



# Medication reconciliation: successful models.....focusing on the front door....

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# What constitutes a successful model?

- Timely
  - Within 24 hours is fine for most admitted patients
    - » What about outpatient clinic visits or emergency dept presentations?
    - » Documentation must be available to those making therapeutic decisions in a timely manner
- Provided to all patients
  - Admitted patients
    - » What about outpatient clinic visits or ED presentations?
- Accurate and comprehensive
- Sustainable
  - » Not just for the duration of a project

# What are the challenges

- Can't rely on any one source in isolation
  - Patient
  - Patients' own medications, dose administration aids, lists
  - Community pharmacists
    - » An often under utilised resource
    - » Extended hours and retrievable, legible records
  - General practitioner
  - Specialists, Pathology Service etc.
- Can be a time consuming process!
- Sometimes need “best guess” and monitor



# Trying to work out what the patient was taking before presentation....

- Often difficult to obtain an accurate history upon presentation to hospital
  - Only 15% of elderly ED patients interviewed in an urban hospital could list their medication including dosages, frequencies and indications  
(Bartfield et al. Ann Emerg Med. 2002;39:605-8)
  - Up to 54% of patients had at least 1 discrepancy on admission. Most common error was omission (46%).  
(Cornish PL et al. Arch Int Med. 2005;165:424-9)
  - Correct medication history by ED doctors in only 12.5% cases  
(Cavin A, Sen B. Hospital Pharmacist. 2005;12:109-112)

# You can't rely on the GP referral letter in isolation....

- 358 patients presenting to 7 Australian EDs with GP referral letter
- 310 (86%) patients had  $\geq 1$  discrepancy pertaining to their regular medications
- Each letter had a mean of  $3.1 \pm 2.9$  regular and  $0.8 \pm 1.3$  as-needed medication discrepancies
  - Medications more likely to be omitted from hand-written letters ( $p < 0.001$ )
  - Medications not taken by the patient were more likely on typed letters ( $p < 0.001$ )
  - Often only list the medications the GP prescribes
    - » Warfarin, cardiac medications, psychiatry medications omitted

# Dose administration aids: You can't rely on the backing card....

Total number of discrepancies between backing card and medication history

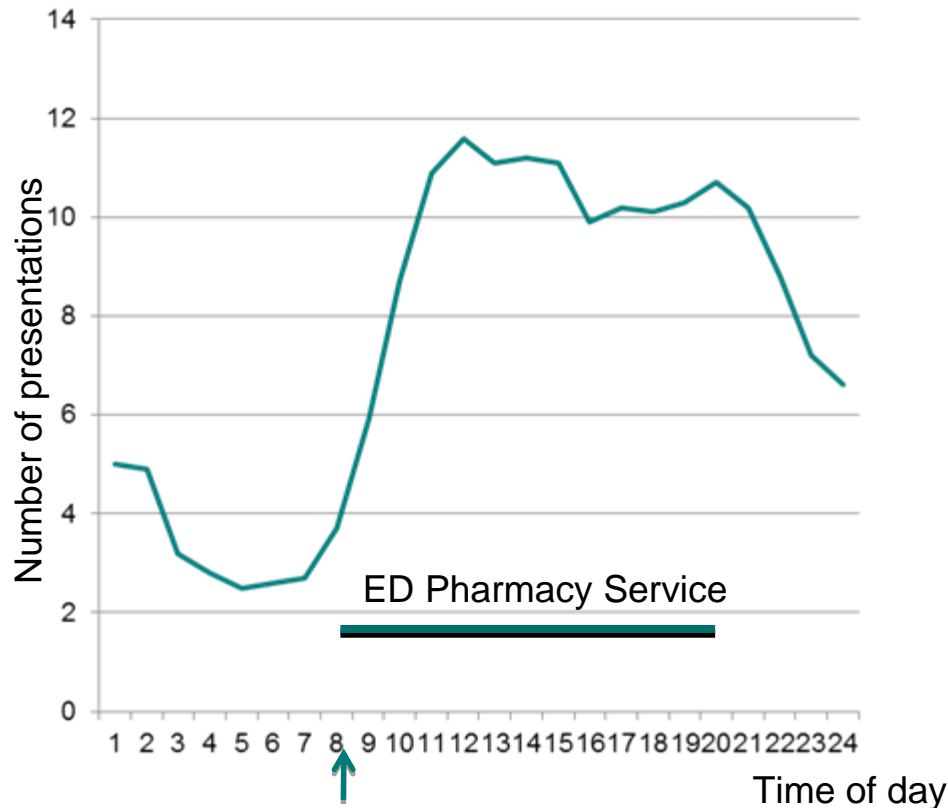
	High significance (%)	Total discrepancy rates (%)
History c.f. backing card All medications included	86/428 (20.1)	259/976 (26.5)
History c.f. backing card Excluding medications that do not fit into DAC*	70/411 (17.0)	123/804 (16.4)

These are the ones you miss if you just  
transcribe the backing card!

\* Patches, MDIs, eye drops, insulin

# What helps?

# Austin ED Clinical Pharmacy Project



- Clinical Pharmacy Service

- Mon-Thurs 8am-9pm
- Fri-Sat 8am-5pm
- 2 full-time pharmacists

- Extended hours

- Pharmacist is there when the medication charts are written
- Proactive service
- Aim to have medication history documented before admitting unit arrives
- Ward pharmacist focus on discharge



# Before and after ED pharmacy service at Austin: Appropriateness of admission medication chart

75% reduction in inaccuracies on admission medication regimens

	No. of ward pharmacist interventions* per 100 pts
Before ED pharmacy service	48.7
With ED pharmacy service	12.3

\* Intervention = ward pharmacist recommended to the prescriber a change to drug therapy and this recommendation was accepted.  $\chi^2$  test  $p < 0.0001$

## Similar outcomes at Frankston Hospital

	Control period n=56	Active period n=55	p-value
Mean number of errors per patient	1.6	0.5	<0.001
Mean number of errors/medication order	0.2	0.1	<0.001

“An ED pharmacist providing timely medication histories resulted in admitted patients more likely to receive an accurate medication chart early in their hospital stay”

# Get in early and start on the right regimen

- Compared frequency and significance of medication errors
  - pharmacists elicited medication histories in ED after medications had been prescribed by Drs
  - pharmacists obtaining and charting medication histories prior to Drs r/v

	Usual Care n=45	Pharmacist med charting n=29
% of patients with $\geq 1$ unintentional discrepancies	76%	3%
Mean number of missed doses per patient	2.4	0.2
Mean number of incorrect doses administered per patient	1.0	0

# What about elective admissions?

- Alfred Pre-admission Clinic
  - Compared patient-completed medication history with that obtained by pharmacist in clinic
  - Mean of 3.9 drug discrepancies per patient
    - » Majority were drugs omitted in error
- Geelong Hospital
  - Short stay surgical ward pharmacist and cardiothoracic pharmacist – see patients likely to go to their wards
  - Complete medication reconciliation form and medication chart
    - » pink warning sticker applied to administration section of medication chart

# Pre-admission clinic pharmacist - Alfred

**Alfred Health** ☐ The Alfred ☐ Caulfield Hospital ☐ Sandringham Hospital ☒ Pre-admission ☐ Inpatient

**MRP: PRE-ADMISSION TO DISCHARGE "MEDICATION RECONCILIATION FORM"**  
This form is to be completed by a pharmacist when reconciling/continuing medications at pre-admission and discharge or outpatient clinics. For inpatients, medications during admission are documented on the medication chart(s) (MR 31-50). All unresolved discrepancies in both inpatient and outpatient settings will be referred to an RMO for clarification and alteration. This form is for utilisation by all clinical staff and to assist with medication counselling at discharge.

This form is accurate for the current clinic/initial admission of the patient to hospital. Medications may change during the admission/clinic visit and patient notes or primary care providers should be referred to.

Number of Forms ☐ of ☐

Patient Details:  
Interview date: 9/10/09  
Discharge Pharmacist (if Page):  
DRUG: NEDA  
REACTION: none  
Ward: ACU  
Joe Bloggs  
Allergy identification label here  
UR III 3333

Entered in ☐ Elective Surgeon ☐ Post Medical II

Current (all drug names) including: Simvastatin, Aspirin, Rosuvastatin, Ramipril

PAC Pharmacist Data source Codes: Reconciliation eg: This form is to assist

**MEDICATION RECORD**  
☒ Nil known ☐ Unknown  
ALLERGIES & ADVERSE REACTIONS (ADR)  
Drug (or other) Reaction/Type/Date Initials  
NEDA  
Date: 9/10/09 Prescriber: J. Selvanayagam Date: 9/10/09

**REGULAR MEDICATIONS**  
YEAR: 20 ADMINISTRATION DATE AND MONTH: 09/10/09  
PRESCRIBERS MUST ENTER ADMINISTRATION TIMES

Medication (Print Generic Name)	Route	Dose	Frequency	Enter Time
<b>VTE Prophylaxis</b>				
<b>SIMVASTATIN</b>	PO	40mg	once	08
<b>ASPIRIN</b>	PO	100mg	mane	08
<b>METOPROLOL XR</b>	PO	95mg	mane	08
<b>RAMIPRIL</b>	PO	10mg	mane	08

**ATTENTION:**  
This chart has been written by a pharmacist on (Page 1)  
It includes all of the patient's usual medications.  
**DO NOT ADMINISTER MEDICATIONS** until orders have been reviewed and signed by a doctor.

MRP ☐ Pages: Clinical Pharmacist Review:

- 25% of patients have changes to their medication regimen between PAC attendance and admission.
- Not unexpected considering the time between PAC attendance and admission
  - 1-6 months
- Still critical for admitting clinical pharmacists to review surgical patients medications on admission to the ward.

# Is it okay just to focus on in-patient care?

- Lets consider a common scenario...
  - he presented to ED, but similar scenarios happen in clinic....
- Italian speaking man presented to ED with shortness of breath.
  - Reviewed by cardiology team, diagnosed with congestive heart failure
  - Plan:
    - » Discharge home on frusemide 40mg and perindopril 2.5mg daily
    - » BUT, he was taking frusemide 80mg mane and 40 mg midday and perindopril 5mg amongst other medications prior to coming to ED

- Have we done this man a service?
- We have beautifully diagnosed him with an exacerbation of his heart failure and approximately halved his heart failure therapy!
- He was not admitted this time, but could have soon needed admission

# Outpatient clinics

- Range of examples in many hospitals
  - Austin – Drug dependence, HITH, Aged care, Haematology
  - Alfred – Disease management unit, heart failure, infectious diseases, respiratory, BMT
  - Geelong – Diabetes, Smoking cessation
- These pharmacists assist with medication histories, facilitate handover on admission, other clinical pharmacy activities

# Our patients don't only present during office hours on weekdays...the Alfred Hospital approach

- Weekend staffing
  - One senior clinical pharmacist and three clinical pharmacists (and an on-call pharmacist from 12 noon onwards)
  - One pharmacist rostered to the Emergency Department (ED)
  - Prior to the weekend, the senior clinical pharmacist must divide the wards/clinical areas between the four clinical pharmacists.
- Outcomes
  - Approx 80% of new admissions have a pharmacist completed MRF within 24 hours



# Prioritising weekend clinical tasks, Alfred Hospital

## 1. Discharges are first priority

- however, if there are no discharge scripts written in the morning, use this time to complete new admissions

## 2. Issues handed over by weekday pharmacists on weekend handover

## 3. New admissions (MRFs) – prioritise by:

- age (e.g. >75 yrs)
- on multiple medications (e.g. transplant, renal, etc)
- problems identified on drug chart by nursing staff or dispensary staff (e.g. ambiguous orders, doses missing on chart, etc)
- length of stay (i.e. admitted on Friday vs. Sunday)

# So if pharmacists do it so well, why don't they do all the medication histories/reconciliation?

- Last month an average of 191 patients presented each day to the Austin ED
  - We currently have one pharmacist in ED 8am-8pm Mon-Thurs and 8am-5pm Fri and Sat
- There are at least 12 preadmission clinics held each week throughout Austin Health
- There are over 100 outpatient clinics each week
- Need to be targeted

## Also, it can be mind-numbing to do all day!

- “I have initially been approaching my full-time ED position with the view that I must see and reconcile as many patients as I can. This is quite a draining and unfulfilling task to be performing constantly and a lot of pressure for one person to take on in the long-term...”

» New Emergency Medicine pharmacist

# Why do pharmacists do it well?

- They are meticulous (maybe pedantic) by nature – partly
- They have a broad product knowledge – partly
- They can speak the patient's language when it comes to medicines – partly
  - So what colour is your OxyContin? A pink tablet. Ahh...20mg
- They do it heaps – partly
- They are focused on the medications – **LARGELY**
  - Don't have to read the X-ray, draw the blood for the Troponin at 2pm, answer the buzzer in cubicle 2, convince the in-patient unit to take the patient.....

# So what are the solutions?

- Increased pharmacist presence at the front doors to the hospital
  - Hospital pharmacy it is no longer an office hours job
- Pharmacy technicians doing the “leg work”
- Capacity building other craft groups to assist
  - Prescribers need to take some responsibility, but are time strapped
- Medication misadventure/discrepancy risk screening tool needed
  - Assist pharmacists in targeting the non-admitted patients
- Increase patient awareness of their role
  - TABLETS and Austin Paramedic POM projects

# Getting pharmacy technicians involved

- Strengths
  - Good product knowledge
  - Know what medications look like – can speak the patient's language
  - Close working relationship with the pharmacists – facilitates referral
  - Many are keen to expand their role
- Challenges – these are surmountable....
  - Training and credentialing
    - » Communication with patients, other health professionals
    - » Limited knowledge of therapeutics
  - Clearly defining the scope of practice
    - » are not permitted to advise on issues that require clinical judgement,
    - » what about obtaining medication list from a GP/community pharmacist
      - Fax versus transcribing over the telephone

# Not a new concept internationally...or locally

- International experience
  - UK
  - Dutch
  - Canadian
- National experience
  - La Trobe Regional Hospital, Vic
  - Royal Perth Hospital, WA

# Pharmacy technicians – UK experience

- Example from Darent Valley Hospital
  - Dartford and Gravesham NHS Trust
    - » Process
      - Technician compiles medication history from at least 2 sources
        - Document medication regimen and sources used on specific section of in-patient medication chart
      - Ward pharmacist performs the reconciliation
    - » Scope
      - Complex and simple wards
    - » Training
      - Complex: Medicines Management technicians
        - Additional work-based course, portfolio, patient counselling exam
      - Others receive in-house training with head technician



# Pharmacy technicians assisting with medication history taking – LaTrobe Regional Hospital experience

- Setting
  - 257 bed Victoria regional tertiary hospital
- Process
  - Technicians identify new admissions, photocopy the med chart
  - Undertake a standard interview – laminated card of questions
  - Document history on photocopy, Medicare/pension no, supplies at home
  - If patient asks a clinical question (e.g. What is this medication for?)
    - » Technician explains to the patient that a pharmacist will see them to answer their questions and completes a referral slip to give to the pharmacist
  - Medications into Green Patient's Own Medications bag, label, bring to pharmacy
  - Clinical Pharmacist completes the Medication Reconciliation Form
- Training/credentialing
  - In-house training only
    - » Buddy up with another tech who has been performing the role

# Pharmacy technicians - challenges

- Pharmacy Board Guidelines (Victoria 2010)
  - Duties: “....assist in delivery of clinical pharmacy services not involving professional pharmaceutical judgement.”
  - Training: “...completion of an approved course in clerical and administrative components of clinical pharmacy services.”
- Training and credentialing
  - What training is available?
  - Mainly “in-house”

# Improving doctor/nurse/allied health obtained histories

St Vincents Hospital Sydney name badge card:  
Susie Welch

## MEDICATION HISTORY TIPS

### Every Patient

- Check tablets, medication list/pack or scripts
- GP letter or Ambo report (always crosscheck)

### Patient lives at home

- **Ask the carer** – ask them to bring pt's tablets
- **Ring GP** – ask pt for their name or check old notes for name and contact details
- **Ring Community Pharmacist (CP)**
  - o Name/phone No. on tablet bottles
  - o Look on patients repeat scripts

### Patient lives in Hostel / Nursing Home

- **Consult** transfer sheet (Note: Be careful – check dates / names and whether ceased)
- **Contact** nursing home, hostel (or CP) directly to confirm medications

### Don't forget

- eye drops - inhalers and puffers
- creams - OTC (herbals & vitamins)

### STILL NO LUCK !?!

- Treat the admitting condition
- Document what you have tried
- Document "medication history to be confirmed" on (1) Chart (2) Notes

ADR Allergies – record drug, reaction & when occurred in chart and notes

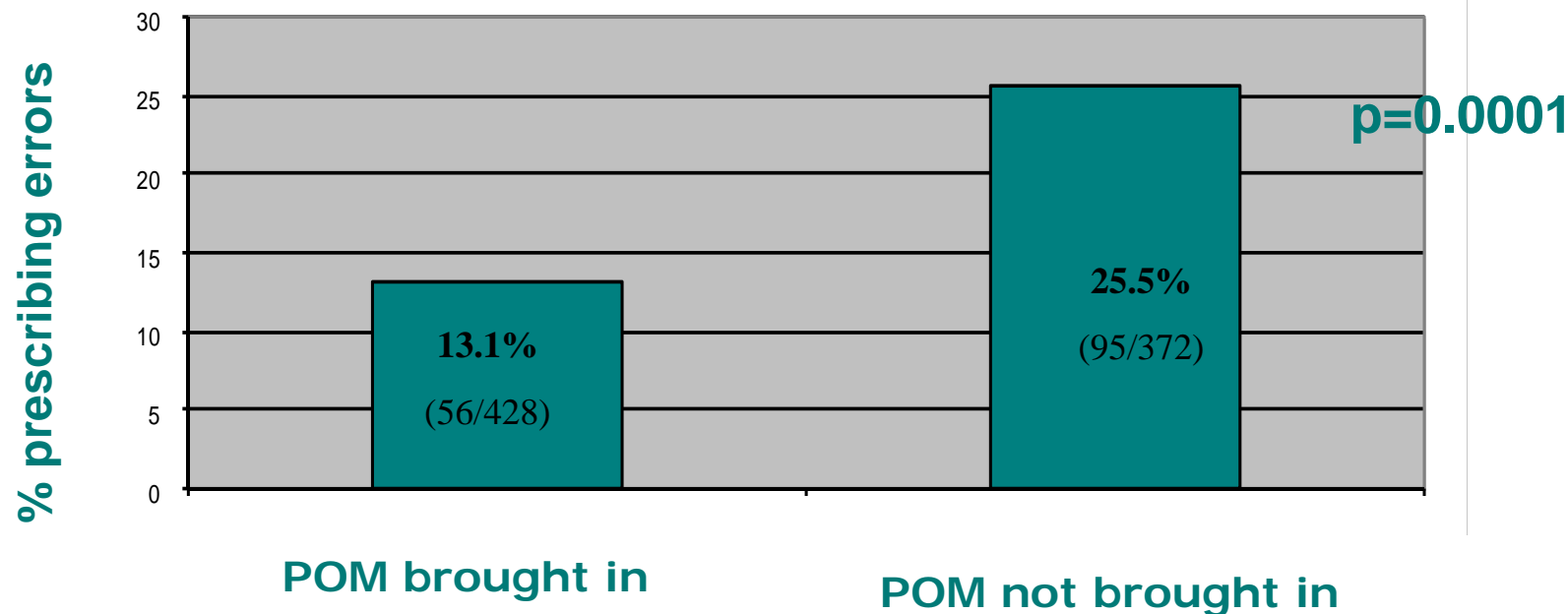
- ED Orientation/Education programs
  - Provided by many ED pharmacists
- Having medical interns spend a rotation with a clinical pharmacist
- Nurse in-services
  - ED, outpatient clinics, pre-admission clinics
- Care coordination team members
- Mechanism to refer on the complex/time consuming cases
  - e.g. To a pharmacist

# Risk screening – medication misadventure and medication discrepancies

- Risk factors include:
  - More than 4 regular medications
  - Patient unable to explain what they take
  - Living home alone
  - Using a dose administration aid
  - Having multiple prescribers
  - High risk medications e.g. Warfarin, cardiovascular meds, diabetes meds
  - High risk comorbidities e.g. Parkinson's disease, diabetes (esp on insulin)
  - etc etc.
- Identify patients who need to be seen by pharmacist vs those who the other professionals do a pretty good job with
- Validation
- Potential model:
  - High risk
    - » MUST be seen by pharmacist
  - Moderate risk
    - » seen by a pharmacy technician and brief review/check by pharmacist
  - Low risk
    - » doctor/nurse/allied health practitioner should be able to document history and hospital prescriber reconcile this

# Get patients to bring their medications in....

## Comparison of own meds *brought in* & *not brought in by ambulance*



**When patients own medications (POM) were brought into the ED, this approximately halved the number of prescribing errors on admission medication charts**

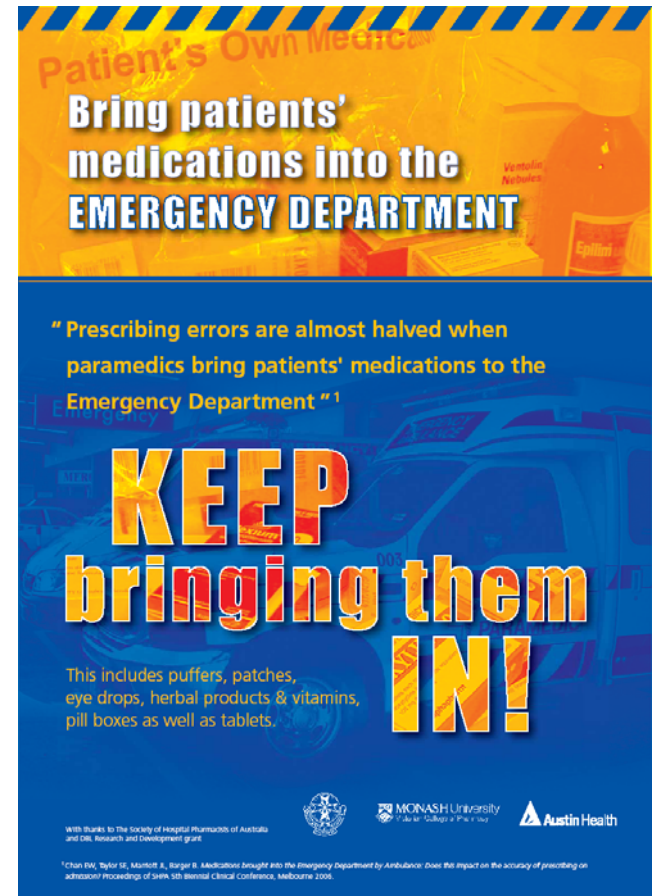
# Methods

## Design

- Quantitative prescribing error assessment study

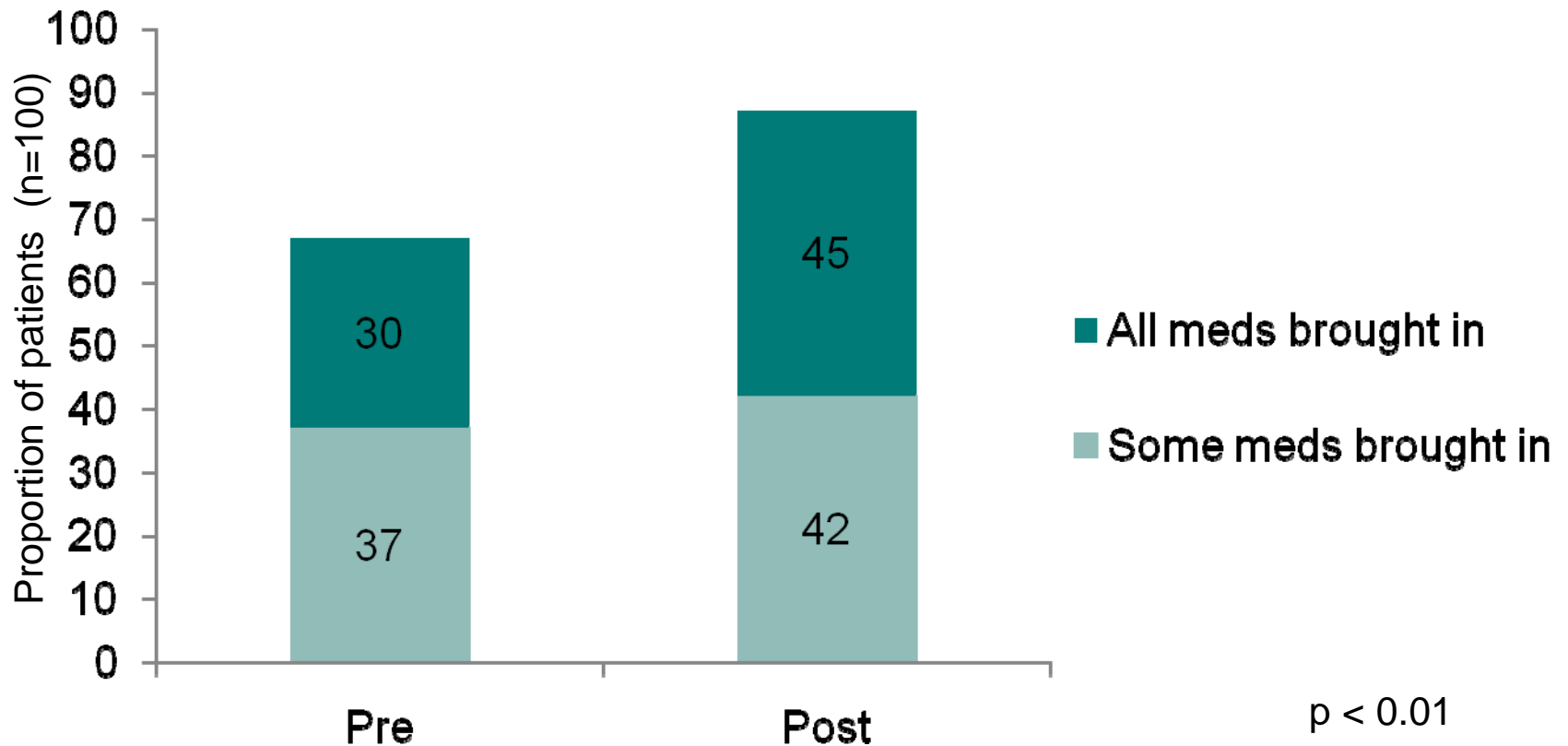
## Intervention

- ED pharmacist met with Ambulance team managers
  - » Discussed pre-intervention data
- Promotional posters
- Other promotion – intranet, VACIS tablets, bulletins etc
- Survey of barriers to paramedics bringing medications to ED



# Outcomes:

Proportion of patients whose own medications were brought to the Emergency Department by ambulance



# Next steps

- Green “Patient’s Own Medication” bags now readily available in all Victorian ambulances and most emergency departments
  - Still some work to ensure they are used as intended!
- A note about the red bags “Ward transfer – in-patient medication”
  - For internal transfer of medications with the patient, for use in hospital
  - Green = “Go” – these medications can go home with the patient
  - Red = “Stop” – these medications must remain in hospital
    - » Not fully labelled, includes injections for hospital use only etc.
- Available Sterling Fildes ~\$118/500 bags



# Electronic solutions are unlikely to be the complete answer for the future....

- Likely to be a valuable adjunct
- “Rubbish in, rubbish out”
- Will still need to interview the patient and carers
  - What is actually done versus what is prescribed/dispensed

# So do we need to talk to the patient?

- Compared medication reconciliation on discharge from hospital with and without talking to the patient
  - Without: used electronic records (mainly community pharmacy)
  - “Pharmaceutical consultant”<sup>\*</sup> spoke with patient
- Conclusion:
  - Patient information is essential, especially to identify medication handling/management issues

Medication Reconciliation Interventions per Patient				
Intervention type	Without taking to pt	With talking to pt	Diff b/w groups	p value
Rx related – correct discrepancy	1.34	1.88	0.54	0.000
Rx related - optimization	1.31	1.78	0.47	0.000
Pt med handling - improve	0.02	1.62	1.60	0.000
Total	2.66	5.28	2.62	0.000

# Until now we have largely talked about the front door.....

- Similar reconciliation processes are just as important on discharge from hospital or any other interface of care
- If PBS prescriptions are taken to community pharmacies
  - Can this review still take place?
  - A case for having the medications dispensed in hospital, after pharmacist has reconciled the discharge prescription

# Conclusions

- Can be a complex, time-consuming process
  - No “quick fix”
  - Essential to verify information from multiple sources
- Need to consider all of the front doors to the hospital
- Goal?
  - Pharmacists see all in-patients – with pharmacy technician assistance
  - Outpatients/ED – risk screening tool to target pharmacist input
- Other professionals must also assist and take responsibility
- Patients to bring medications and lists to every medical encounter
- Don't just reconcile the medications
  - Take the opportunity to review their appropriateness