

# Med Wreck to Med Rec

How medication reconciliation can (should)  
change your practice !

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# Med Wreck



# Clarity

Goal: Reduce drug related adverse events

A better communication process

“It takes me too long to write orders *that way*”

“There must be a better way”

“We want ONE LIST of medications that is up to date and accurate”

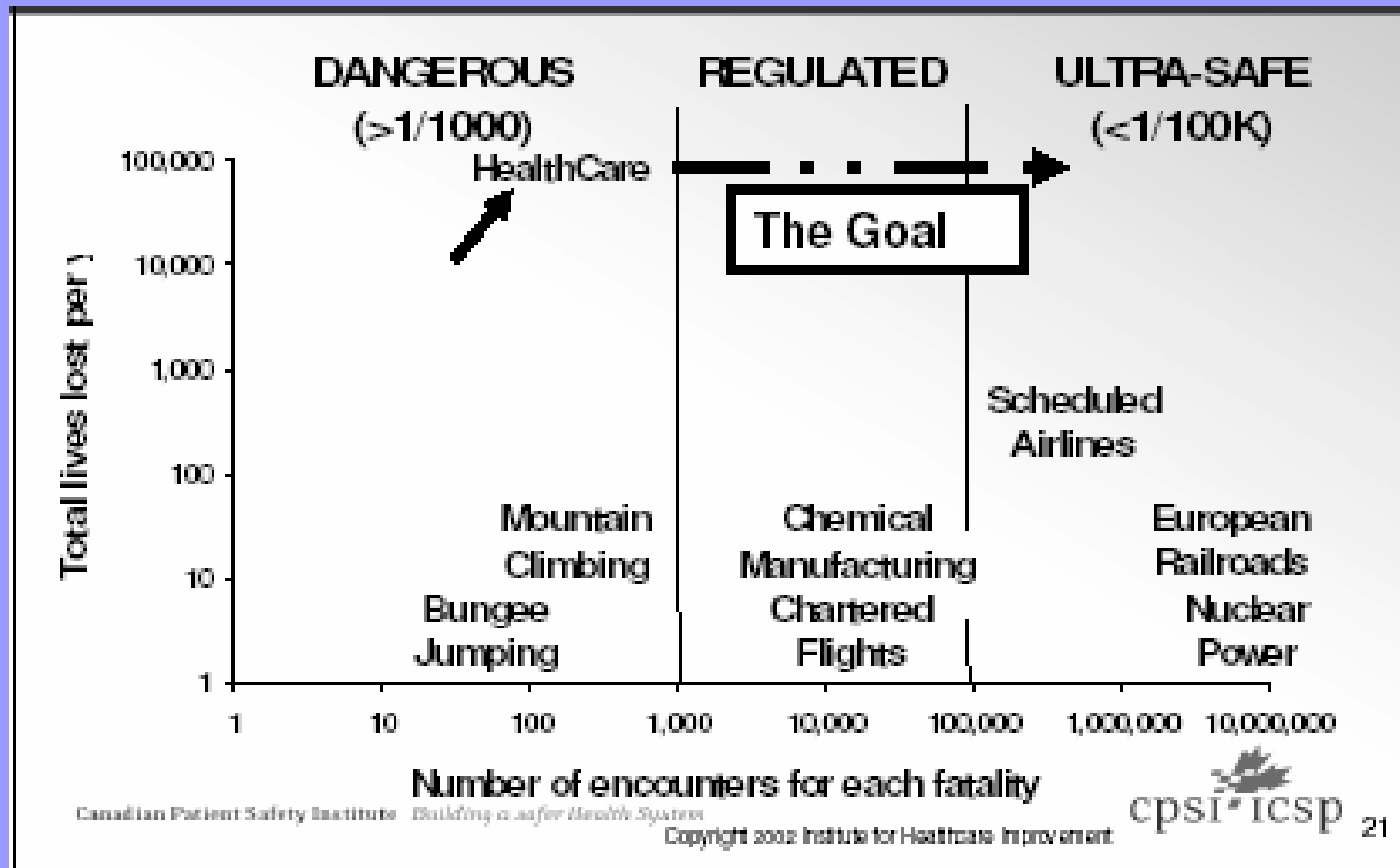
“I spend too much time clarifying orders!!”

“It would be nice to have a clear set of orders”



# How hazardous is health care?

(Leape)



# Canadian experience

Canadian Adverse Events Study (Hospital settings)

- Incidence of 7.5% in hospitals (2000)
- 9,000-24,000 preventable AE deaths in Canada (2000)
- Baker, R & Norton P et al (2004)
- 70,000 preventable adverse events (est.)
- One in 9 acquire infection in hospital
- One in 9 given wrong medication
- More deaths occur due to adverse events than from breast cancer, vehicle accidents and HIV

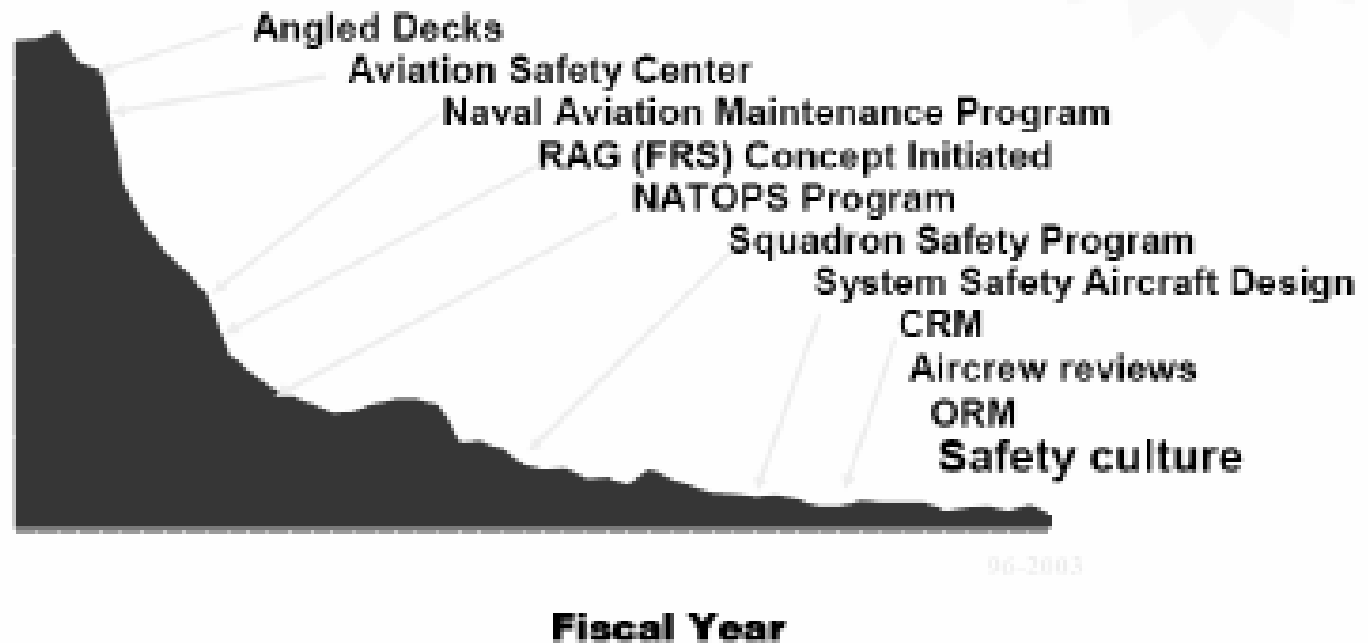


# Naval Aviation Class A Flight Mishap Rate

776 aircraft  
destroyed in  
1954

FY50-03

24 aircraft  
destroyed in  
FY03-  
all in flight  
mishaps



# What is patient safety?

- **Identification and control of things** that could cause harm or injury to patients/residents
- **Prevention of harm or injury** to patients/residents
- About providing a **safe environment** in which to deliver care.



# Background

CPSI has evolved from numerous patient safety events:

- The “Quality in Australian Health Care Study” 1995
- US Institute of Medicine “To Err is Human” 1999
- British “An organization with a memory” NHS 2000
- National steering committee on patient safety “Building a safer system” 2002
- Creation of Canadian Patient Safety Institute 2003
- Safer Health Care Now (Med Rec) 2005



## What We Already Know

	AE Rate	Preventable	Drug
NY 1984	3.7%	n/a	19%
Utah/Col 1992	2.9%	n/a	19%
Australia 1992	16.6%	51%	11%
NZ 1998	13.1%	37%	12%
UK 1999	10.8%	48%	14%
Canada 2004	7.5%	37%	24%

## Adverse drug events

- Adverse drug events (ADEs) = adverse events where the injury is attributable to a medication
- ADEs occur in up to 6.5% of hospitalized patients and account for almost one-fifth of all adverse patient events
- Depending on the definition and seriousness of the error, estimates of the overall rate per dose vary from less than 1% to almost 20%



# Admission Problems Persist

- 1402 patients admitted to 3 Toronto ICUs
  - 33% had at least one chronic pre admission medication unintentionally discontinued at discharge
    - Allopurinol, L thyroxine, statin, antiplatelet/anticoagulant, regular bronchodilators, or acid suppression therapy
- J Gen Int Med 2006;21(9): 937-941

## Continuity of Care

- Gaps in the continuity of patient care have been identified as a major area for improvement in patient safety
- Community → Hospital → Community may be a factor affecting issues such as medication continuity and unintentional medication discontinuation



## Summary: What We Know

- Poor documentation common
  - Many undocumented intentional discrepancies
  - Unnecessary rework and confusion
- Errors (Unintentional discrepancies) common
  - About 50% of complex medical patients have at least one error at time of admission
- Errors (Unintentional discrepancies) are important
  - About 1/3 are clinically important
  - They carry on through to discharge



# Patients at greatest risk for adverse drug events

- > 3 concurrent disease states
- Drug regimen changes >3 times in last 12 months
- >4 medications in present regimen
- >11 doses per day
- History of non-adherence

= the average renal patient



# Medication Reconciliation

- What it is
- What it isn't
- Definitions
- Why it is so important
- Current state
- Future state

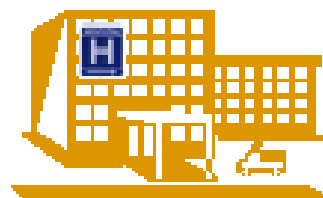


# Medication Reconciliation

## Guiding Principle

Ultimately, the goal is to develop a process which provides an accurate list that can be used for medication orders by all healthcare providers as patients are admitted, transferred through the institution, and eventually discharged.





**Medication  
Reconciliation  
Across the  
Continuum of Care**



**Medication Reconciliation** is “a process designed to prevent medication errors at patient transition points. It is a three-step process entailing:

1. Creating the most complete and accurate list possible of all home medication for each patient,
2. Using that list when writing medication orders, and
3. Comparing the list against the physician’s admission, transfer, and/or discharge orders, identifying and bringing any discrepancies to the attention of the physician and, if appropriate, making changes to the orders.



# Medication Reconciliation



## **PATIENT SAFETY AREA: COMMUNICATION**

### **GOAL:**

- Improve the effectiveness and coordination of communication among care/service providers and with the recipients of care/service across the continuum

### **Required organizational practices:**

- Inform and educate patients/clients about their role in patient safety (written and verbal communication) Employ effective mechanism for transfer of information at interface points
- Implement verification processes and other checking systems for high-risk care/service activities
- Reconcile the patient's/client's medications upon admission to the organization and with the involvement of the patient/client
- Reconcile medications with the patient/client's medications to the next provider of service



# Evidence from the literature



# *Patients with Unintentional Discrepancies*

*From Selected Canadian Studies*

- Admission\*
  - ~50% patients Gen Med  
(Cornish P, *Arch Int Med* 2005;165:424)
  - ~40% patients Elective Surgery  
(Kwan Y. *Arch Intern Med* 2007; 167:1034-1040 . )
- Internal Transfer\*
  - ~ 60% patients (Lee J , [abstract] *CJHP* 2008; 61(suppl 1) : 62)
- Discharge\*
  - ~ 40% patients (Wong J. [abstract] *Pharmacother* 2006;26:106)

**\*Many of these discrepancies  
are clinically significant**



# General Medicine Hospital Admission : Unintended Medication Discrepancies

Cornish P et al. *Arch Intern Med* 2005;165:424-429

- 151 patients
  - At least 4 regular prescriptions, admitted to teaching hospital
- 53.6% of patients at least 1 unintended discrepancy
  - [95% CI 45.7%-61.6%]
  - 46.4% of errors – omitted medication
  - Patient Impact : 38.6% had the potential to cause moderate to severe discomfort or clinical deterioration



# Clinical Assessment of Post-Operative Medication Discrepancies Related to Home Medications

*Kwan Y . Arch Intern Med 2007; 167:1034-1040 .*

- Potential to prevent clinically significant harm (potential to cause patient discomfort and/or clinical deterioration if unresolved)
- Reduction from 3.0/ 10 patients (standard of care) to 1.3/ 10 patients (intervention)



# Characteristics of Post-Operative Medication Discrepancies Related to Home Medications

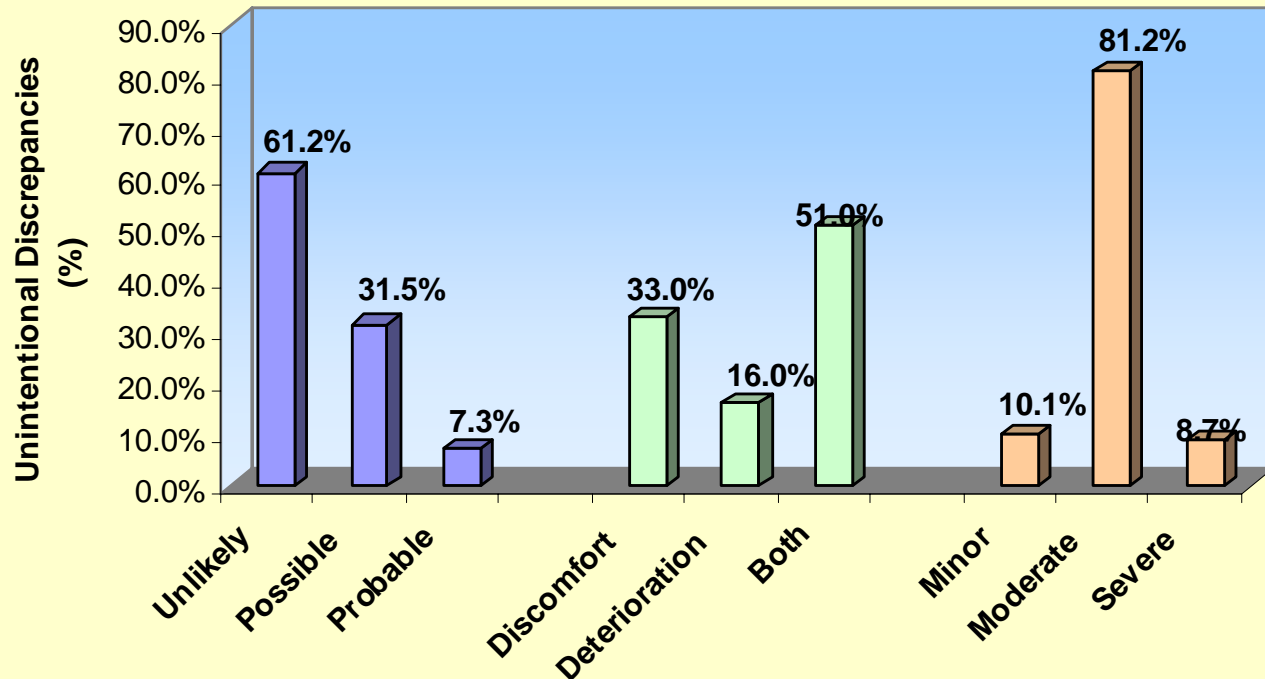
*Kwan Y . Arch Intern Med 2007; 167:1034-1040 .*

- Top categories of discrepancies in standard care arm :
  - Omission of a home medication
  - Order written as “pharmacy to clarify home meds”
  - Incorrect dose
  - Incorrect formulation



# Are these unintentional discrepancies clinically significant?

Lee J , [abstract] CJHP 2008; 61(suppl 1) : 62



Probability of Patient  
Discomfort and/or  
Clinical Deterioration  
(n = 178)

Impact of Discrepancies  
(Possible or Probable Only)  
(n = 69)

Severity of Impact  
(Possible or Probable Only)  
(n = 69)



# Does Medication Reconciliation Improve Patient Outcome

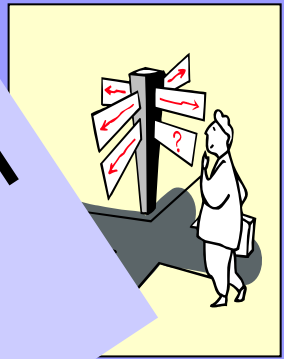
- Other emerging evidence
  - 2007: Large US observational study
    - statistically significant association between pharmacist-led admission medication reconciliation and reduced mortality (*Journal of Clinical Pharmacotherapy* 2007; 27(4):481)
  - Systematic Review- Interventions by clinical pharmacists actually improve outcomes in hospitalized patients
    - “reconciling medications” 1 of 5 proven interventions
- ( Kaboli et al. *Arch Intern Med* 2006;166:955-964)



# Discharge - evidence from the literature



# Does Medication Reconciliation Improve Patient Outcomes?



- Without med rec, patients are more than twice as likely to be readmitted (14.3% vs 6.8%)  
(Coleman et al. *Arch Intern Med* 2006;166:565-571)

- Med Rec significantly reduces adverse drug events 30% after discharge (11% vs 1%)  
(P < .01)  
(Shaffer et al. *Arch Intern Med* 2006;166:565-571)

# Best Possible Medication History (BPMH) in Hemodialysis Patients by a Pharmacy Technician

## Investigators:

Marianna Leung, PharmD

Joanne Jung, BScPharm

Wynnie Lau, BScPharm Candidate 2010

Bev Jung, MD

Mercedeh Kiaii, MD

# Background

- High risk for adverse drug events in hemodialysis (HD) pts
  - 113 drug record discrepancies over 5 mos identified (Manley et al Pharmacother 2003;23:231-9)
  - Discrepancies occurred in 60% of HD pts
  - Pts at risk for adverse drug reactions 49.6%; dosing errors 34.5%
- Med reconciliation crucial but requires significant healthcare resources

# Med Reconciliation Survey

Renal Programs: SK (1); ON (2); NL (2)

Population	HD (n=5)	CKD (n=2)	PD (n=1)
Size	30-330	400-600	70
Frequency	Q6wks to q6mos	Q1-4 mos (each clinic visit)	
By whom	RNs + Rx's	RNs	RNs

- Pharmacists are consulted for recently discharged, noncompliant, or complex pts

# Objectives

## *Primary Objective:*

- To demonstrate that pharmacy technicians have the skills to conduct interviews with HD pts to obtain BPMH

## *Secondary Objectives:*

- To tabulate number and types of discrepancies identified
- To tabulate number and types of drug related problems identified
- To determine time commitment and associated costs of pharmacy technician

# Method

- *Design:*
  - Prospective, interventional
- *Study Time Period:*
  - May 2008 – August 2008
- *Training:*
  - 2-week training in May 2008
    - ❖ methodology for taking BPMH was taught
    - ❖ observed medication histories by pharmacist
    - ❖ completed medication histories under the direct supervision of a pharmacist

# Method

- ***Inclusion Criteria:***

- Pts at St. Paul's Hospital in-centre hemodialysis unit
- English or Cantonese speaking pts

- ***Exclusion Criteria:***

- Pts who require an interpreter
- Pts or caregivers who are unable to participate in an in-person interview

# Outcome Variables

- ***Primary Outcome Variables:***
  - Agreement between technician and pharmacists in discrepancies identified
- ***Secondary Outcome Variables:***
  - # undocumented intentional and unintentional discrepancies identified
  - # drug related problems identified
  - Time and costs of pharmacy technician associated with BPMH

# Results

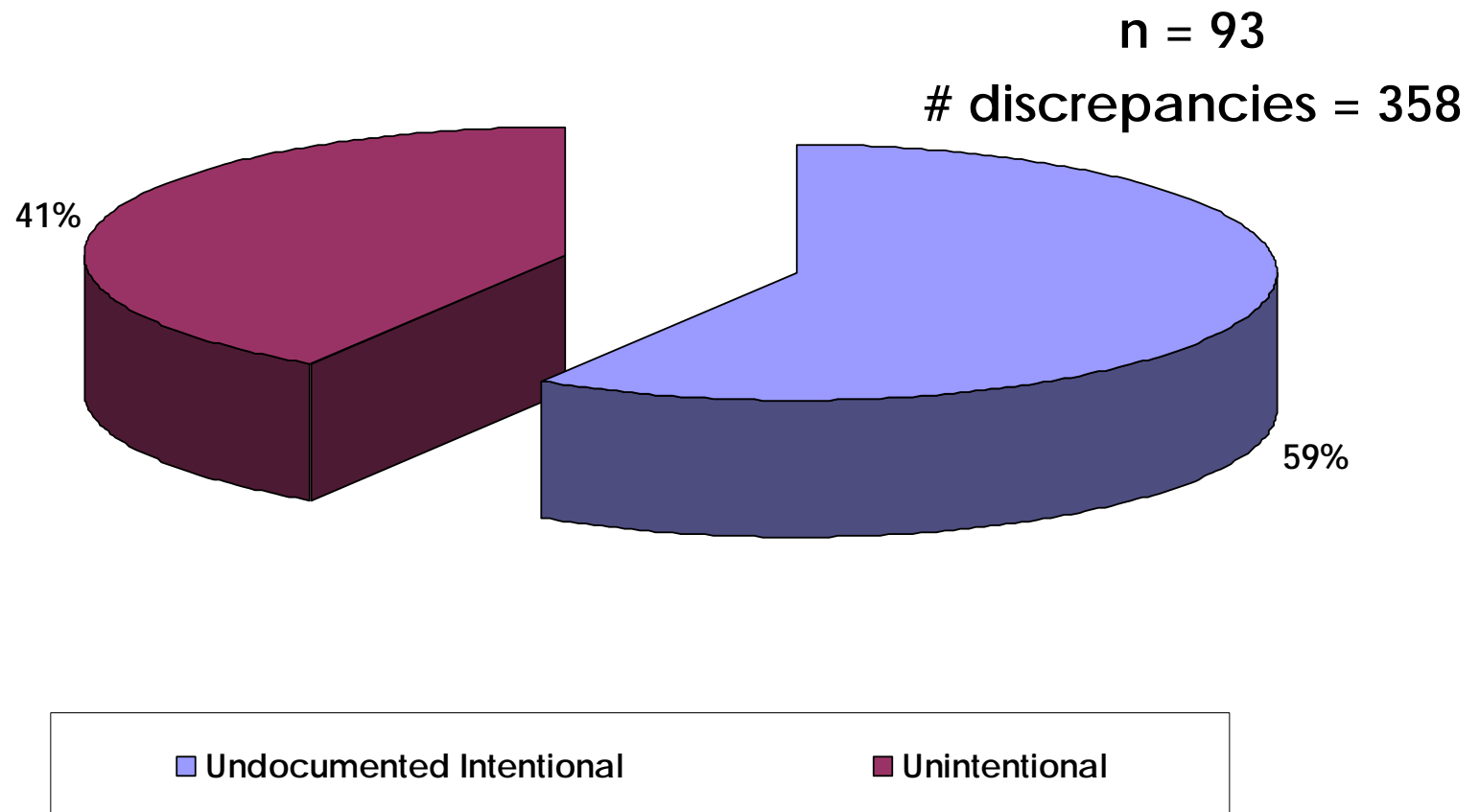
<b>n = 99</b>		<b>Mean (range)</b>
Mean Age (years)		67 (19-96)
% Male		56%
Time since last med review (days)		158 (7-359)
No. of meds/pt		13.5 (5-23)
<b>n = 93 (minus new pts)</b>		
No. of meds added/pt		1.5(0-9)
No. of meds stopped/pt		1.4 (0-8)
Total # of med discrepancies		358
No. of med discrepancies/pt		3.9 (0-12)

# Results

- Disagreement between technician & pharmacists
  - 15 med orders (1.1%)
- Average time per interview:
  - 17 minutes (10-40 minutes)
- Costs of Technician time: \$22.81 per hr

# Results

## Discrepancies Identified

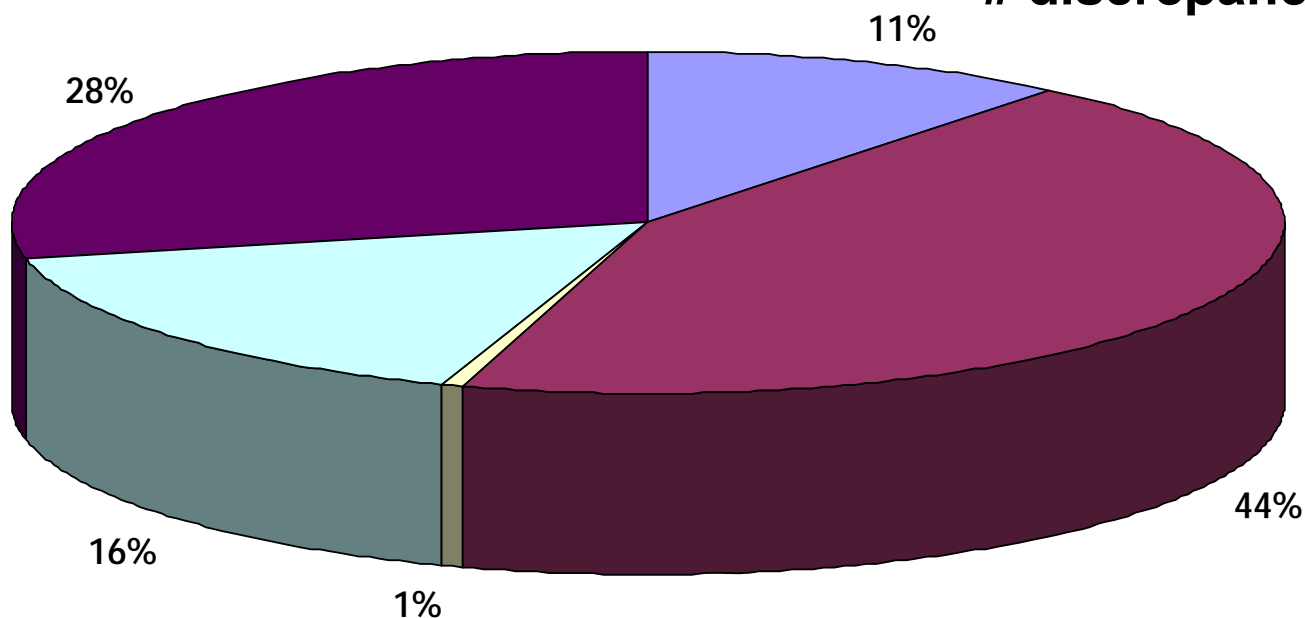


# Results

## Unintentional Discrepancies

n = 93

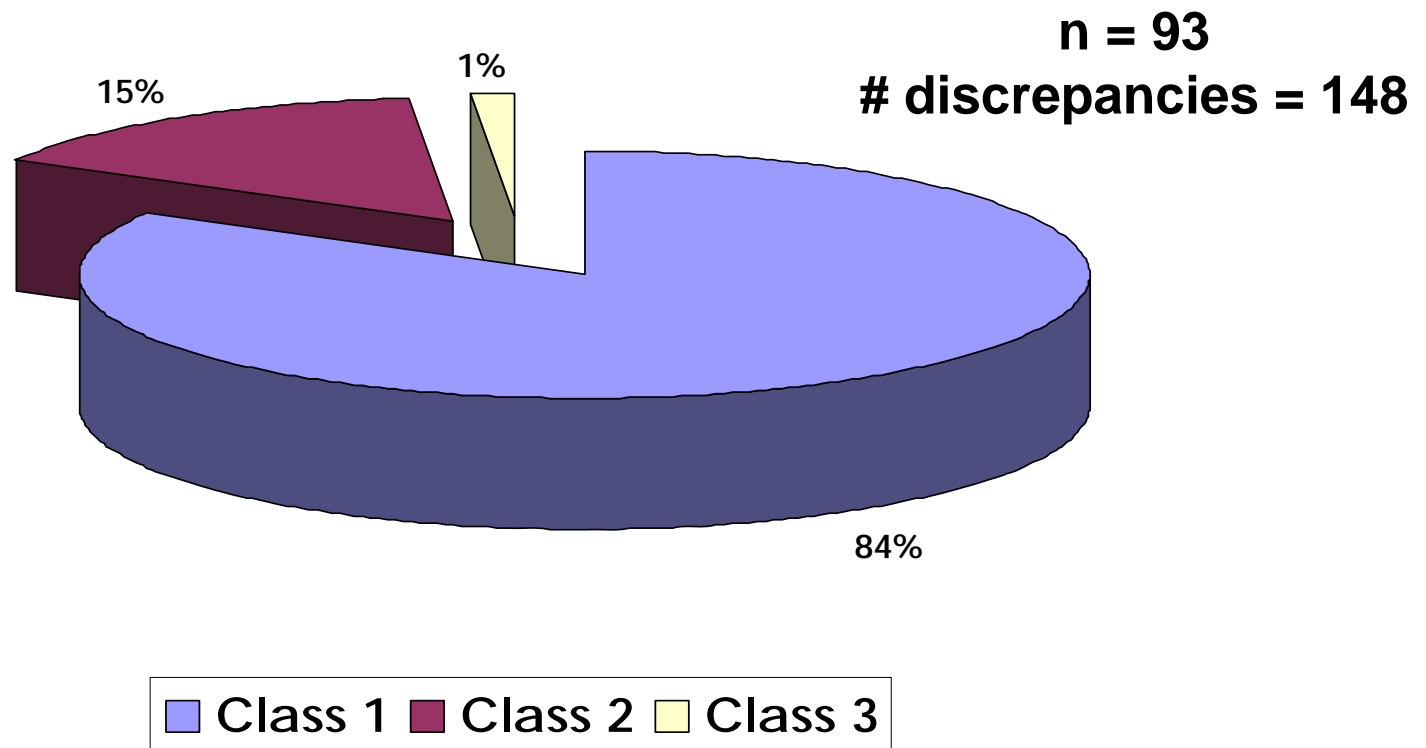
# discrepancies = 148



■ Omission ■ Comission ■ Wrong Drug ■ Wrong Dose ■ Wrong Frequency

# Results

## Significance of Unintentional Discrepancies



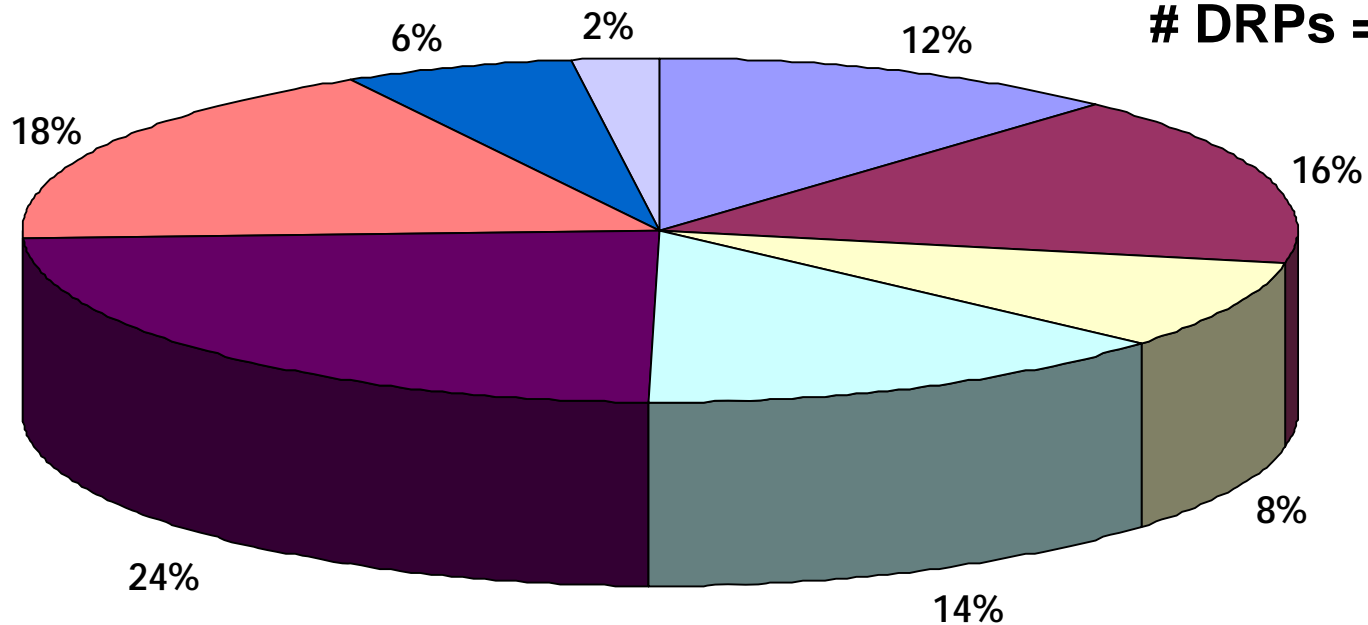
Class 1 = unlikely to cause; Class 2 = moderate; Class 3 = severe patient discomfort or clinical deterioration

# Results

## Type of Drug Related Problems (DRPs)

n = 99

# DRPs = 135



No indication	No drug	Wrong drug	Too little drug
Too much drug	Not taking as prescribed	ADRs	Drug interaction

# Limitations

- Small sample size
- Non-comparative study design
- Study conducted over the summer; results could have differed if conducted by regular staff

# Conclusions

- Pharmacy technician is capable of interviewing patients to provide BPMH
  - Comfort level of pharmacists to delegate authority
  - Extra funding for technician
- A number of drug record discrepancies identified
- BPMH by technician is a useful tool to identify drug related problems

# Medication reconciliation across the continuum of renal care The Vancouver Island Experience

Dan Martinusen BSc(Pharm), ACPR, PharmD  
Chair, BCPRA Pharmacy & Formulary Committee



# Results

# Patients	# orders reviewed	Undocumented Intentional Discrepancies	Unintentional discrepancies
119	2414	531	261
Per patient	20.3	4.5	2.2

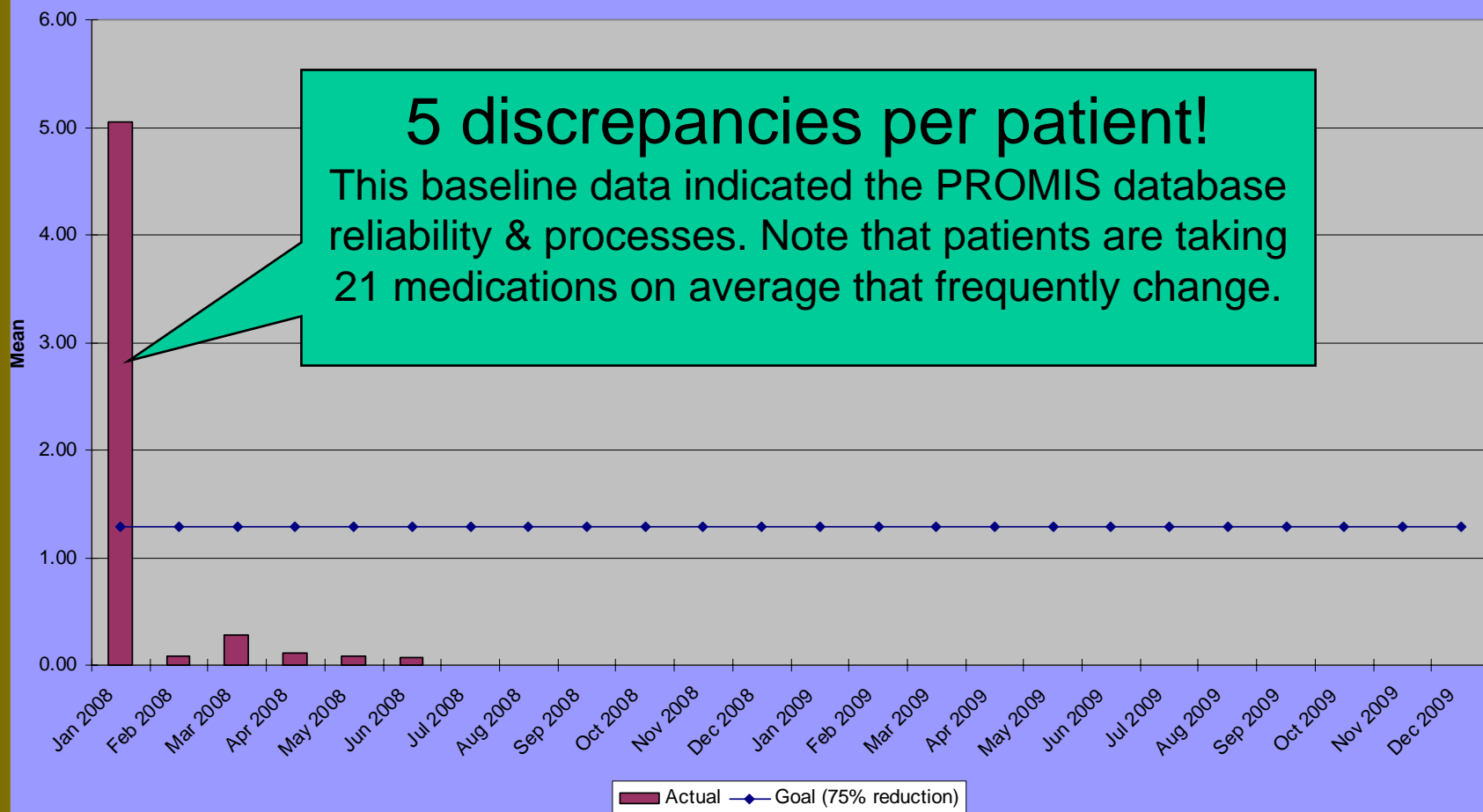


Jan – Aug 08



# Results

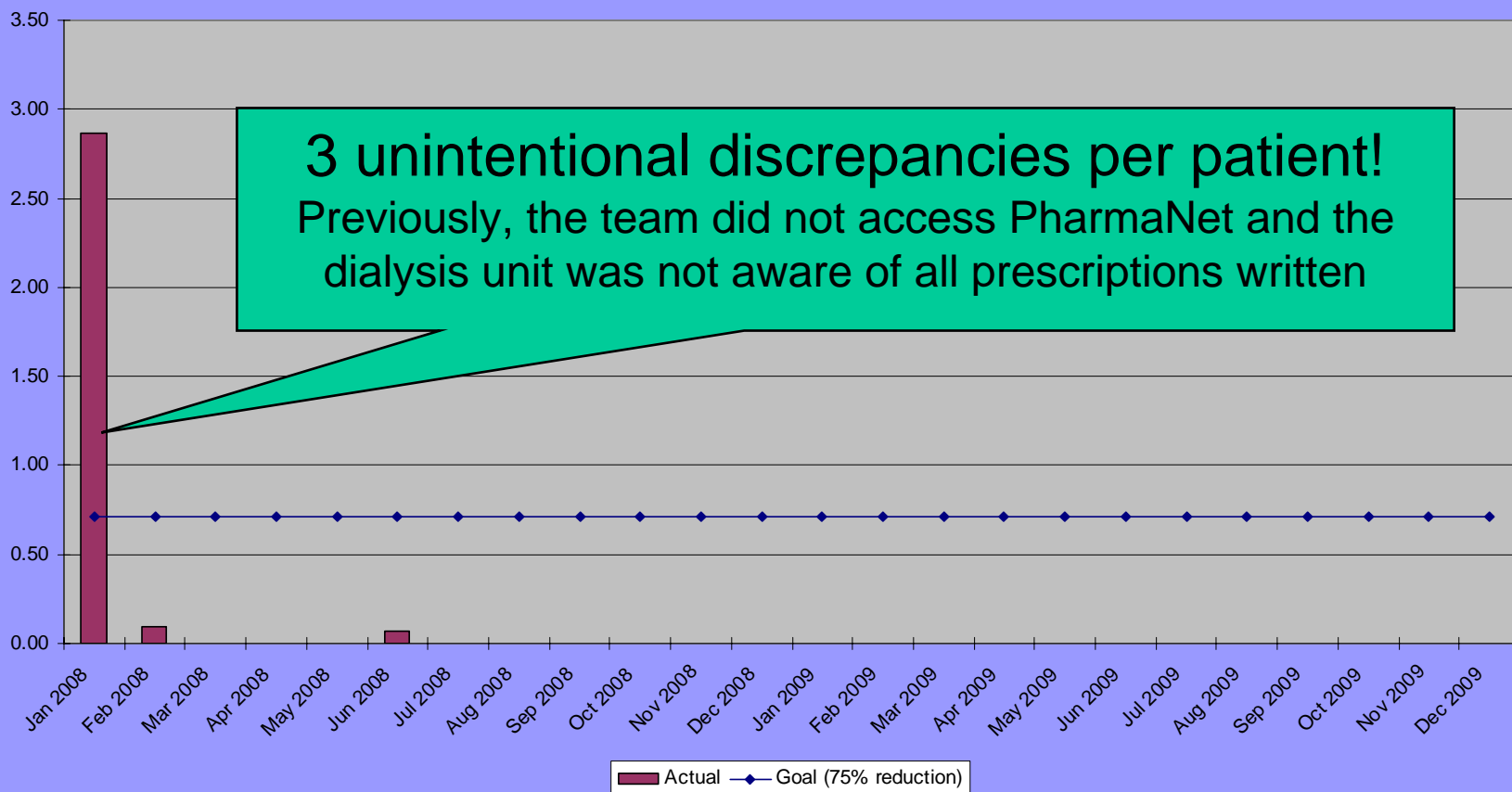
Average undocumented intentional medication discrepancies





# Results

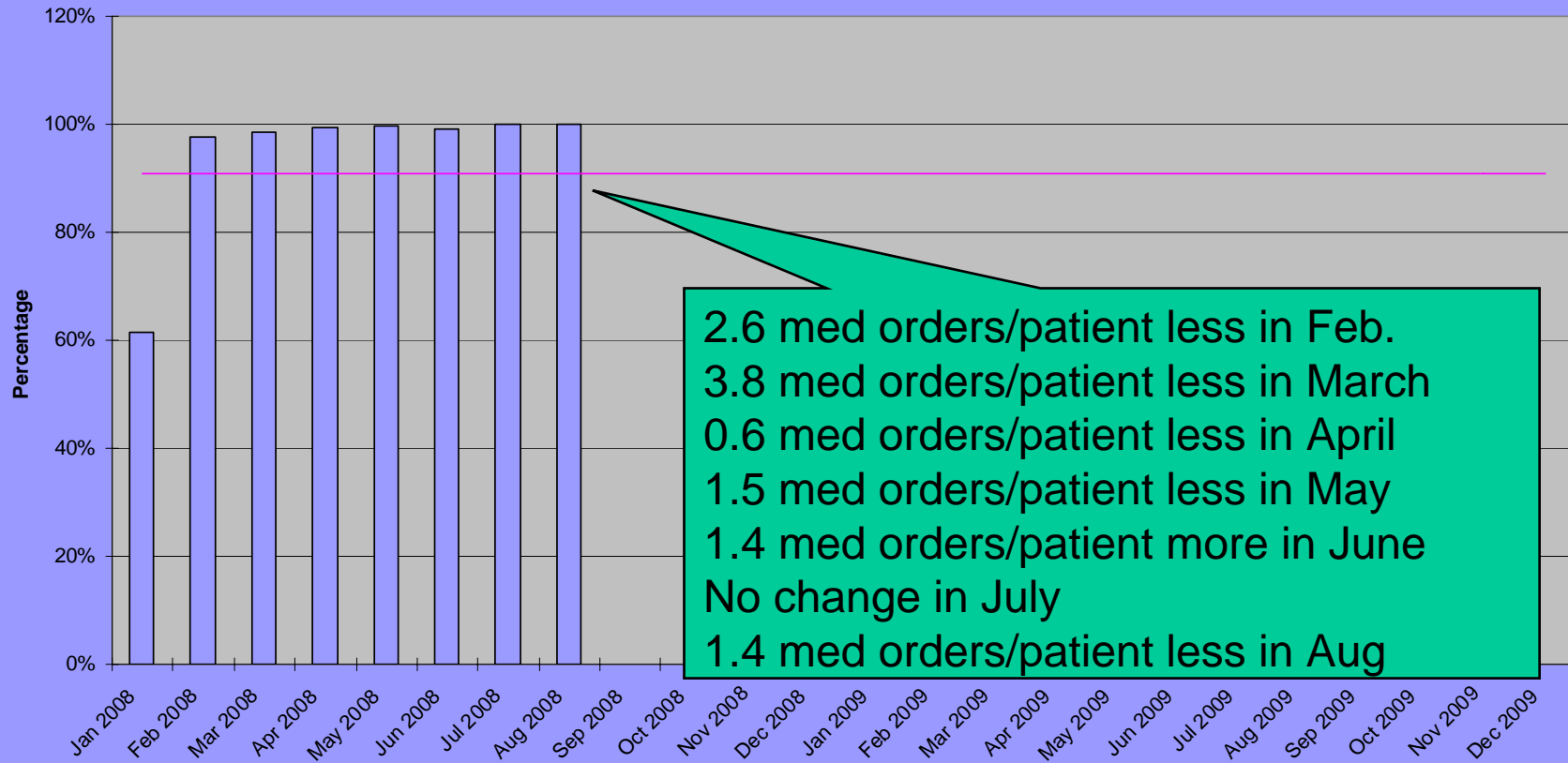
Average unintentional medication discrepancies





# Results

## Medication Reconciliation Success Index





Early medication reconciliation – too much handwriting!



PATIENT JARRE - BUSTER PACKED FROM STEROPS - PRESUME HE IS TAKING BUSTER PACKS (BUT A HISTORY OF NON ADHERANCE)

Individual BPMH Record and Audit Tool

Implementation Stage: ☒ Baseline ☐ Early implementation ☐ Full implementation

Patient Sample: RJH In-center dialysis unit

PHYSICIAN INSTRUCTIONS:

- Review the medication history and indicate by placing a ✓ for all Type 2 and Type 3 discrepancies and whether they were resolved by placing a ✓ in the "Resolved" column.
- Write the order clarification on the Physician Order Form in the hemodialysis chart
- All additional medications found during the medication history are noted under "ADDITIONAL" at the end of the list

Complete satisfaction with this patient's medication reconciliation on a scale of 1-10 here  Date: 1/11/08

Best Possible Medication History (BPMH)				Discrepancy					Potential DRP #	Discrepancy Comments
Medication	Dose	Route	Frequency	0	1	2	3			
ACETAMINOPHEN	500mg	PO	CHOCKUP PAIN	✓						
TYLENOL #3	1-2 TABS	PO	PAIN HOOKUP PAIN	✓						
ALFACALCIDOL	5mcg	PO	ONCE WEEKLY	✓						
AMLODIPINE	5mg	PO	BID (AMODIPINE)	✓						
CALCIUM ACETATE	667mg	PO	TID CC	✓						
DARBEF.	50mcg	IV	WEEKLY	✓					NEED BOMCY WAX 1/1/08	
GRAVOL	25mg	IV	PAIN RELIEF	✓						
GRAVOL	500-100mg	PO	" "	✓						
DOMPRIKONE	10mg	PO	TID AC	✓						
ASA 81mg	1	PO	DAILY	✓						
GABAPENTIN	100mg	PO	AM	✓						
"	300mg	PO	Q PRNS			✓				
FERALECIT	250mg	IV	MONTHLY	✓					125mg IV 9 MONTH (Feb 20)	
PENTOXIFYLLINE	400mg	PO	BID	✓						
RANITIDINE	150mg	PO	DAILY	✓						
REPLAXITE	1 TAB	PO	DAILY	✓						
ZINC GLUCONATE	50mg	PO	WEEKLY	✓						
TRIMOLZ/LATANOPROST	1 gtt	Q EYE	DAILY			✓	✓			
BROMOPHENIRAMINE 0.2%	1 gtt	Q EYE	BID			✓	✓			
LORAZEPAM	0.5mg	SL	PRE-HD.	✓						
COMBIVENT	2 PUFF	PO	BID				✓		IN PHONES - NOT TAKING	
SALBUTAMOL	2 PUFF	PO	BID PRN				✓		" " " "	
LOXAPROPRAMINE	5mg									

BPMH Discrepancy Total 17 3 5

MURPHY'S  
NAPROXEN  
METAMUCIL

Type 0= No discrepancy - there is no discrepancy between physician orders and best possible medication history  
Type 1= Intentional discrepancy - physician has made an intentional choice to add, change or discontinue a medication and is clearly documented.  
Type 2= Undocumented Intentional Discrepancy - physician has made an intentional choice to add, change or discontinue a medication but this choice is not clearly documented.  
Type 3= Unintentional Discrepancy - physician unintentionally changed, added or omitted a medication the patient was taking prior to admission.

(EAL PHONES - NOT TAKING)



# Desired outcomes

- The new reports prove to be easy to use, reliable and effective communication tools.
- The new process is implemented widely
- Improved communication processes & forms to ensure accurate medication profiles
- Improved communication processes to ensure medication accuracy (dispensing, administration)
- Improved prescribing practices
- In summary, clarity in communication and process regarding medications

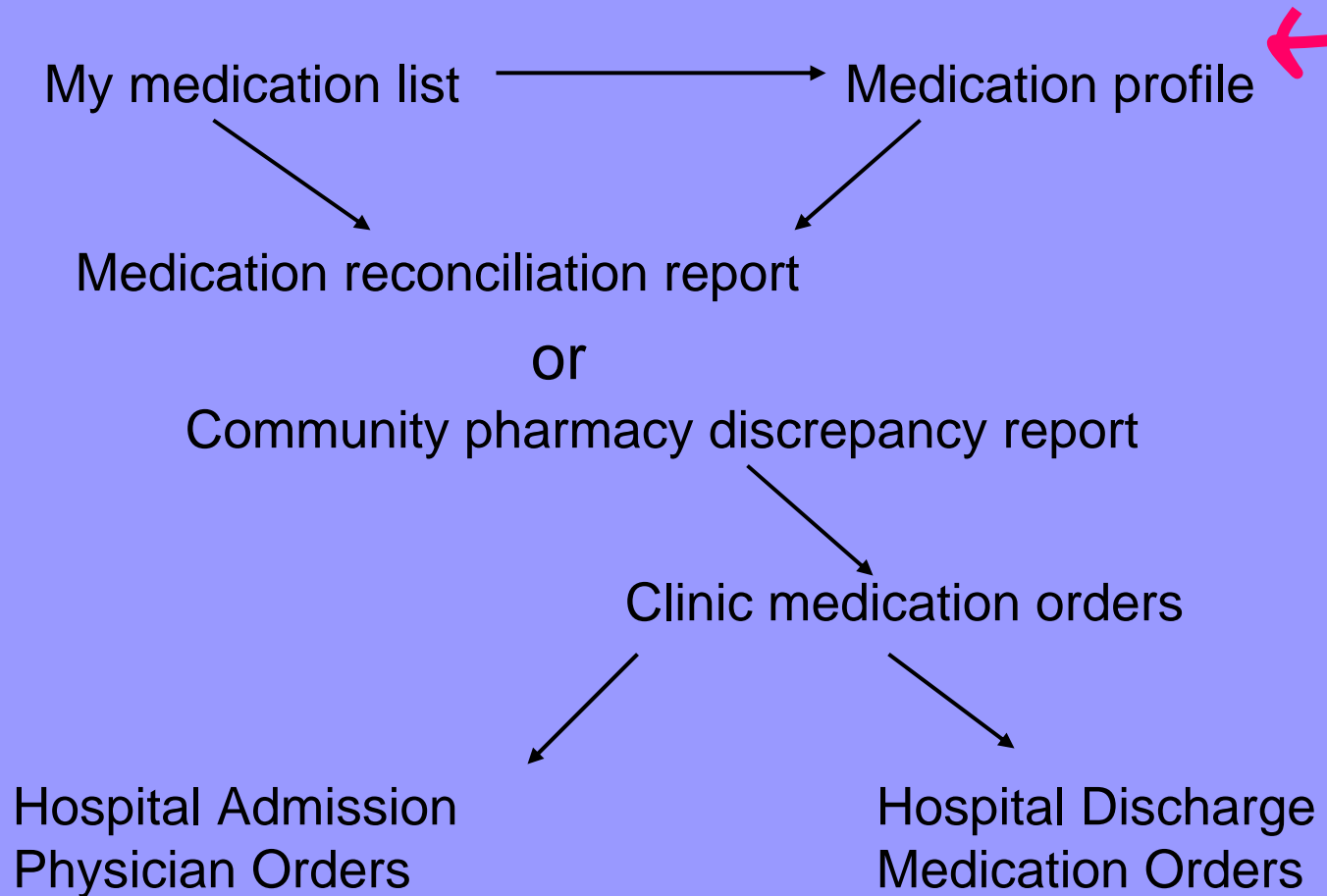


# BC Renal Process

- Medication reconciliation uses database reports
  - Medication profile (“Current medications”)
  - My medication list
  - Medication reconciliation report
  - Clinic medication orders
  - Community pharmacy discrepancy report
  - Hospital Admission Physician Orders
  - Hospital Discharge Medication Orders



# BC Renal Process



# My Medication List

Patient/caregiver is asked to review the list every six months and report back (and report “other physician” orders in between)



## My medication list BLOW, JOE

PHN:  
DOB: 25-DEC-1900

Printed on 19-MAR-2008

### DRUG ALLERGIES:

Medication	Directions
ACETAMINOPHEN 300mg/CAFF 15mg/CODNE PHOSPHATE 30mg (TYLENOL WITH CODEINE NO. 3)	Orally Take 1 tablet(s) twice daily as needed.
ATORVASTATIN CALCIUM	Orally Take 20 mg at bedtime.
CALCITRIOL	Orally Take 0.25 microgram 3 times a week.
CALCIUM CARBONATE (TUMS REGULAR)	Orally Take 2 tablet(s) 3 times daily.
COLCHICINE	Orally Take 0.6 mg once daily.
DIMENHYDRINATE (GRAVOL)	Orally Take 25-50 mg as needed.
FLUOXETINE HCL (PROZAC)	Orally Take 40 mg once daily.
GABAPENTIN (NEURONTIN)	Orally Take 400 mg at bedtime. Indication(s): for pain
HYDROMORPHONE (DILAUDID)	Orally Take 4 mg every 4 hrs as needed. Indication(s): for pain
IRON SODIUM FERRIC GLUCONATE COMPLEX (FERRLECIT)	Orally Take 125 mg every 2 weeks.
LEVOTHYROXINE SODIUM (ELTROXIN)	Orally Take 100 microgram once daily.
LORAZEPAM (ATIVAN)	Sublingual Take 1 mg every Dialysis Run.
NIACIN	Orally Take 500 mg 3 times daily. Indication(s): for high cholesterol/lipids
RABEPRAZOLE SODIUM (PARIET)	Orally Take 20 mg once daily. Indication(s): for my stomach
REPLAVITE (REPLAVITE)	Orally Take 1 tablet(s) once daily.
SEVELAMER (RENAGEL)	Orally Take 2 tablet(s) 3 times daily. Indication(s): to bind phosphate
WARFARIN SODIUM (COUMADIN)	Orally Take 3 mg once daily. Indication(s): to prevent blood clots

This medication list was considered correct at the time of printing. However, you may have had a recent medication change, or you may be taking additional non-prescription or herbal medications that are not listed here. If this is the case, please notify a member of your renal team, who will help ensure your medication list is as accurate as possible.

This medication list is an important component of your care. Please ensure that it is kept up to date. We suggest that you keep a copy of the list with you at all times so that you can show it to any health care providers involved in your care.

# Medication Profile

The current PROMIS list is compared with Pharmanet, the chart and the patient interview

PHN:		NAME:		DOB:	
Start date	End date	Discont. date	Drug Name	Dose/Directions/Schedule	
09-OCT-02			EPOETIN ALFA	Subcutaneous Take 8000 unit(s) once weekly.	
08-OCT-02			TERAZOSIN HCL (HYTRIN)	PO Take 1 mg at bedtime.	
01-OCT-02			ACETAMINOPHEN (TYLENOL)	PO Take 1 tablet(s) as needed.	
01-OCT-02			CLONIDINE HCL	PO Take 0.2 mg 3 times daily.	
01-OCT-02			DIMENHYDRINATE (GRAVOL)	PO Take 25 mg as needed.	
01-OCT-02			FELODIPINE (PLENDIL)	PO Take 10 mg twice daily.	
01-OCT-02			QUININE SULFATE	PO Take 300 mg once daily.	
01-OCT-02			REPLAVITE (REPLAVITE)	PO Take 1 tablet(s) once daily.	
26-MAY-00			ALFACALCIDOL	PO Take 2 microgram once weekly.	
01-MAY-00			ACETAMINOPHEN (TYLENOL)	PO Take 1-2 tablet(s) as needed.	
01-MAY-00			CALCIUM CARBONATE (TUMS REGULAR)	PO Take 2 tablet(s) every morning. + 3 tablet(s) every noon. + 3 tablet(s) every supper. + 2 tablet(s) as needed. Take with food.	
01-MAY-00			CAPTOPRIL	PO Take 25 mg 3 times daily.	
01-MAY-00			VITAMIN D	PO Take 1 microgram once weekly.	



A reconciliation report is created to resolve any discrepancies and create the “BPMH”



## page 1 of 1



## page 1 of 1

Clinic medication orders are written based on the reconciliation

## Clinic Medication Orders

Note: This list may not include the following type of drugs: investigational, antiretroviral, oncology, physician sample, herbal, or self selected over the counter medications. Always review the list with the patient or reliable alternative caregiver

PAT

PHN

DOB

This report was generated from the BC Provincial Renal Agency's PROMIS database

### DRUGS ALLERGIES:

#### Prescription

#### Directions

Prescription	Directions	Continue	Discontinue	Change	MITT	Refills
ACETAMINOPHEN (TYLENOL EXTRA STRENGTH)	PO Take 1-2 tablet(s) every 6 hrs as needed. OR Tylenol #3 - same dose.	✓				
ACETAMINOPHEN 300mg/CAFF 15mg/CODNE PHOSPHATE 30mg (TYLENOL WITH CODEINE NO. 3)	PO Take 1-2 tablet(s) every 6 hrs as needed. OR Tylenol ES - same dose.	✓				
CITALOPRAM (CELEXA)	PO Take 20 mg once daily.		✓			
DIMENHYDRINATE (GRAVOL)	PO or IV Take 25-50 mg every 6 hrs as needed.	✓				
DIPHENHYDRAMINE HCL (BENADRYL)	PO or IV Take 25-50 mg every 6 hrs as needed.	✓				
DOMPERIDONE	PO Take 10 mg 3 times daily. Take before meals.	✓				
EPOETIN ALFA	IV Take 5000 unit(s) 3 times a week. in the Renal unit.				✓	
INSULIN ASPART (NOVORAPID)	Subcutaneous Take 5 unit(s) 3 times daily. Take before meals.	✓				
INSULIN HUMAN NPH (HUMULIN N)	Subcutaneous Take 12 unit(s) twice daily. Take before breakfast and at bedtime.	✓				
IRON SODIUM FERRIC GLUCONATE COMPLEX (FERRLECIT)	IV Take 125 mg once weekly. in the Renal Unit.				✓	
NYSTATIN (MYCOSTATIN) PWR	Topical Take 1 application twice daily as needed. Apply to groins.	✓				
OXAZEPAM (SERAX)	PO Take 15-30 mg at bedtime as needed.	✓				
PANTOPRAZOLE SODIUM (PANTOLOC)	PO Take 40 mg once daily.	✓				
REPLAVITE	PO Take 1 tablet(s) once daily.	✓				
WARFARIN SODIUM (COUMADIN)	PO Take 2.5-3 mg as directed by physician. Take 2.5mg on HD-days & 3.0mg on non-HD days.				✓	

### Changes to above orders:

Fluoxetine 50mg po qd  
↓ 500 5000 units IV qwk  
terbutaline 0.5mg IV qmonth  
Warfarin 3mg po qd

### Additional discharge medication:

Hydrocortisone 1% to ear site qd  
Ponipil 5mg po qd  
Dispendone 1mg qhs  
Fucipin ointment to affected area BID prn.  
All orders for 100 days supply or quantity as written

Fax all pages to pharmacies, home dialysis unit, nephrologist and family physician

Physician's Name

College ID

Signature

Date

page 1 of 1



A new “My medication list” is printed for the patient to carry with them and update over the 6 months. This

**My medication list**  
**BLOW, JOE**

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DOB: 25-DEC-1900

Printed on 19-MAR-2008

**DRUG ALLERGIES:**

Medication	Directions
ACETAMINOPHEN 300mg/CAFF 15mg/CODNE PHOSPHATE 30mg (TYLENOL WITH CODEINE NO. 3)	Orally Take 1 tablet(s) twice daily as needed.
ATORVASTATIN CALCIUM	Orally Take 20 mg at bedtime.
CALCITRIOL	Orally Take 0.25 microgram 3 times a week.
CALCIUM CARBONATE (TUMS REGULAR)	Orally Take 2 tablet(s) 3 times daily.
COLCHICINE	Orally Take 0.6 mg once daily.
DIMENHYDRINATE (GRAVOL)	Orally Take 25-50 mg as needed.
FLUOXETINE HCL (PROZAC)	Orally Take 40 mg once daily.
GABAPENTIN (NEURONTIN)	Orally Take 400 mg at bedtime.
	Indication(s): for pain
HYDROMORPHONE (DILAUDID)	Orally Take 4 mg once daily as needed.

This medication list was considered correct at the time of printing. However, you may have had a recent medication change, or you may be taking additional non-prescription or herbal medications that are not listed here. If this is the case, please notify a member of your renal team, who will help ensure your medication list is as accurate as possible.

**This medication list is an important component of your care. Please ensure that it is kept up to date. We suggest that you keep a copy of the list with you at all times so that you can show it to any health care providers involved in your care.**

not for any  
healthcare  
encounter.



SEVELAMER (RENAGEL)	Orally Take 2 tablet(s) 3 times daily.
	Indication(s): to bind phosphate
WARFARIN SODIUM (COUMADIN)	Orally Take 3 mg once daily.
	Indication(s): to prevent blood clots

This medication list was considered correct at the time of printing. However, you may have had a recent medication change, or you may be taking additional non-prescription or herbal medications that are not listed here. If this is the case, please notify a member of your renal team, who will help ensure your medication list is as accurate as possible.

**This medication list is an important component of your care. Please ensure that it is kept up to date. We suggest that you keep a copy of the list with you at all times so that you can show it to any health care providers involved in your care.**

# Our Community Pharmacy Partners – An untapped opportunity?



## Community Pharmacy Discrepancy Report

Note: This list may not include the following types of drugs: investigational, antiretroviral, oncology, physician sample, herbal, or self selected over the counter medications. Always review the list with the patient or reliable alternative caregiver.

This list may not include the following types of drugs: investigational, antiretroviral, oncology, physician sample, herbal, or self selected over the counter medications. Always review the list with the patient or reliable alternative caregiver.

PATIENT:

PHN:

24-JAN-2008 13:27

DOB:

Printed by Lai, Philip

This report was generated from the BC Provincial Renal Agency's PROMIS database

Review Date

DRUGS ALLERGIES: NO KNOWN ALLERGIES

### Prescription

### Directions

Prescription	Directions	Reconciled	Discrepancy see below	Suggest discontinue
ALLOPURINOL	PO Take 1 tablet(s) as directed by physician.			
ATENOLOL	PO Take 1 tablet(s) as directed by physician.			
EPOETIN ALFA	Subcutaneous Take 10000 unit(s) once weekly.			
IRON DEXTRAN COMPLEX	IV Take 1 gram once.			
DOCUSATE SODIUM (COLACE)	PO Take 2 capsule(s) once daily as needed.			
INSULIN HUMAN REG 30%/NPH 70%	Subcutaneous Take 55 unit(s) every morning. + 42 unit(s) each PM.			
PIOGLITAZONE (ACTOS)	PO Take 15 mg once daily.			
BETAMETHASONE 0.1% CREAM/FUSIDIC ACID CREAM AA	Topical Take 1 application twice daily as needed. Apply to itch skin.			
SENNOSIDES (SENNA GLYCOSIDES) (SENNOKOT)	PO Take 17.2 mg once daily as needed.			
RAMIPRIL	PO Take 2.5 mg once daily.			
ATORVASTATIN CALCIUM	PO Take 20 mg once daily.			
CYANOCOBALAMIN (VITAMIN B12)	PO Take 500 microgram once daily.			
FOLIC ACID	PO Take 10 mg once daily.			
IRON POLYSACCHARIDES COMPLEX (NIFEREX)	PO Take 300 mg once daily.			
PYRIDOXINE HCL (VITAMIN B6)	PO Take 100 mg once daily.			
RANITIDINE HCL	PO Take 150 mg once daily.			
REPLAVITE (REPLAVITE)	PO Take 1 tablet(s) once daily.			
SALBUTAMOL SULPHATE INH	PO Take 2 puff(s) twice daily as needed.			
CALCIUM CARBONATE	PO Take 1250 mg 3 times daily. Take with meals.			
IPRATROPIUM BROMIDE (ATROVENT) INH	Inhale Take 1-2 puff(s) 4 times daily as needed.			

Discrepancies noted as below: Physicians, please review and advise	Physician's comments

Please update PROMIS and fax this form back to pharmacy with clarifications

Physician's Signature

Date

Fax back to community pharmacy after review

page 1 of 1





- Goal is to reconcile the meds is taking prior to admission initiated in hospital with meds be taking post-discharge to ensure that discrepancies are intentional and that discrepancies are resolved prior to discharge to avoid avoidance of therapeutic medications and unnecessary medications.



Note: This list may not include the following type of drugs: investigational, antiretroviral, oncology, physician sample, herbal, or self-selected over the counter medications. Always review the list with the patient or reliable alternative caregiver

PHN: 07-MAY-2008 10:30  
DOB: 25-DEC-1900 Printed by Martinusen, Dan

This report was generated from the BC Provincial Renal Agency's PROMIS data

### Prescription

Prescription	Directions
ACETAMINOPHEN 300mg/CAFF 15mg/CODINE PHOSPHATE 30mg (TYLENOL WITH CODEINE NO. 3)	PO Take 1 tablet(s) twice daily as needed.
ATORVASTATIN CALCIUM	PO Take 20 mg at bedtime.
CALCITRIOL	PO Take 0.25 microgram 3 times a week.
CALCIUM CARBONATE (TUMS REGULAR)	PO Take 2 tablet(s) 3 times daily.
COLCHICINE	PO Take 0.6 mg once daily.
DIMENHYDRINATE (GRAVOL)	PO Take 25-50 mg as needed.
FLUOXETINE HCL (PROZAC)	PO Take 40 mg once daily.
IRON SODIUM FERRIC GLUCONATE COMPLEX (FERRLECIT)	PO Take 125 mg every 2 weeks.
LEVOTHYROXINE SODIUM (ELTROXIN)	PO Take 100 microgram once daily.
LORAZEPAM (ATIVAN)	Sublingual Take 1 mg every Dialysis Run.
RABEPRAZOLE SODIUM (PARIET)	PO Take 20 mg once daily.
REPLAVITE (REPLAVITE)	PO Take 1 tablet(s) once daily.
SEVELAMER (RENELAG)	PO Take 3 tablet(s) 3 times daily.
WARFARIN SODIUM (COUMADIN)	PO Take 3 mg once daily.

Changes to above orders:

## Additional discharge medication:

Unless otherwise specified, initial and refill prescription quantities are in 30-day supply.

**Fax all pages to pharmacies, home dialysis unit, nephrologist**

[illegible]

**RN** quote: "The form is straight forward, you just fill in the blanks and it is done- all on one page. It is really quite nice!" " The process is working. You can't mix up patient orders if a patient is off serviced. The doctors do not have to rewrite anything therefore saves time. We are all more conscious of accuracy and details now."

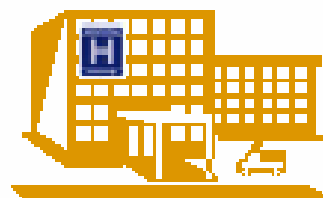
- "We were amazed when we started just how many discrepancies there were"
- "We are all conscious of accuracy and details now"



# Frequently asked questions

- Can this work in a pre-dialysis clinic or home dialysis clinic?
- What if we can't access PharmaNet?
- Can nurses do this? Pharmacy technicians?
- Can the PROMIS reports be part of the chart?
- And where am I to find the time?





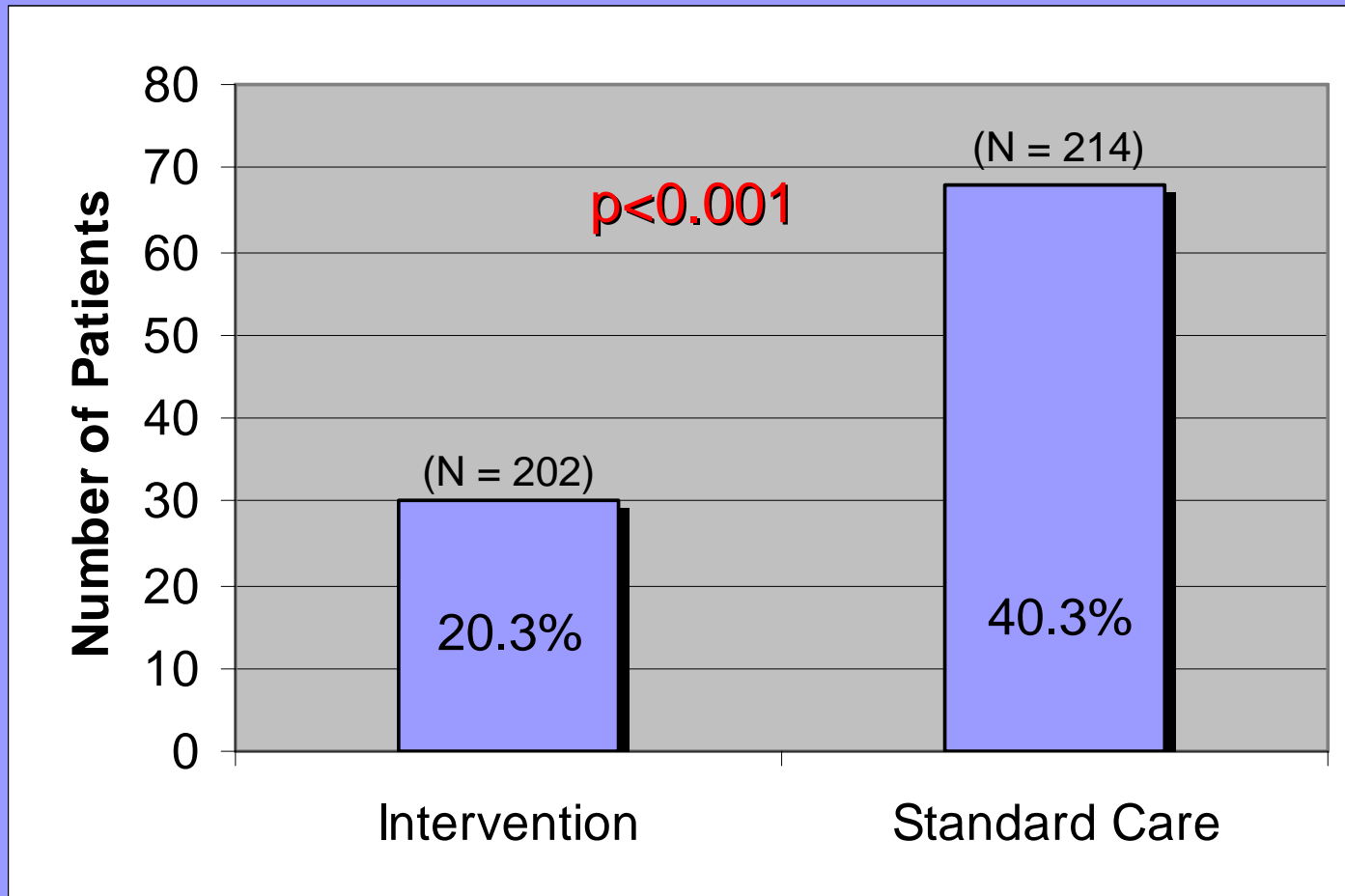
**Medication  
Reconciliation  
Across the  
Continuum of Care**







## Results: Patients with At Least 1 Post-Operative Medication Discrepancy Related to Home Medications



Time period: April 19, 2005 to June 3, 2005

Number of patients: 416

*Arch Intern Med 2007; 167:1034-1040*



# Clinical Assessment of Post-Operative Medication Discrepancies Related to Home Medications

Potential to Cause Patient Discomfort and/or Clinical Deterioration if Unresolved	Intervention (N=60 discrepancies)	Standard Care (N=157 discrepancies)
Unlikely	25	53
Possible	23	51
Probable	12	53

## Assumptions:

- Omission of medications – patient without treatment for 7 days (estimated average length of patient stay)
- Clarification orders – within 24 hrs
- Standing vs prn dosing taken into consideration *Kwan Y. Arch Intern Med 2007; 167:1034-1040*

# Does Medication Reconciliation Improve Patient Outcomes ??



- RCT: Discharge Reconciliation: inconsistencies and omissions
  - n=253 patients , inpatient tertiary care family practice units
  - 39.6% of patients inconsistency or omission prior to intervention (n=134)
    - 2<sup>o</sup> endpoint: potential clinical impact : significant or very significant (mean 4.33-4.35 of a scale of 6)
    - ( Nickerson et al. *Health Care Quarterly* 2005;8:65-72)



# Does Medication Reconciliation Improve Patient Outcomes ??

## Clinical Importance / Impact

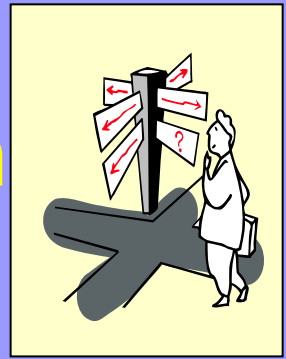
- Only 6 of 22 included studies (n=588 patients)
  - Investigators estimate: 11-59% of medication history errors were clinically important
  - Clinical importance usually determined by consensus among a *panel of experts*
  - One study: prescription discrepancies
    - 39% of errors had the “potential to cause moderate or severe patient discomfort or deterioration in the patient’s condition”

Frequency, Type and Clinical Importance of Medication History Errors at Admission to Hospital

Tam et al *CMAJ* 2005;173(5):510-5



# Does Medication Reconciliation Improve Patient Outcomes ??



- Post Hospital Medication Discrepancies

- Non-randomized investigation; n=375 patients 65 yo or older
- 2<sup>o</sup> endpoint: Rehospitalization rates: 14.3% patients experienced a discrepancy vs. 6.1% no discrepancy (p=0.04)  
( Coleman et al. *Arch Intern Med* 2005;165:1842-47)

RCT: Pharmacist Counseling Preventing ADEs after hospitalization

- n=178 patients Gen Med, teaching hospital
- Preventable ADEs 30 days post discharge: 11% vs. 1% (control) p=0.01)  
( Schnipper et al. *Arch Intern Med* 2006;166:565-571)

