.

General considerations

Tips for interviewing patients

- Use open-ended questions (what, how, why, when) and balance with yes/no questions.
- Use non-biased questions that do not lead the patient into answering something that may not be true.
- Pursue unclear questions until they are clarified.
- Ask simple questions, avoid using jargon, and invite the patient to ask questions.
- Let the patient know the importance of using one regular pharmacy/pharmacist to enable complete medication histories to be maintained.
- Educate the patient on the importance of using a medication wallet card (NPS at http://www.nps.org.au/resources/content/medicines_list.pdf) and bringing their medications to the hospital, doctor's office, etc.
- When asking about all medications, be sure to get the generic and trade name, dosage form, dosage, dosing schedule, and last dose taken – be as specific as possible about prn (as needed) medications.
- Prompt the patient to try and remember patches, creams, eye drops, inhalers, sample medications, injections, natural remedies, vitamins and minerals.
- When discussing allergies, educate the patient on the difference between a side effect and a true allergy, for example, rash, breathing problems, hives.
- Have patients describe how and when they take their medications (vague responses may indicate non-compliance).
- Steps to take if the patient cannot remember medication or if clarification is needed:
 1. obtain a detailed description of the medication from the patient or a family member—dosage form, strength, size, shape, colour, markings
 2. talk to any family members present or contact someone who could possibly bring in the medication or read it over the phone
 3. try calling the patient's pharmacy to obtain a list of medications that the patient has been regularly taking

4. contact the patient's clinician(s) to try and get an accurate listing of their current medications, and
5. obtain previous medical records.

Barriers that may be encountered

Teams working on preventing ADEs may face resistance and other barriers to improvement. The following table identifies some common challenges and suggested solutions.

Table one: Challenges and solutions

Challenges	Solutions
Fear of change	The antidote to fear is knowledge <ul style="list-style-type: none"> • Inform staff about the deficiencies of the present process and • Provide reasons to be optimistic about the potential benefits of a new process.
Lack of support by leadership	<ul style="list-style-type: none"> • Use opinion leaders (physicians) and data. • A business case for the project may help to win leadership support.
Uneven acceptance of new practices	<ul style="list-style-type: none"> • Use physician opinion leaders. • Review medical literature and feedback data on a surgeon-specific level. • Work first with early adopters and use their stories to convince the majority. • Share baseline data that demonstrates the reliability of the process.
Communication breakdown.	<ul style="list-style-type: none"> • Communicating the importance of preventing ADEs to staff. • Ongoing education of staff.

Measurement

The aim is to prevent ADEs by implementing medication reconciliation. It is anticipated that each organisation will ultimately address all three areas related to reconciliation (admission, transfer and discharge). It is best to start with admission reconciliation. Addressing admission reconciliation first will prevent any existing problem compounding and thereby minimise patient harm.

Compliance process measurement

The measure for preventing ADEs assesses how well the team is adhering to the medication reconciliation process. The compliance measurement is always expressed as a percentage.

Each month, review a set of 20 closed patient records using a random selection process. Check that the medication reconciliation process is clearly documented in the patient records.

The compliance measurement is taken for the entire medication reconciliation process, not just parts of the process. If any of the process steps are missing, the case is considered to not be in compliance with the intervention.

Hospital sites will submit by means of an eForm just two numbers.

1. The number of patient records with all process steps documented, and
2. The number of patient records in the sample.

The SSSL project team will calculate compliance to the ADE intervention by:

- dividing the number of patient records with all process steps by the number of patient records, then
- multiplying the result by 100, this will provide the percentage of compliance to the ADE intervention.

Examples of compliance

15 of the 20 histories record the process in full, 75% comply.

All histories had all steps, the compliance would be 100%.

If any histories were missing a single step, compliance is 0%.

Outcome measure

Following consultation with the ADE expert panel it was decided that a meaningful outcome measure for this intervention was not identifiable. It was agreed that there would be no outcome measure for this intervention.

Abbreviations

ADE	Adverse Drug Event
ACSQHC	Australian Council for Safety and Quality in Health Care
DHS	Department of Human Services (Victoria)
GP	General Practitioner
ICU	Intensive Care Unit
IHI	Institute for Healthcare Improvement
NIMC	National Inpatient Medication Chart
NPS	National Prescribing Service
PDSA	Plan Do Act Study
QHSMPU	Queensland Health Safe Medication Practice Unit
QUM	Quality Use of Medicines
SSSL	Safer Systems – Saving Lives

References

- ¹ Runciman WB, Roughead EE, Semple SJ, Adams RJ. Adverse drug events and medication errors in Australia, *International Journal for Quality in Health Care* 2003(15); 1:i49-i59.
- 2 Rozich JD & Resar RK. Medication safety: one organisation's approach to the challenge, *JCOM* 2001(8); 10:27-34.
- 3 Branowicki P. Sentinel events: Opportunities for change, Presentation at Massachusetts Coalition for the Prevention of Medical Errors Conference, November 18 2002.
- 4 National Medication Safety Breakthrough Collaborative, Project Chronicle <http://www.safetyandquality.org/projectchronicl.pdf>
- 5 Barnsteiner JH. Medication reconciliation: Transfer of medication information across settings – keeping it free from error, *AJN* 2005(March Supplement):31-36.

Other resources

The approach adopted in this guide is in line with Australian trends. There are many other useful resources available to assist with implementing an RRS. It is recommended that they be referred to as well.

Berman S. Accelerating the Pace of Improvement: An Interview with Thomas Nolan, *Journal of Quality Improvement* 1997(23); 4:217-222.

Chiquette E, Amato MG, Bussey HI. Comparison of an Anticoagulation Clinic with Usual Medical Care, *Arch Intern Med* 1998(158):1641-1647.

Whittington J & Cohen H. OSF Healthcare's journey in patient safety, *Quality Management in Health Care* 2004(13); 1:53-59.