

AUSTRALIAN COMMISSION ON  
SAFETY AND QUALITY IN HEALTH CARE

**Connecting for patient safety:  
closing the gaps in national  
medication safety and quality**

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**3<sup>rd</sup> Improving Medication Safety Conference**

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# Medication safety and quality

*“Medications are the most prevalent health therapy in Australia. In any two week period, around seven in ten Australians will have taken at least one medicine. For older Australians, that increases to nine in ten.”*

**Windows into Safety and Quality in Health Care 2008**



# Medication safety and quality

## Medicines can cause harm

- Adverse drug reactions (Preventable, non preventable)
- Medication errors
  - Knowledge based (Lack of knowledge)
  - Rules based (Bad rule, misapplying a good rule)
  - Action based (Slips e.g. selecting wrong drug)
  - Memory based (Lapses e.g. forgetting pt allergic)
- Aronson JK **Medication errors: what are they, how do they happen, and how to avoid them.** Q J Med 2009 102:513-521

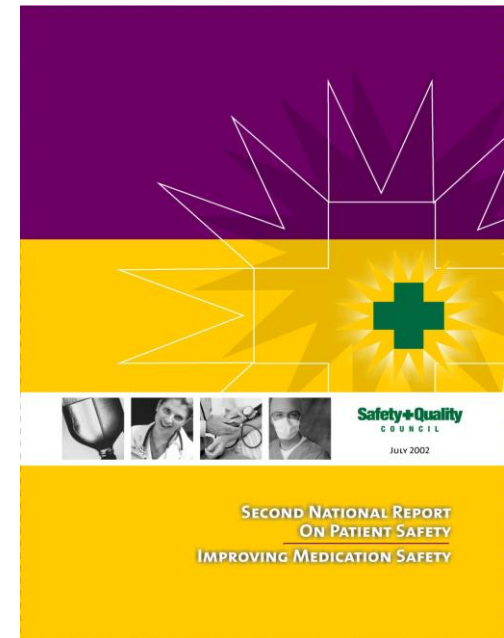
# Medication safety reports

## Reports



Here we discuss 15 recommendations for reducing the risks of medication errors:

1. Provision of sufficient undergraduate learning opportunities to make medical students safe prescribers.
2. Provision of opportunities for students to practise skills that help to reduce errors.
3. Education of students about common types of medication errors and how to avoid them.
4. Education of prescribers in taking accurate drug histories.
5. Assessment in medical schools of prescribing knowledge and skills and demonstration that newly qualified doctors are safe prescribers.
6. European harmonisation of prescribing and safety recommendations and regulatory measures, with regular feedback about rational drug use.
7. Comprehensive assessment of elderly patients for declining function.
8. Exploration of low-dose regimens for elderly patients and preparation of special formulations as required.
9. Training for all health-care professionals in drug use, adverse effects, and medication errors in elderly people.
10. More involvement of pharmacists in clinical practices.
11. Introduction of integrated prescription forms and national implementation in individual countries.
12. Development of better monitoring systems for detecting medication errors, based on classification and analysis of spontaneous reports of previous reactions, and for investigating the possible risks of medication errors when patients die.
13. Use of IT systems, when available, to provide methods of avoiding medication errors, standardization, proper evaluation, and certification of clinical information systems.
14. Nonjudgmental communication with patients about their concerns and elicitation of symptoms that they perceive to be adverse drug reactions.
15. Avoidance of defensive reactions if patients mention symptoms resulting from medication errors.



# Medication safety and quality

## International/National Organisations

- WHO, World Health Alliance
- Institute of Safe Medication Practice (ISMP)
- ISMP – Canada
- National Patient Safety Agency (NHS)
- International Medication Safety Network – 20 member organisations

## Publications

- Newsletters, books, safety alerts, web sites

AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTHCARE



### Reducing risk of overdose with midazolam injection in adults

**Issue**  
Some adult patients are being overdosed with midazolam injection when used for conscious sedation. The presentation of high strength midazolam as 5mg/ml (2ml and 10ml ampoules) or 2mg/ml (5ml ampoule) exceeds the dose required for most patients. There is a risk that the entire contents of high strength ampoules are administered to the patient when only a fraction of this dose is required. Doses often exceed that required, are not titrated to the patient's individual needs, do not take into account concurrent medication (e.g. opioids) and may involve high risk groups for example, the frail or the elderly. There is frequent reliance on injectable flumazenil (antagonist/reversing agent) for reversal of sedation in patients that have been over sedated.

ISMP Canada is an independent Canadian non-profit agency established for the collection and analysis of medication error reports and the development of recommendations for the enhancement of patient safety.



The Healthcare Insurance Reciprocal of Canada (HIROC) is a member-owned expert provider of professional and general liability coverage and risk management support.

Volume 3, Issue 4 **ISMP Canada Safety Bulletin**

April, 2003  
used to treat inadvertent shorter half life of flumazenil

### Insulin Errors

Insulin is considered one of the top five "high alert" medications because errors in dosing and administration can result in severe patient adverse effects, it is one of the drugs most likely to be involved in an error. Administration of an excessive dose can rapidly lead to hypoglycaemia which may progress to seizure and coma. An under-dose can allow worsening of hyperglycaemia that may progress to ketoacidosis. The fact that insulin is frequently used and has a narrow therapeutic index increases the risk for medication errors. A retrospective study of diabetic ketoacidosis cases

written by the physician (exact dose was calculated based on patient weight, and then not rounded to 7 units) contributed to the error. The hospital subsequently took steps to ensure that only insulin syringes are used for insulin administration and added discussion of dose rounding in the physician orientation program.

An administration error can occur when there is a failure to properly prepare insulin suspensions (e.g. NPH insulin) for dose withdrawal and administration. Because suspensions

**NHS National Patient Safety Agency Patient Safety Division**

dependent sector where midazolam

ing with the lead pharmacist and

5mg/ml in 2ml and 10 ml ampoules; or intensive care, palliative medicine risk assessed, for example, where

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of midazolam is clear and that the participating in sedation techniques have

m is used and that the use of g of midazolam.

hat overall responsibility is assigned

list.

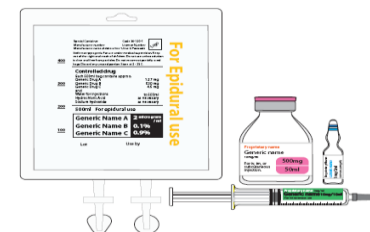
of readout dose meter. exhibiting and part of case to alert staff. The display, in more, a The errors resulted in been notified also been

es often lie "shoehorn" is standardized

## Design for patient safety

### A guide to labelling and packaging of injectable medicines

Edition 1 2008



# National safety and quality

## Australian Commission on Safety and Quality in Health Care

- Established in 2006
- Reports to Health Ministers
- Remit across public, private, acute and primary
- Nine priority programs including medication safety
- Lead and coordinate safety and quality in health care

## National

# Medication Safety Participants

## NSW

Therapeutic Goods Administration  
(ADEC MEC CMEC)

Australian Drug Reactions Advisory Committee

Australian Pharmaceutical Advisory Council

Pharmaceutical Health and Rational Use of Medicines Committee

Australian Institute of Health and Welfare

National Electronic Health Transition Authority

Professional Associations

Industry Associations

Consumer Associations

Hospital Associations

Aust Commission on Safety & Quality in Health Care

National Prescribing Service

Australian Patient Safety Agency

Australian Council on Healthcare Standards

National Health and Medical Research Council

National Institute on Clinical Studies

Centre for Research Excellence in Patient Safety

Health Insurance Agencies

Clinical Excellence Commission

Greater Metropolitan Clinical Taskforce

 NSW TAG  
SAFER Medicines Group

Incident Information Management System (IIMS)

NSW Healthcare Complaints Commission

Professional Registration Boards

Universities

Joint TAGs

NSW Health Branches:

Health Performance

Quality and Safety

Pharmaceutical Services

Public Health

Infection Control

Nursing

Strategic Information Management

Area Clinical Governance Units

Area and Local Drug and Therapeutics Committees

Area and Local Patient Safety Committees

Local Medication Safety Committees



# National Medication Safety and Quality Scoping Study Committee Report

- **4 major recommendations**  
Including establishing a  
Medication Reference Group
- **45 recommendations**  
for action working with other  
organisations

NATIONAL MEDICATION SAFETY  
AND QUALITY SCOPING STUDY  
COMMITTEE REPORT

21 APRIL 2009



[http://www.safetyandquality.gov.au/internet/safety/publishing.nsf/Content/NIMC\\_006\\_Initiatives&Event](http://www.safetyandquality.gov.au/internet/safety/publishing.nsf/Content/NIMC_006_Initiatives&Event)

# Medication scoping study

## Literature reviews

- Medication safety in acute care<sup>3</sup>
  - Update former Council's 2nd National report on patient safety – Improving Medication Safety 2002<sup>1</sup>
  - Australian acute care sector
  - Extent and causes of medication incidents and adverse events
  - Strategies and activities for improving medication safety
- Medication safety in community<sup>2</sup>
  - National Prescribing Service Ltd looked at outcomes and prevalence, contributory factors and the effect of interventions to reduce ADEs.

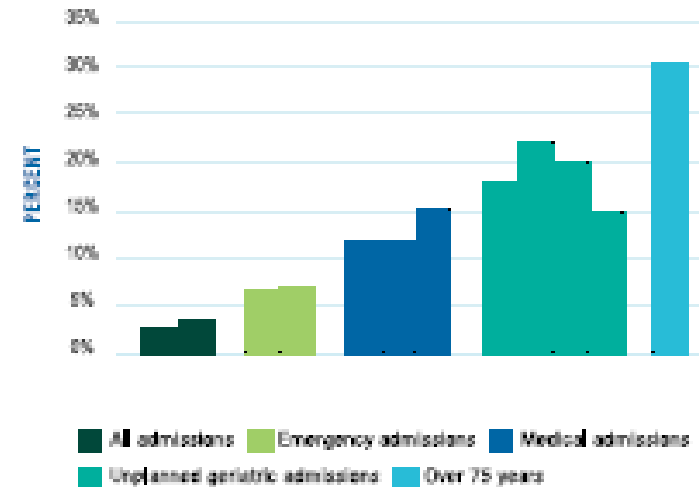
# Extent of medication problems

- Medication related admissions approx 2-3% <sup>3</sup>
- Approx 190,000 hospital admissions/year associated with medicines <sup>3</sup>
- Cost estimate \$660/year <sup>3</sup>

3 Roughead EE, Semple SJ **Medication safety in acute care in Australia: where are we now?. Part 1: a review of the extent and causes of medication problems 2002-2008** ANZ Health Policy 2009, 6:18

## The scale of medicine adverse events in Australia

Figure 4.1: Types of medication-related hospital admissions: results from Australian studies (each column represents a study) <sup>3</sup>



Windows into Safety and Quality in Health Care 2008



# Extent of medication problems

- Approx 50% are potentially preventable <sup>3</sup>
- Up to 30% admissions of patients >75 years are medication related <sup>3</sup>
- 74% oncology admissions associated with an adverse drug event <sup>3</sup>
- 5 fold increase in ADR associated admissions over 1981-2002<sup>3</sup>
- 5% patients on warfarin INR >5, 1% abnormal bleeding <sup>4</sup>

3 Roughead EE, Semple SJ **Medication safety in acute care in Australia: where are we now?. Part 1: a review of the extent and causes of medication problems 2002-2008** ANZ Health Policy 2009, 6:18

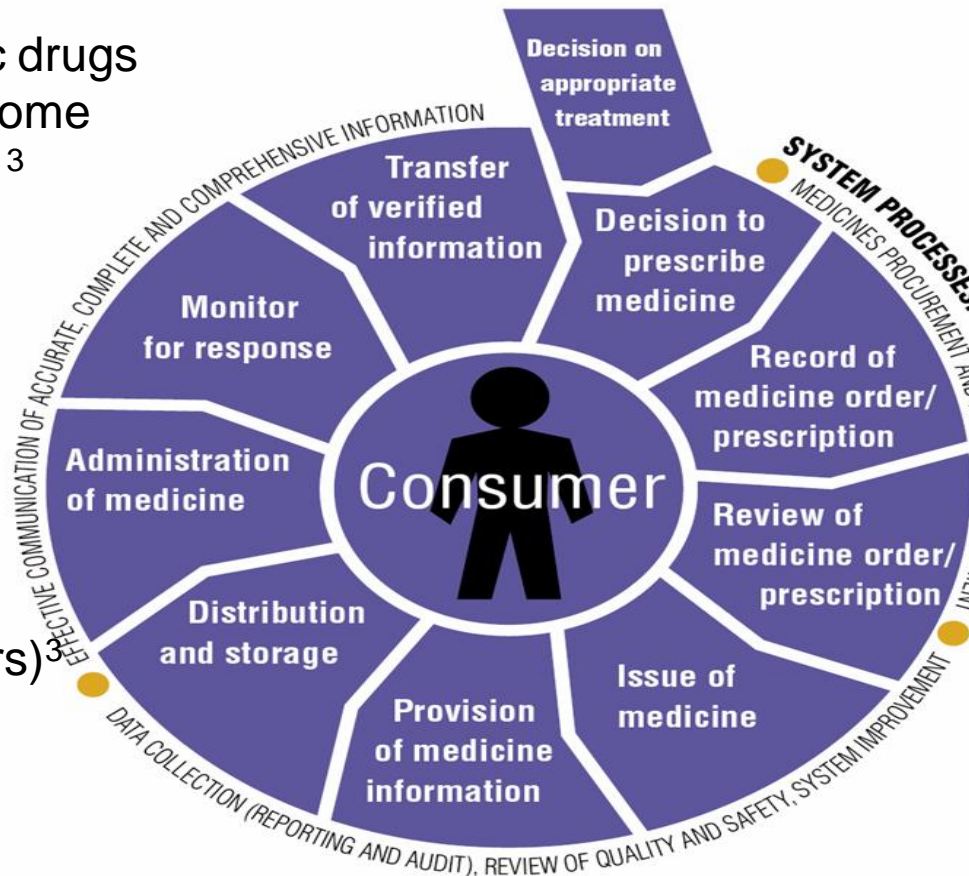
4. Runciman B, Roughead E et al **Adverse Drug Events and medication errors in Australia** Int J Qu 2003;15:i49-i59

# Extent of medication problems

## The medication management cycle

Psychotropic drugs  
41% no outcome  
documented<sup>3</sup>

2% – 5% drug  
charts  
contain prescribing  
errors<sup>1</sup>  
11.6% error rate  
with CPOE<sup>3</sup>



Pts with CrCl  
40ml/min  
45% scripts for  
renally excreted  
drugs inappropriate  
dose<sup>3</sup>

Administration  
errors rate  
5% - 18%<sup>1</sup>  
IV infusion errors  
18% (>75% rate errors)

# Causes of medication errors

## 21 prescribing errors by hospital interns

### Contributors

Environmental factors (Workload, skill mix)	90%
Team factors (Communication, supervision)	76%
Individual factors (knowledge and skills, motivation)	76%
Task factors (Med chart design, protocols, test results)	76%
Patient factors (pt condition, communication)	62%

5. Coombes ID, Stowasser DA, Coombes JA, Mitchell C. **Why do interns make prescribing errors in an Australian Hospital.** *Med J Aust.* 2008;188:89-94

# Causes of medication errors

## 29 medication errors

21 slips and lapses (Prescribing, dispensing, administration)

8 knowledge based (Prescribing)

### Contributors

Individual, team, patient and environmental

Inadequate knowledge

Difficulty accessing protocols or guidelines 23%

Difficulty accessing drug dosing information 23%

Unfamiliar drug 27%

Communication problems 30%

Unfamiliar with patient 31%

6 Nichols P et al **Learning from error: identifying contributory causes of medication errors in an Australian Hospital.** MJA 2008;188: 276-279

# Causes of medication errors

## Administration errors

### Contributing factors

- Interruptions <sup>7</sup>
- Poor communication<sup>7</sup>
- Environmental factors <sup>7,8</sup>
  - Stress, high workload

High level of knowledge protective against errors<sup>8</sup>

7. Deans C: **Medication errors and professional practice of nurses**. Collegian 2005;12:29-33

8. McKeon CM, Fogarty GJ, Hegney DG: **Organisational factors: impact on administration violations in rural nursing**. J Adv Nurs 2006;55:115-123

# National focus for medication safety and quality

## Medication Safety Program

- Medication Reference Group
- National Inpatient Medication Chart Oversight Committee
- Jurisdictional medication safety network
- Links into all health care settings through:
  - Inter-Jurisdictional Committee
  - Private Hospital Sector Committee
  - Primary Care Committee

# Priority areas for action

## Priority 1

Medication accuracy at transitions of care / medication reconciliation

### *Actions*

- WHO High 5s Medication Reconciliation Project
- National Medication Action Plan incorporating a standard medication history format and implementation resources
- Clinical Handover Program including medications

# Priority areas for action

## Priority 2

Lead identification and development of standardisation initiatives

### *Actions*

- Recommendations for user applied labelling of parenteral medicines, fluids and lines
- National terminology
- National Tallman standard
- Maintain existing standardisations (incl. NIMC VTE prophylaxis and specialist charts)

# Priority areas for action

## Priority 3

Develop a guidance document on the requirements for safe hospital e-medication management (EMM) systems

### *Actions*

- Specifying safe EMM systems guideline
- Implementing safe EMM systems guideline
- Guideline for a common EMM user interface

# Priority areas for action

## Priority 4

Develop additional standard medication charts

### *Actions*

- Residential aged care facility chart
- Community chart
- Hospital insulin charts
- Hospital IV fluid chart
- Mental health chart

# Priority areas for action

## Priority 5

Share lessons nationally through generation of alerts and bulletins

### *Actions*

- Development of standard taxonomy, terminology and format for medication safety alerts
- Act as a clearing house for alerts and other guidance
- Implement a process for identifying and developing national medication safety alerts

# Other activities

- Private Hospital VTE Prevention Program
- Anti-microbial Stewardship – book, checklist, MSSA
- National Warfarin Booklet
- Medication Safety Self Assessment
- National Medication Safety and Quality Standard (not just for hospitals)

# Other recommendations

- Extend Medication Safety Self Assessment to additional practice areas
- Agree priorities for addressing gaps in practice in quality use of medicines and safe medication practice, and monitor outcomes through the use of indicators
- National approach to medication incident and adverse event reporting

# The future?

- Single funding basis for medicines
- Monitoring patient outcomes (esp. in relation to gaps in practice)
- Economic evaluation of safety programs and cost consequence
- Primary care data
- Safe prescribing competency for prescribers (incl. non-medical prescribers)

# The future?

- Machine readable codes down to patient administration level
- Further standardisations including discharge summaries
- Set priorities for gaps in practice activity
- Respond to the unforeseen

# References

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19. Kelly M, Chandler S, Montgomery J, Thornton P, Verge m, Wilson S. How Safe is labeling of parenteral product and invasive parenteral lines in NSW public hospitals

# Australian Commission on Safety and Quality in Health Care

## Medication Safety Program

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