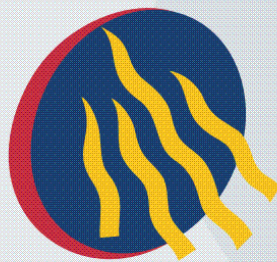


Integrating Information Technology to Improve Medication Safety

Jennie McKay, Arna Neilson, Christine Maclean
Safe Medication Practice Unit
Medication Services Queensland



Queensland Government

Queensland **Health**

Background

- APAC - *Guiding principles to achieve continuity in medication management*
 - “... will receive sufficient information, in a form they can use and understand to enable them to safely and effectively use medicines ...”
 - “...verified list of all the consumer’s medicines at the beginning of an episode of care and changes made during an episode of care.”

Background

- Discharge
 - ~20% patients have adverse event post discharge
 - ~70% related to medication
 - 95-98% ADEs occur in first 28 days post discharge
- 72% patients have changes to medications

- Omission of 1 medication from discharge summary \Rightarrow 2.3 x risk unplanned readmission
- Errors on discharge prescriptions 5-50%
- GPs not receiving discharge summaries
- Medication information in discharge summaries sub-optimal/inaccurate

Background

- Other issues
 - Timely communication
 - Aged Care Facilities
 - Community Pharmacies
 - Dose administration aids
 - Intra-hospital communication of medication issues

Background

- Potential Solutions
 - Structured medication history interview on admission
 - Medication Action Plan
 - Process for reconciliation on discharge
 - Pharmacists input to discharge summary
 - Information technology

Current Status Queensland Health

- Statewide dispensing system
- Statewide medication liaison system – eLMS
- Isolated installations
 - Discharge summary
 - Health records eg chronic disease
- No electronic prescribing system
- No unique patient identifier
- No provider directory

eLMS

Enterprise-wide Liaison Medication System

- ALL medications patient is taking (not just dispensed medications)
- “Snapshots” of medication information
 - Admission (or pre-admission)
 - Discharge
- Pharmacy driven
 - RNs in rural sites

Key features

- Web-based application
- Information available from dispensing system
 - Demographic information
 - Adverse drug event/allergy information automatically transferred
 - Medicines dispensed can be downloaded
- Medication information transferred from one episode of care to next
- Complementary medicines/alternative therapies
- Use of medicines eg dose administration aids



UR: 9326954

PRINCESS ALEXANDRA HOSPITAL TRAINING PHARMACY DEPARTMENT

Ward: W5A Medical & Ophthalmology

If you have any questions, please phone (07) 3240 2557 and ask for the pharmacy department.

DISCHARGE MEDICATION RECORD FOR PETER PAGE

Pharmacist: Jennie McKay

Date: Wednesday, 3 May 2006

Medicine Names	Brand Name	Used for	Directions	Daily Time Table				Changes
				Morning	Noon	Evening	Night	
Aspirin 100mg Tablets	Cardiprin 100	Prevent blood clotting	Take 1 tablet in the MORNING	1				Restarted
Insulin Neutral / Isophane 30/70, 3mL Pen	Mixtard 30/70 InnoLet	Treat diabetes	Use 10 units in the MORNING and Use 8 units in the EVENING with dinner	10 units		8 units		Changed - Decreased dose
Frusamide 40mg Tablets	Lasix Uremide	Remove excess fluid	Take 1 tablet in the MORNING	1				Unchanged
Temazepam 20mg Capsules	Temaze	Assist sleep	Take 1 capsule at NIGHT when required	Take 1 capsule at NIGHT when required				Unchanged
Oxycodone 5mg Tablets	Endone	Treat pain	Take 1 tablet FOUR times a day when required	Take 1 tablet FOUR times a day when required				New - Temporary

The following medicines were CEASED by your hospital doctor during your hospital visit:

<u>Date Ceased</u>	<u>Medicine</u>	<u>Brand Name</u>	<u>Explanation</u>
01/05/2006	Flucloxacillin 500mg Capsules	Flopen	no longer required

Allergies and Adverse Drug Events:

<u>Medicine</u>	<u>Reaction</u>	<u>Event Date</u>
Tramadol hydrochloride	vomiting	05/11/2003

Multiple Outputs

- Reports
 - Medication guides for patients (DMR)
 - Medication Profiles for other health providers
 - Letters to post or fax to community providers
 - Pre-Admission clinic documentation
 - Medication Action Plan
 - Home Medicine Administration Chart (RACF)
- HL7 messaging

Aim

- To improve medication safety and enhance transfer of accurate medication information through the integration of information technology (IT).

Three wishes...

1. Access to all medication lists for a patient
2. Improved quality of medication information in discharge summaries
3. Timely communication with GPs



Wish 1... Access to all medication lists for a patient

- Client Directory
 - Links various patient identifiers used across QH and provides a single source of demographic information
 - Intended to enable other specialised systems to present a single patient-centric view

Client Directory and eLMS

- eLMS “queries” Client Directory to identify records matching current patient
- Displays all eLMS records for a patient
- Automatic

Patient Details

UR Number:	492781
First Name:	Mary
Surname:	Directory
Sex:	F
DOB:	7/08/1962

Refreshed At - 3/03/2008 2:43:00 PM

General

Phone numbers

Health insurance

Languages

Community

UR Number	Title	Given Names	Surname
492781	Mrs	Mary	Directory

Address:

Sex:
 DOB: Age: 45

Postcode:

Country:

Episode of Care

Adverse Drug Event

Medical History

Medication Problems

Administration of Medicines

Recommendations Hx

Charts/Forms/Letters Hx

Communication Hx

New Episode	Site	OPD Date	PAC Date	Admission Date	Discharge Date	Other Date	
VIEW	PAH	MAP			6/09/2007		DELETE
VIEW	RBWH	MAP		27/08/2007	28/08/2007		DELETE

Open Charts, Forms and Letters

Close

Patient Details

UR Number:	492781
First Name:	Mary
Surname:	Directory
Sex:	F
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Refreshed At - 3/03/2008 2:43:00 PM

General

Phone numbers

Health insurance

Languages

Community

UR Number	Title	Given Names	Surname
492781	Mrs	Mary	Directory

Address: 100 Home Street
 Comfort

Postcode: 4001

Country: _____

Adverse Drug Event Detail - Microsoft Internet Explorer ...

Adverse Drug Event Detail

Medicine: Captopril
Reaction: swelling of face
Reaction Date: 01/01/2003
Date Entered: 27/08/2007

Episode of Care

Adverse Drug Event 

Medical History

Medication Problems

Administration of Medicines

Recommendations Hx

Charts/Forms/Letters Hx

Communication Hx

These Adverse Drug Events will appear on reports. Click Refresh to load new Adverse Drug Events from iPharmacy into eLMS.

These ADEs have been entered at another site(s). Please confirm the details, if appropriate add them to iPharmacy at your site, then refresh.

Medicine	Site
Captopril	RBWH

Outcomes

- Statewide view of patient medication lists
 - Read only access
- Significant benefits already
 - View allergies/ADRs recorded at other sites
 - Improve safety
 - View medicine lists from other sites
 - Improve safety
 - Can copy information from one site to another
 - Save data entry time

Wish 2...

Improved quality of medication information in discharge summaries

- Enterprise Discharge Summary (EDS)
 - Proposed statewide system
- Draws on existing IT resources:
- Various options for entry of discharge medication information:
 - ‘Free text’ entry by Medical Officer (MO)
 - Import discharge dispensing records (from iPharmacy)
 - Import Discharge Medication Record (DMR) (from eLMS database)

EDS and eLMS

- Discharge prescription written – reconciliation process
- eLMS profile created by pharmacists
- Available to EDS once authorised
- Work practice changes
 - When d/c prescription is written
 - Time taken to prepare

Discharge Summary Audit

- 250 bed public teaching hospital in QLD
- Retrospective audits (pre- and post-) of medical records for discharged medical patients
- Comprehensive review of available medication information
 - Correct name, dose and frequency of all medications to be continued on discharge
 - Documented alterations to pre-admission regimen (dose changes, new therapy, cessations)
- Previous discharge summary a Word template

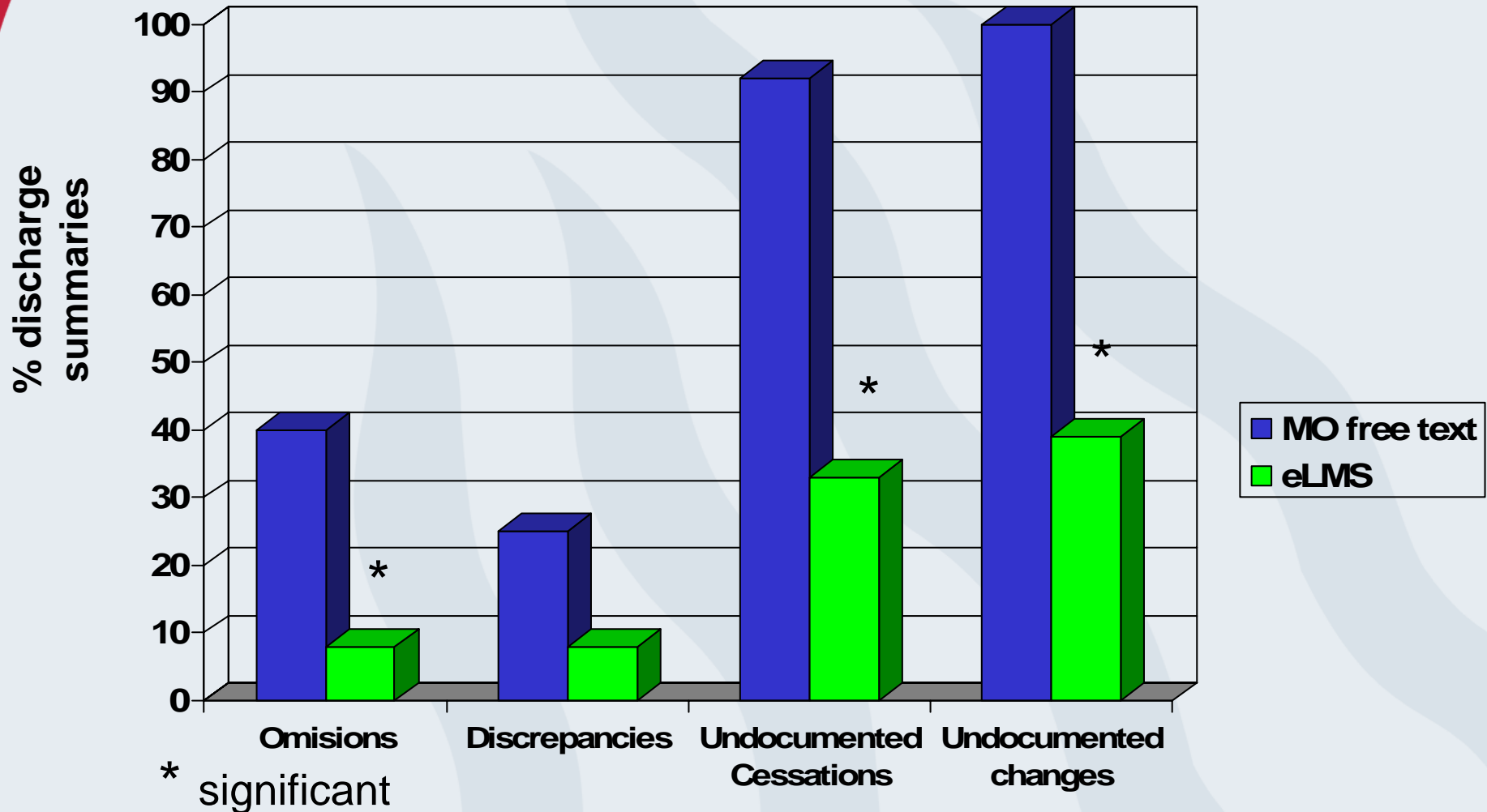
Results

- 97 eligible subjects audited:
 - Non-EDS (pre-audit) **n = 52**
 - EDS (post-audit) **n = 45**
- Study groups were generally well-matched with regard to factors which may influence discharge summary quality

Medication Information – All Sources

- EDS reduced frequency of summaries containing
 - Medication omissions (37% vs 54%)
 - Medication discrepancies (17% vs 39%)
- EDS showed no change in frequency of summaries containing
 - Undocumented ceased medications (68% vs 59%)
 - Undocumented changes (78% vs 71%)

Medication Information – Pharmacist Input via eLMS



Medication Information – Dispensing Records

- Using iPharmacy dispensing records increased frequency of:
 - Omissions
 - Undocumented Cessations
- Performed worse than eLMS information
 - Discrepancies
 - Undocumented changes

Wish 3... Secure messaging discharge medication information to GPs

- Limitations in GP Desktop software
 - Neither PDFs or HL7 message suitable
- “GP Connect”
 - QH Pathology secure messaging system
 - Convert eLMS HL7 message to different format
- Messages sent after “authorisation” in eLMS

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DISCHARGE MEDICATION INFORMATION

A Hospital Pharmacy Department

Discharge medication Information 28 June 07

Patient Name: Joe Bloggs

Date of Birth: 15/11/1935

Ur Number: 123456

Ward: Medical

ADVERSE DRUG EVENTS AND ALLERGIES:

Tramadol, nausea and vomiting, 01/04/2006

DISCHARGE MEDICATIONS

Aspirin (DBL) 100mg Tablets

Take 1 tablet in the MORNING with food

Prevent heart attacks and strokes

Unchanged

Simvastatin (Lipex) 40mg Tablets

Take 1 tablet at NIGHT

Lower cholesterol

Increased dose

Omeprazole (Maxor) 20mg Tablet

Take 1 tablet in the MORNING 30 minutes before breakfast

Treat reflux

New

MEDICATION CEASED DURING ADMISSION

Ranitidine (Zantac) 150mg, changed to omeprazole

For further information contact Jane Doe, Pharmacist, A Hospital Pharmacy, ph (07) 3344 0000

Evaluation

- Survey of GPs
 - Suitability of format
 - Technical issues
 - Clarity of information

Results

- N = 50
- No technical issues experienced
- 73% information arrived prior to patient presenting to surgery
- 23% using “pathology report” to send information was confusing
- 100% type of information was useful

Results

- 98% format readable
- 96% agreed it was an appropriate approach
- 31% wanted other information
 - Discharge diagnosis
 - Discharge summary
 - Reason for medication changes

Discussion

- Capturing GP details difficult
 - Provider directory
- Only can send to “connected” GPs
- Work practice
 - Changes/re-authorisation

Lessons Learnt

- Easiest implementation
 - Client directory - no work practice change
- Hardest implementation
 - Integration with EDS
 - Multidisciplinary work practice changes
 - Map entire process
 - Communication

Lessons learnt

- Quality of information
 - Concern re accuracy/currency of pharmacist prepared information
- Perceived importance of accuracy
 - Drs and pharmacists
- Users don't remember everything you tell them
 - Up-skilling/re-training
- Technology must assist clinical work
 - Clinicians not IT people

Conclusion

- Improve access to patient specific medication information
- Improve accuracy of information provided to GPs
- Improve timely delivery of discharge medication information to GPs