

Medication Safety: What You Cannot Afford to Ignore

CACCN Nursing Conference
Banff, October 17 & 18th, 2004

David U

President and CEO

Institute for Safe Medication Practices Canada (ISMP Canada)

and

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ISMP Canada



Objectives

- **ISMP Canada**
- **Research Highlights**
- **Incident Reporting**
- **High-Alert Medications**
- **Error Prevention Strategies and Tools**
- **What Nurses can do**
- **What the future holds**

ISMP CANADA Vision

- Independent nonprofit Canadian organization
- Established for:
 - ◆ the collection and analysis of medication error reports and
 - ◆ the development of recommendations for the enhancement of patient safety.
- Serves as a national resource for promoting safe medication practices throughout the health care community in Canada.

ISMP Canada Mission:

- Committed to the safe use of medication through improvement in drug distribution and drug delivery system design.
- Collaborate with healthcare practitioners and institutions, schools, professional organizations, pharmaceutical industry and regulatory & government agencies to provide education about adverse drug events and their prevention

ISMP Canada Programs

- Voluntary reporting
 - ◆ Errors, near-misses and hazardous situations
 - ◆ Confidential
 - ◆ Non-punitive
 - ◆ Front-line practitioners provide detailed, unrestricted information on incidents

- Analysis & recommendation of prevention strategies

How Error Reports are received:

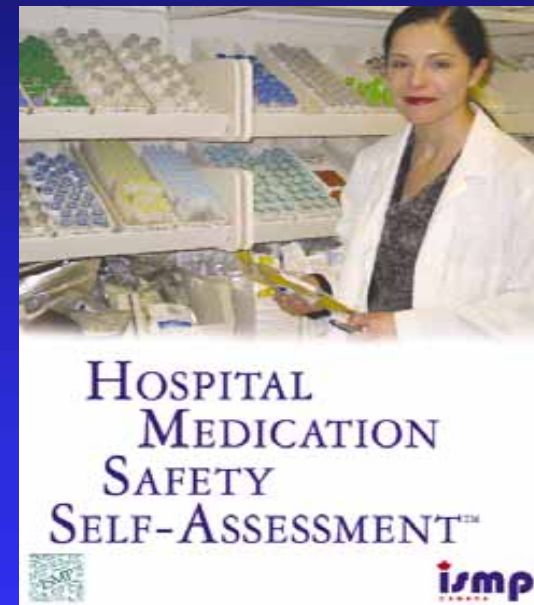
- i) website: www.ismp-canada.org;
 - ii) e-mail: info@ismp-canada.org;
 - iii) phone at 1-866-54-ISMPC [47672] or 416-480-4099.
- ISMP Canada guarantees confidentiality and security of information received. ISMP Canada respects the wishes of the reporter as to the level of detail to be included in publications.

ISMP Canada Programs cont'd

- CMIRPS (Canadian Medication Incident Reporting and Prevention System)
- 3 partners:
 - ◆ ISMP Canada,
 - ◆ Canadian Institute for Health Information (CIHI) and
 - ◆ Health Canada

ISMP Canada Programs cont'd

- Medication Safety Support Service
 - ◆ Concentrated Potassium Chloride
 - ◆ Opioids (narcotics)



Medication Safety Self-Assessment (MSSA)

ISMP Canada Programs cont'd

- Fellowship program (12-month)
- Hospital Consultations
- Root Cause Analysis (RCA)
- Failure Mode and Effects Analysis (FMEA)
- Education/ Presentations

ISMP Canada's Initiatives:

- Systems Analysis of Medication Errors (SAME) Research Study
- Canadian Patient Safety Institute (CPSI)

ISMP Canada's Initiatives:

- Canadian Counsel on Health Services Accreditation (CCHSA) Collaborative Patient Safety Project
 - ◆ New standard 14.5- MSSA
 - ◆ Development of patient safety goals
 - ◆ Review and revisions of standards related to medication use
 - ◆ Collaborative workshops

Publications: Newsletters

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.

ISMP CANADA **HIROC**

Volume 3, Issue 5 **ISMP Canada Safety Bulletin** May, 2003

Human Factors and Substitution Errors

Approximately 45-50% of medication errors reported to the USP-ISMP Medication Error Reporting Program (MERP) are related to problems with product labelling, packaging and nomenclature.¹ Although many of these problems involve original manufacturer products, they can originate from hospital in-house manufacturing and packaging. ISMP Canada has received two error reports involving in-house packaging practices that contributed to substitution errors and resulted in patient harm. The reporting hospitals indicated a desire to share information about their respective errors with others for learning purposes.

1. Development of a pre-printed treatment order set for the management of methanol overdose.
2. The manual describing intravenous medication policies has been modified to include a cross-reference for ethanol and alcohol.
3. 100% ethanol prepared for addition to dialysate is now prepared in amber glass bottles that are incompatible with the original IV infusion Set packaging.
4. The amber glass bottles are not clearly labelled with the intended use.

In the first case a patient diagnosed with methanol overdose was transferred from another facility and prescribed "continue IV ethanol drip at 100 mL/h" and "ethanol to dialysate as per protocol". The Pharmacy initially supplied pre-packaged 100% ethanol for addition to the dialysate solution. In consultation with the physician, prepared a 10% ethanol infusion solution of 10% ethanol. Both items were in similar sterile bottles as shown in Figure II. In addition to dialysate use, the 10% ethanol was also used intravenously. The patient experienced renal impairment as a result of the 10% ethanol infusion. The patient's renal function returned to baseline after discontinuation of the 10% ethanol infusion.

Similar packaging and labelling of an IV solution intended for addition to dialysate.



As a result of the hospital's in-depth review of the event, the following system changes were recommended and instituted:

- The 100% ethanol was supplied in a clear glass bottle with stopper. This bottle can be clearly distinguished from the 10% ethanol product which is supplied in an amber glass bottle compatible with intravenous administration.
- Label design: although the 100% ethanol product was labelled with a computer-generated warning: "For Dialysis Use Only, Not for Injection", the warning was not distinct from other label information.

continued on page 2 ▶

Now available on ISMP Canada's website

ISMP Canada Safety Bulletin (monthly)

Education of the healthcare community about safe medication practices. **Acute Care**

ISMP Medication Safety Alert!

May 20, 2003 • Volume 6 Issue 11

Safety Alerts

Mind your "Medrols"

PROBLEM: Numerous cases of confusion between methylprednisolone acetate (DEPO-MEDROL) and methylprednisolone sodium succinate (SOLU-MEDROL) have been reported over the years. While both forms of the product are used to treat inflammation, dosing may differ, and the acetate form should never be administered intravenously (IV). Most recently we heard about a 3-year-old child in the emergency department (ED) who was prescribed Solu-Medrol 40 mg IV. The nurse accidentally selected methylprednisolone acetate 40 mg, which was the first form and strength of the generic methylprednisolone that appeared on the automated dispensing cabinet screen. Shortly thereafter, the pharmacist who entered the order for Solu-Medrol into the computer noticed that Depo-Medrol had been removed from the cabinet, and he called the unit to alert the nurse to the error. Fortunately the nurse had already noticed that she had selected the wrong product and the child received the correct form of the drug.

ISMP Canada recently published an error in which another 3-year-old child did receive the acetate form of the drug IV. In this case, a daily outpatient infusion of Solu-Medrol 140 mg IV had been prescribed for the child, who had recently received an organ transplant at a large teaching hospital. The first dose was administered in the ED of a small community hospital on a Saturday when the pharmacy was closed. A nursing supervisor brought a box containing four vials of Depo-Medrol, each 40 mg, to the ED. The child's nurse noticed the box of Depo-Medrol and assumed that the medication had been supplied by the hospital where the transplant was performed. Unfamiliar with Solu-Medrol, the nurse checked a drug reference text

and found that both Solu-Medrol and Depo-Medrol listed methylprednisolone as part of their generic names. She erroneously assumed that both medications were brand names for equivalent products and administered Depo-Medrol 140 mg in 50 mL of saline IV to the child over 1 hour. The Pharmacia (now Pfizer) warning on the vial "Not for IV use" is in very small print and is poorly visible (see the photo), so that the nurse never noticed the warning. The error was not detected until the following day, when the child's mother commented that the medication administered that day was clear while the medication given the day before had been cloudy. Fortunately, the patient did not experience an adverse effect. However, the manufacturer has received reports of adverse reactions, some severe, due to IV administration of Depo-Medrol. The United States Pharmacopeia also advised that 48 reports of mix-ups between Solu-Medrol and Depo-Medrol have been received through their MEDMARX program in the past 5 years, mostly related to look-alike brand and generic names.

SAFE PRACTICE RECOMMENDATION: To reduce the risk of confusion between Solu-Medrol and Depo-Medrol, consider the following:

- Increase awareness.** Alert practitioners to the differences between Solu-Medrol and Depo-Medrol. Some may not be aware that the word "depo" or "depot" in association with a drug indicates slow release or slow absorption, with longer duration of action. Thus, these products are not intended for IV administration.

continued on page 2 ▶

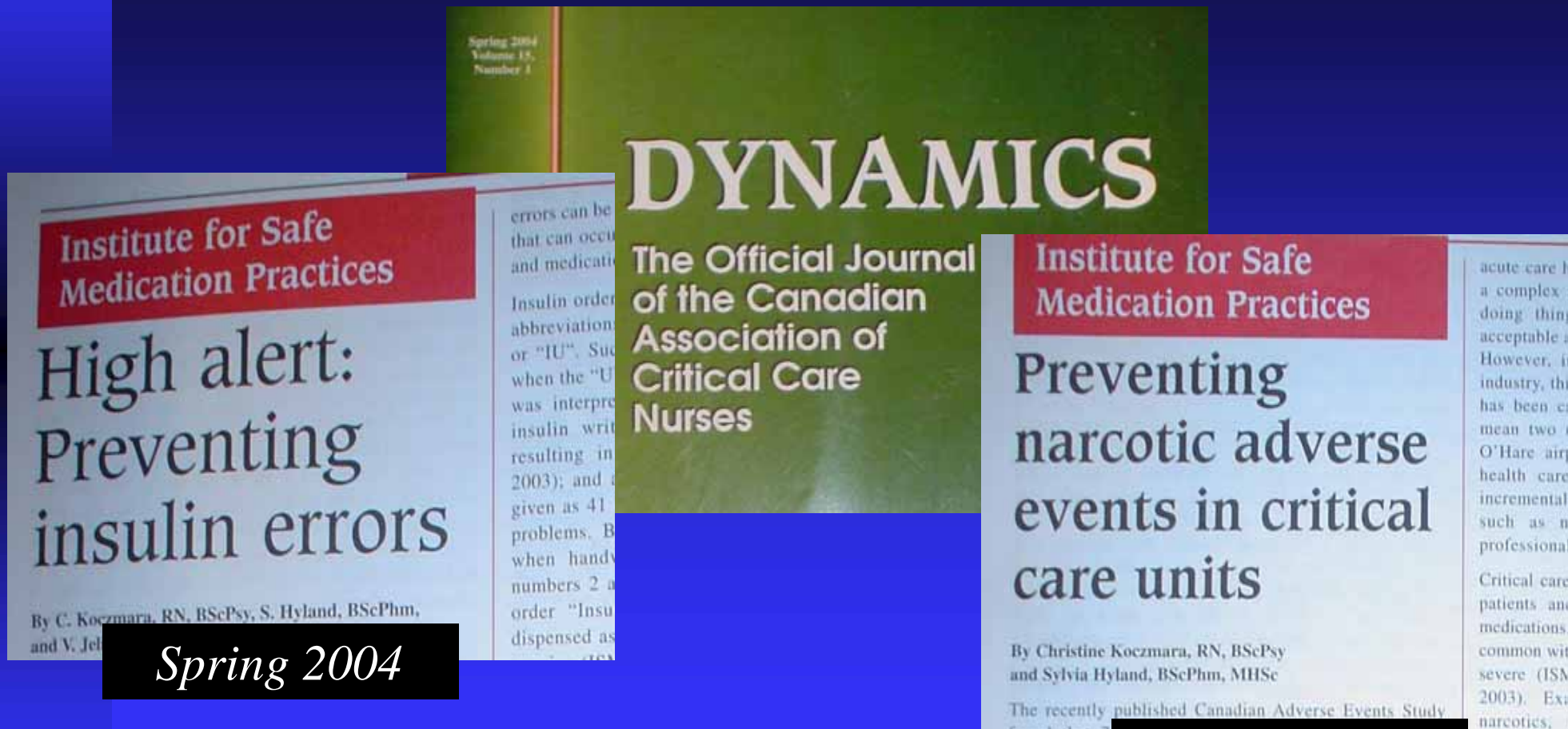
Medication Safety Alert! (biweekly)

Publications:

- Hospitals News
- Journal publications on medication safety
 - ◆ *CJHP, CMAJ*

And.....

CACCN Dynamics as of Spring 2004

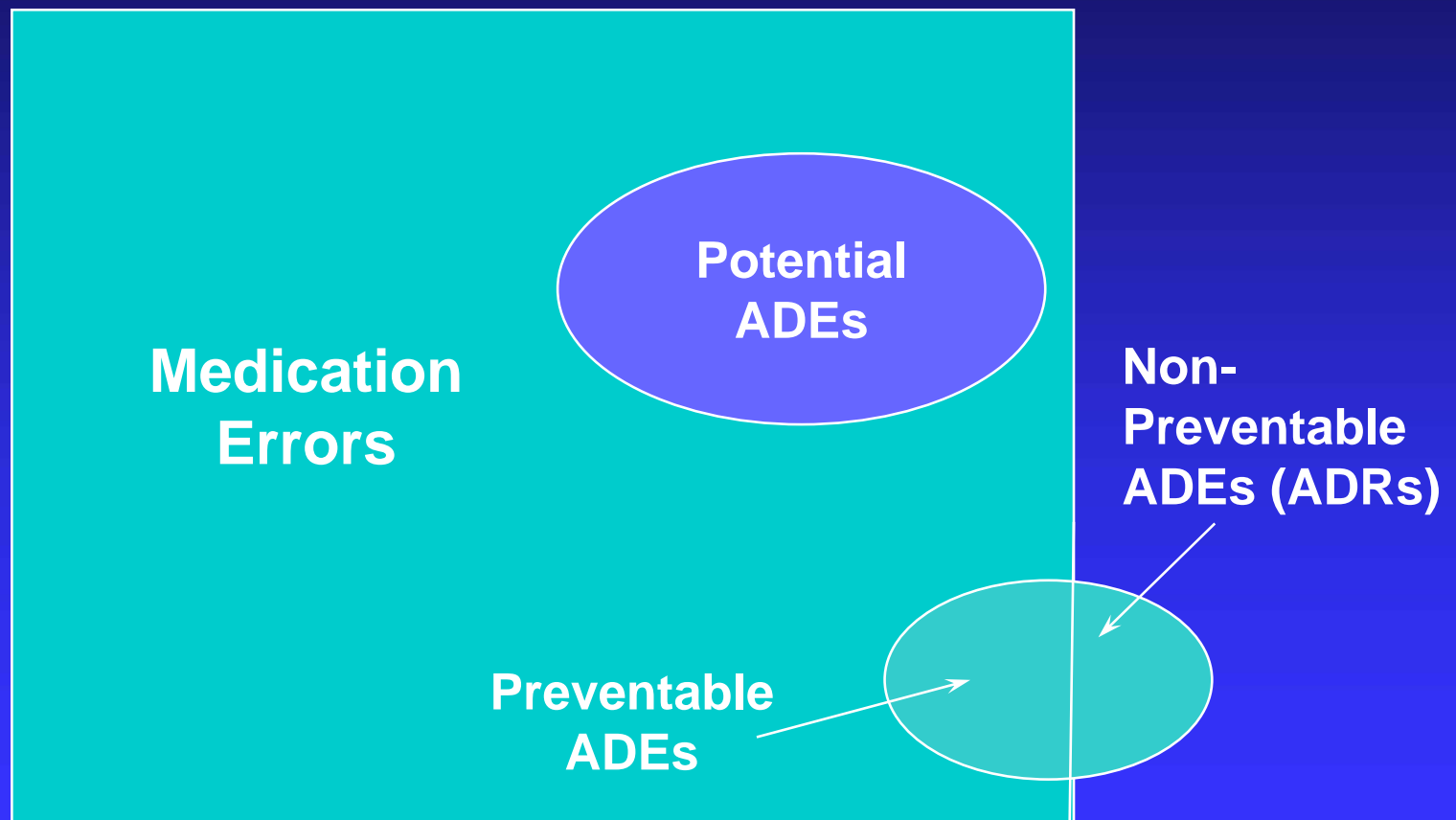


Spring 2004

Fall 2004

Thank-you for your interest, commitment
and support for patient safety!

Relationships Between Medication Errors and Adverse Drug Events



United States

IOM (1999): To Err Is Human

Report on hospital errors:

- **Medical errors kill 44,000-98,000 people per year**
- **“More people die from medical errors each year than from suicides, highway accidents, breast cancer, or AIDS”**

“These stunningly high rates of medical errors - resulting in deaths, permanent disability, and unnecessary suffering - are simply unacceptable in a system that promises to first ‘do no harm.’”

William Richardson



Institute of Medicine (IOM) Report cont'd

Studies included:

- Harvard Practice Study
 - ◆ 3.7% of hospitalizations in New York
 - ◆ 58% preventable
- Utah/ Colorado Study
 - ◆ 2.9 % of hospitalizations

HOW TO PREVENT MEDICAL ERRORS

No one wants to hear that their appendix operation was a success when it was their gallbladder that needed to be removed. The fact is, errors in the health care system are a growing concern. Fortunately, most errors are preventable, especially when people become active and informed participants in their own health. This is why UnitedHealth Foundation is providing information from medical and patient safety experts* that can help keep you and your family safe. By following the tips below, you can limit the chance of getting a medicine that will clear up your acne when you need one to relax your muscles.

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MAJOR CAUSES OF DEATH IN THE UNITED STATES:



1. Make sure you and every member of your health care team knows about every prescription, over-the-counter medication, herbal product or supplement you may be taking. Be sure your doctor knows about any allergies or adverse reactions you have to any medicine.
2. When your doctor writes a prescription, make sure you can read it and that you fully understand what it's for. Be sure you know exactly when and how to take it and that you are aware of any potential side effects your medication may cause.
3. When you pick up your medicine from the pharmacy, ask the pharmacist to confirm that it is the medicine and the dosage that your doctor prescribed.
4. If you have a test, be sure to call and get the results. No news is not necessarily good news.
5. If you need to stay at a hospital and you have a choice, choose one where many patients have had the procedure or surgery you need.

6. If you're having surgery, be sure that your health care team agrees on exactly what will be done to exactly which part of your body. Having the surgeon mark the site to be operated on is a good idea.
7. When being discharged from a hospital, ask your doctor or health professional to thoroughly explain the treatment plan you will use at home, review your medications and coordinate your follow-up visit.
8. Speak up if you have questions or concerns and don't be shy about asking your doctor or nurse for more information from reliable sources. Good health professionals value the relationships they have with their patients.

We believe that the more you know about your health, the healthier you'll be. Keep this information and share it with your family and your health care team. For more information on preventing medical errors and other health care-related topics, visit us at www.unitedhealthfoundation.org.

International Studies

- Australia (1995) – 16.6%
- New Zealand (2001) – 12.9%
- UK (2001) - 10.8%
 - ◆ Half preventable
 - ◆ 1/3 resulted in moderate or greater disability or death

And Canada.....?????????.....

Canadian Adverse Events Study

Baker GR, Norton, PG, Flintoft, V. et al. CMAJ.
May 25th, 2004;170(1):1678-1686.
Available online at www.cmaj.ca

Adverse Event

“an unintended injury or complication that results in disability at the time of discharge, death or prolonged hospital stay and that is caused by health care management rather than by the patient’s underlying disease process.”
(p.1679).

Canadian Adverse Events Study Cont'd

- 5 provinces
 - ◆ B.C., Alberta, Ontario, Quebec, Nova Scotia
- Retrospective chart review for fiscal year 2000
 - ◆ Random hospital selection
 - ◆ 1 teaching, 1 large community and 2 community hospitals in each province
 - ◆ 3745 charts eligible for review

Canadian Adverse Events Study cont'd

- Initial review by RN or health records professional
- Physician review of charts that were positive for at least one screening criterion

Related Procedures or Events of AE

#1

Surgical = 34.2%

#2

**Medication and
fluid-related =
23.6%**



Table 5: Procedures or events to which AEs were related, by service most responsible for delivery of care at time of AE

Type of procedure or event*	Most responsible service; no. of AEs			Total
	Medicine	Surgery	Other†	
Surgical	6	115	2	123
Drug- or fluid-related event	69	15	1	85
Other clinical management	30	11	2	43
Diagnostic	26	11	1	38
Medical	16	9	1	26
Other‡	9	8	1	18
System event§	3	4	4	11
Fracture	2	5	1	8
Anesthesia-related event	1	6	0	7
Obstetric	0	1	0	1
Total	162	185	13	360

*Physician reviewers could attribute events to more than 1 type of procedure.

†Includes dentistry and oral surgery, nursing, osteopathy, pharmacy, physiotherapy and podiatry.

‡AEs not covered in previous categories (e.g., burns, falls).

§System events include AEs that cannot be attributed to an individual or specific source (e.g., communication, reporting, lack of equipment).

Preventable Adverse Drug Events

Examples:

- Digoxin toxicity in patient with chronic renal failure
- Sub-therapeutic anticoagulation in a patient with a mechanical heart valve
- Steroid dependent patient did not receive steroids in hospital leading to adrenal insufficiency.

Canadian Results:

- 7.5% (or 187,500) patients in Canadian hospitals were seriously harmed by their care.
- As many as 9,250 to 23,750 people died in a Canadian hospital as a result of medical errors.
- 37% of adverse events were determined to be preventable.

Study recommendations:

- Improved reporting and monitoring of adverse events
- Application of relevant new technologies
- Improved communication and coordination among caregivers

But What About Critical Care

.....?????????.....

Cullen et al. (1997). Preventable adverse events in hospitalized patients: A comparative study of intensive care and general units. *Crit Care Med*;25:1289-1297.

- Prospective study of 4,031 patients
- Random sample in 11 medical and surgical units
 - ◆ Included 2 medical and 3 surgical ICUs
- Findings:
 - ◆ 2X adverse drug events in ICUs
 - ◆ When adjusted for the number of medications, no differences

Andrews, Stocking et al. (Feb 1, 1997). An alternative strategy for studying adverse events in medical care. *Lancet*;349:309-14

- 1047 patients
- Attended all rounds, reports on patients
- 2 surgical ICUs and 1 surgical unit
 - ◆ AE = 45.8% of patients (total AE = 2183)
 - ◆ Serious AE = 17.7% of patients
- Likelihood of AE ↑ by 6% for each day in hospital

Bracco et al. (2001). Human error in a multidisciplinary intensive care unit. Crit Care Med;27:137-145

- 1 year prospective study
- Non-university teaching hospital
- 1024 consecutive patients admitted to ICU
 - ◆ Errors occurred in 15.7% of patients
- Errors ↑ ICU total stay by 425 patient days
 - ◆ 15% of ICU time!

Donchin et al. (Feb. 1995). A look into the nature and causes of human errors in the intensive care unit. Crit Care Med;23(2):294-300.

- Med-Surg 6 bed ICU, 4 months; incident reports & 24 hour observation
 - ◆ Average number of activities: 178/ pt / day!
 - ◆ Error rate of 1.7% (excluded medical decisions)
 - ◆ BUT a severe or potentially detrimental error occurred on average of 2 x/ day!
 - ◆ COMMUNICATION key issue

Critical Care Patients ARE at Higher Risk for Serious Consequences from Errors:

- More susceptible to serious outcomes
- Less able to recover
- Tend to receive multiple high-alert medications
- Most medications administered are IV
- Tend to receive more medications in total
 - ◆ Probability of numbers
- Complexity of care
- Patient involvement often less

Comparisons to Other Industries: What if we had 99.9% Accuracy?

- 2 unsafe landings at O'Hare Airport/ day, extrapolated.....
- 16,000 pieces of mail lost/ day
- 32,000 bank cheques deducted from the wrong account each HOUR!

In healthcare:

- 50 babies dropped at birth everyday in the U.S.
(Deming, 1987)





**Reported Errors
(3-6%)**

Errors NOT Reported

Lack of Reporting due to:

Many reasons including:

- Failure to recognize error
- Lack of certainty if it “really is an error”
 - ◆ definition (? Related to harm)
- Punitive culture
 - ◆ Fear of reporting: self and others

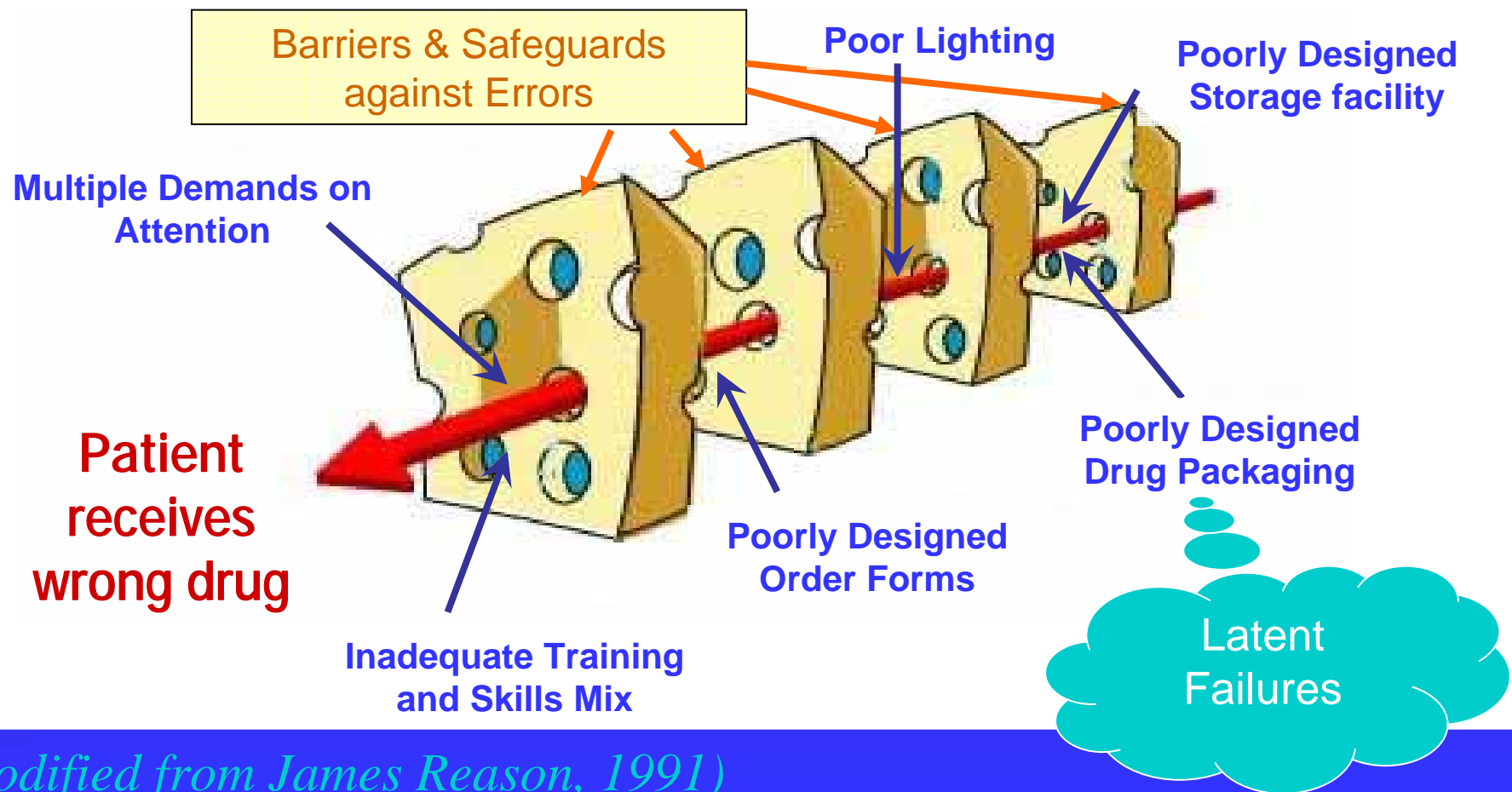
Medication Errors: need to move away from “blame & shame”

- Who did it? → What allowed it?
- Punishment → Thank you for reporting!
- Errors are rare → Errors are everywhere
- Add more layers → Simplify/standardize
- Calculating error rates → No thresholds

Sharp End vs. Blunt End

- Error investigations have always concentrated on *sharp end* (front line staff) where patient/caregiver interaction occurs
- Contributing factors and latent errors often originate at the *blunt end* where organizational policies, procedures and resource allocation decisions are made

Swiss Cheese Model



(modified from James Reason, 1991)

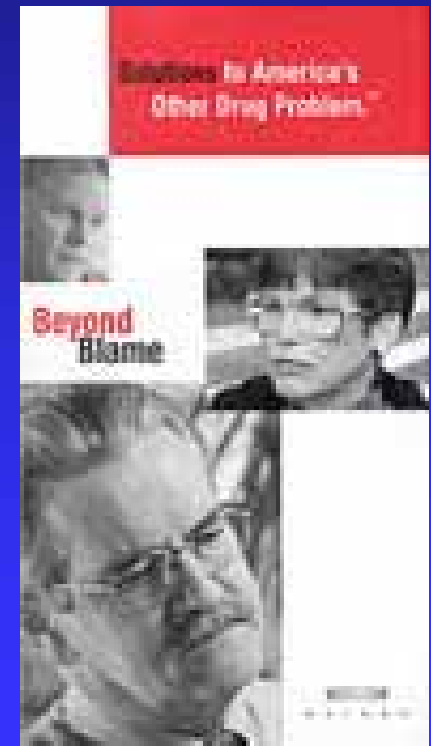
Blaming Practitioners *versus* System Failure

- “People working in health care are among the most educated and dedicated workforce in any industry. The problem is not bad people; the problem is that the system needs to be made safer”

(To Err is Human: Building a Safer Health System, IOM Report 1999)

Culture Change

- Need to dispel the belief that healthcare workers are perfect
- Leadership
- Eliminate “shame and blame” & fear



Culture Change cont'd

- Promote effective team functioning & communication
- Job design based on system's approach
 - ◆ avoid reliance on memory and sustained attention
 - ◆ simplify and standardize processes
- Create a learning environment

Culture Change cont'd

- Anticipate mistakes will be made
 - ◆ Prevention strategies
 - ◆ Make errors visible
 - ◆ Design for recovery

High-Alert Medications: Errors causing the most serious harm

- Insulin
- Free flow IV pumps
- PCA devices
- Parenteral narcotics
- Lidocaine
- Cancer chemotherapy
- Neuromuscular blockers
- Conscious sedation
- Concentrated electrolytes
(potassium, magnesium,
phosphate)

high-alert medication list available at : www.ismp.org/MSAarticles/highalert.htm
accessed May 3rd, 2004.

Bulletins from Error Reports:

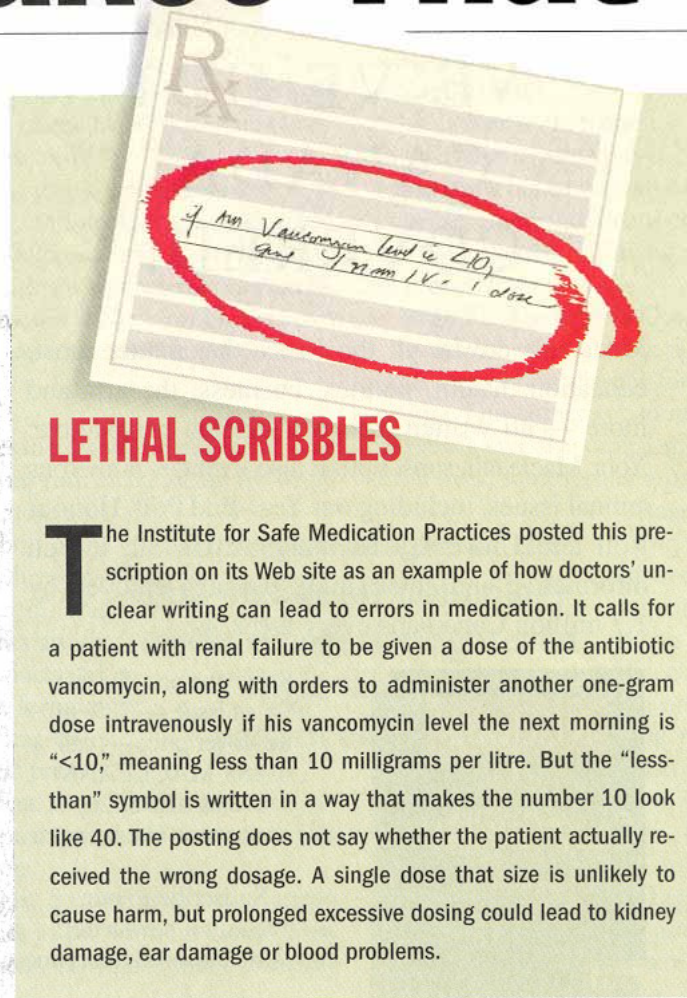
- Adrenergics (Nov. 2002; Apr. 2004)
- NMBs (Dec. 2002; ??? 2004)
- Narcotics (Feb. 2002; Mar. 2002; Sept. 2003, Nov. 2003)
- Epidural Infusion (January 2003)
- Infusion Pumps (July & Oct. 2003, Jan. & Apr. 2004)
- Concentrated
 Electrolytes (Nov. 2001; May 2002; Dec. 2003; Mar. 2004)
- Insulin (Apr. 2003)
- Sterile Water (Apr. 2002; June 2003)
- Chemotherapy (Oct. 2001; July 2002; Aug. 2003)

Uncounted thousands of Canadians die each year because of avoidable medical errors. A program is just beginning to monitor the errors and eliminate the causes.

Mistakes That Kill

BY DIANA WILEY

ON JULY 30, 1996, Nancy Brown witnessed her son's death by the same lethal injection that is used for executions in the United States—potassium chloride. The setting, however, was no death row but the supposedly curative premises of Leamington District Memorial Hospital in southwestern Ontario. Jeffrey Brown, 33, undergoing treatment for a kidney infection, was chatting with his mother and a friend when a nurse arrived with a medication cart. Brown was supposed to receive an injection of lasix, a drug used to reduce swelling caused by excess bodily fluids. Instead the nurse somehow took a vial of concentrated potassium chloride from a drawer in the cart, filled a 20-cc syringe and in-



LETHAL SCRIBBLES

The Institute for Safe Medication Practices posted this prescription on its Web site as an example of how doctors' unclear writing can lead to errors in medication. It calls for a patient with renal failure to be given a dose of the antibiotic vancomycin, along with orders to administer another one-gram dose intravenously if his vancomycin level the next morning is "<10," meaning less than 10 milligrams per litre. But the "less-than" symbol is written in a way that makes the number 10 look like 40. The posting does not say whether the patient actually received the wrong dosage. A single dose that size is unlikely to cause harm, but prolonged excessive dosing could lead to kidney damage, ear damage or blood problems.

experience, was charged with criminal negligence. Two and a half years later, she was cleared of all charges. Nancy Brown is still trying to make sense of this "unfinished business," as she calls it. "My son died in a public institution and no one's been held accountable," she says. "I cannot heal until I am certain there are practices and procedures in place to prevent this ever happening again."

CLEARLY, THERE AREN'T. In hospital settings, where the guiding principle is the Hippocratic injunction "First, do no harm," thousands of Canadians—credible estimates range as high as 10,000 per year—are dying as a result of medical error. A further 10,000 deaths may result from infections acquired in hospitals and unanticipated complications from medications. Add to this an estimated 20,000 medication-related

600 Regular INSULIN NOW

Lenthoid 0.1 mg P.O.
Dig 0.125 mg P.O. qod
Mini prs 5 mg P.O. qd
Foley catheter
wt's daily

115.45 N15 75 cc HC, add 60 mg NaCl / L

after patient voids.

Bicillin 600.000. IV; IM x 1 dose

Urine test p each meal + noc
Meban 25mg @ HS
Hydrocortisone - 25mg qd + tablet
Serr. Siquid bid + capsule
PKG
Urinalysis

Synthroid 1mg

RUN 25AL/H

Dewata Tanya NiHCO₃/L
250 cc/L

Standardize Order Communication

- Use leading zero (0.1 mg not .1 mg)
- No trailing zeros (1 mg not 1.0 mg)
- Avoid nonstandard abbreviations (“U” for unit, q.d., drug name abbreviations such as “MS”)
- Drug protocols and standard order forms
 - ◆ handwriting eliminated; choices- best practices; can incorporate error reduction strategies

Confirmation Bias

It leads one to “see” information that confirms our expectation rather than to see information that contradict our expectation.

- What if you are given the hint “Alphabet” or “A”?

A white outline of the letter 'B' is centered on the blue background. The letter is drawn with a single continuous line, starting from the top left, going down, then curving to the right and back down, and finally curving to the right and back down again to complete the shape.

- If you are given the hint “NUMBER”, what comes to mind?

A hand-drawn white outline of the number 13 on a blue background. The digit '1' is a simple vertical line on the left. The digit '3' is formed by a curved line starting from the top of the '1', curving to the right and then back down to the right, with a small loop in the middle.

The power of the human mind

According to a research at Cambridge University, it doesn't matter in what order the letters in a word are. The only important thing is that the first and last letter be at the right place. The rest can be a total mess and you can still read it without problem. This is because the human mind does not read every letter by itself, but the word as a whole.

Amazing huh?



Enalaprilat
Injection

1.25 mg/mL

Anhydrous Equivalent
FOR INTRAVENOUS
USE ONLY



NDC 10012-081-02

Pancuronium
Bromide Injection

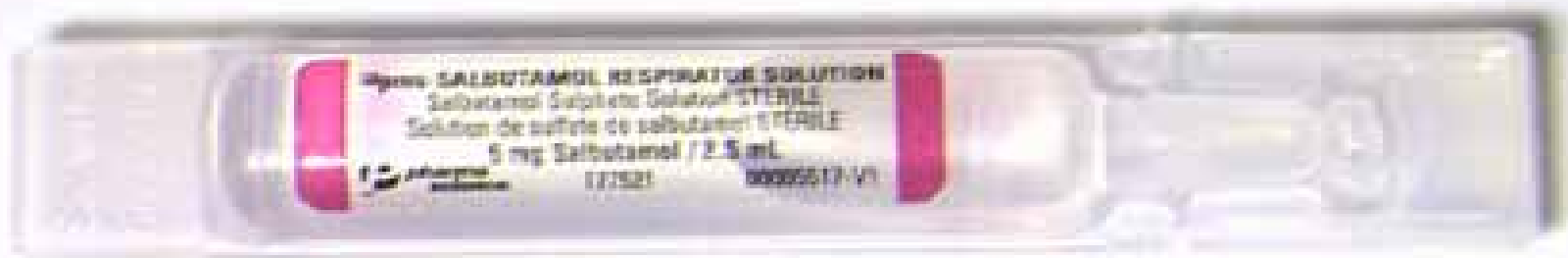
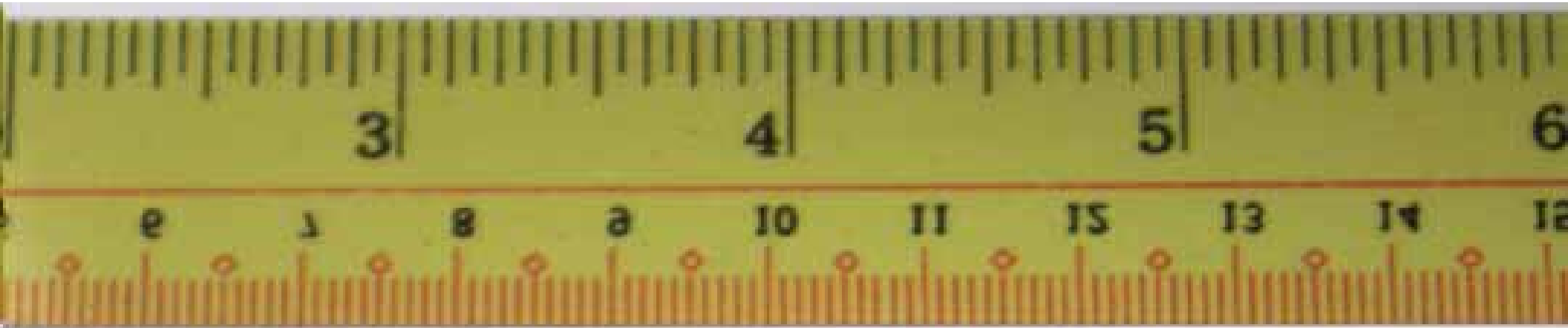
2 mg/mL

For IV Use
Rx only

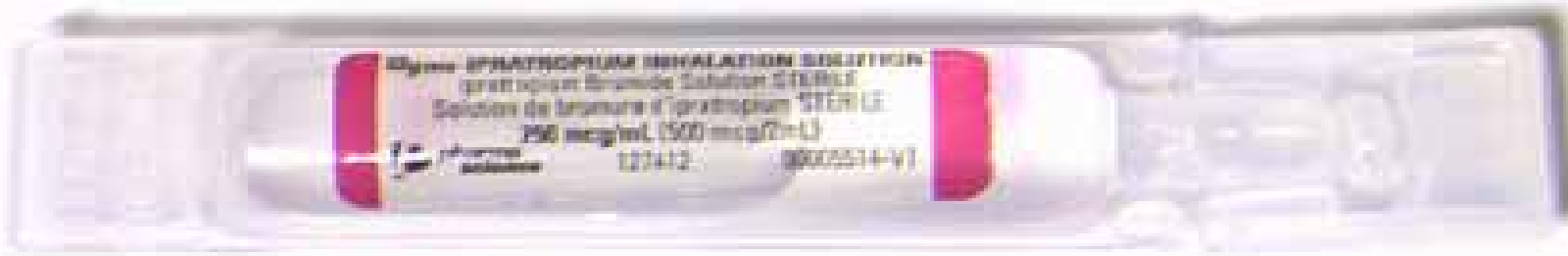
2 mL VIAL PREPARED
BY THE MANUFACTURER







Alproxa SALBUTAMOL RESPIRATORY SOLUTION
Salbutamol Sulphate Solution STERILE
Solution de sulfate de salbutamol STERILE
5 mg Salbutamol / 2.5 mL
127521 00005513-V1



Alproxa IPRATROPIUM INHALATION SOLUTION
Ipratropium Bromide Solution STERILE
Solution de bromure d'ipratropium STERILE
250 mcg/mL (500 mcg/2mL)
127412 00005514-V1

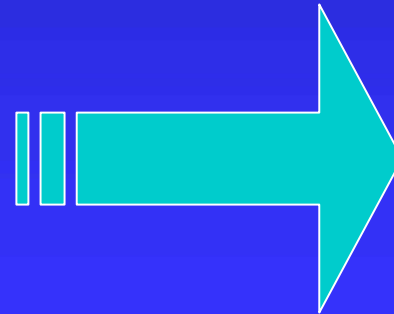
Differentiate:

■ Feel different, look different

- ◆ ordering from different manufacturer's
- ◆ use of different sizes
- ◆ auxiliary labels

Tall Man Lettering

vincristine
vinblastine



vinCRISTine
vinBLASTine



100

**Sterile Water
for Injection USP** **JB0304**
DIN 02014882 **1000 mL**

100

200

**PHARMACY BULK PACKAGE
NOT FOR DIRECT INFUSION
MAKE CONTENTS ISOTONIC BEFORE PARENTERAL
ADMINISTRATION BY THE ADDITION OF A SUITABLE SOLUTE**

200

300

**STERILE NONPYROGENIC
NO ANTIMICROBIAL AGENT OR OTHER SUBSTANCE HAS
BEEN ADDED**

300

400

**APPROX pH 5.5 APPROX mOsmol PER LITER 0
DOSAGE AS DIRECTED BY A PHYSICIAN DIRECTION SHEET
AVAILABLE UPON REQUEST**

400

500

**CAUTIONS SQUEEZE AND INSPECT BAG DISCARD IF
LEAKING MUST NOT BE USED IN SERIES CONNECTIONS
STORE AT 15° - 30° C**

500

Eau Stérile pour Injection USP

600

**CONDITIONNEMENT EN VRAC POUR
LA PHARMACIE NE PAS UTILISER
POUR PERFUSION DIRECTE
RENDRE LE CONTENU ISOTONIQUE AVANT DE
L'ADMINISTRER PARENTERALEMENT EN Y
DISSOLVANT UNE SUBSTANCE APPROPRIÉE**

600

700

**STERILE APYROGENE
AUCUN AGENT ANTIMICROBIEN OU AUTRE SUBSTANCE N'A
ETE AJOUTEE**

700

800

**pH APPROX 5.5 mOsmol APPROX PAR LITRE 0
POSOLOGIE TEL QUE PRESCRIT PAR LE MEDECIN FEUILLE
DE MODE D'EMPLOI DISPONIBLE SUR DEMANDE
ATTENTIONS PRESSER ET INSPECTER LE SAC JETER EN
CAS DE FUITES NE DOIT PAS ETRE MONTE EN SERIE
ENTREPOSER ENTRE 15° ET 30° C**

800

Viaflex® PVC CONTAINER/CONTENANT DE PVC

900

Baxter 88-70-19-603

900

Baxter Corporation
Clintec Nutrition Division
Toronto Ontario Canada

NO NATURAL RUBBER LATEX  **SANS LATEX NATUREL**

JB0304

1000 mL
DIN 02014882

Sterile WATER **H₂O**
for Injection USP
NOT FOR DIRECT INFUSION

PHARMACY BULK PACKAGE

**STERILE NONPYROGENIC
NO ANTIMICROBIAL AGENT OR OTHER SUBSTANCE HAS
BEEN ADDED APPROX pH 5.5 APPROX mOsmol PER LITER 0
DOSAGE AS DIRECTED BY A PHYSICIAN DIRECTION SHEET AVAILABLE UPON
REQUEST MAKE CONTENTS ISOTONIC BEFORE PARENTERAL ADMINISTRATION BY
THE ADDITION OF A SUITABLE SOLUTE
CAUTIONS SQUEEZE AND INSPECT BAG DISCARD IF LEAKING MUST NOT BE
USED IN SERIES CONNECTIONS STORE AT 15° - 30° C**

EAU Stérile **H₂O**
pour Injection USP
NE PAS UTILISER POUR PERFUSION DIRECTE

CONDITIONNEMENT EN VRAC POUR LA PHARMACIE

**STERILE APYROGENE
AUCUN AGENT ANTIMICROBIEN OU AUTRE SUBSTANCE N'A
ETE AJOUTEE pH APPROX 5.5 mOsmol APPROX PAR LITRE 0
POSOLOGIE TEL QUE PRESCRIT PAR LE MEDECIN FEUILLE DE MODE D'EMPLOI
DISPONIBLE SUR DEMANDE RENDRE LE CONTENU ISOTONIQUE AVANT DE
L'ADMINISTRER PARENTERALEMENT EN Y DISSOLVANT UNE SUBSTANCE
APPROPRIÉE
ATTENTIONS PRESSER ET INSPECTER LE SAC JETER EN CAS DE FUITES NE DOIT
PAS ETRE MONTE EN SERIE ENTREPOSER ENTRE 15° ET 30° C**

**VIAFLEX PVC CONTAINER/CONTENANT DE PVC VIAFLEX IS A TRADEMARK OF BAXTER
INTERNATIONAL INC/VIAFLEX EST UNE MARQUE DE COMMERCE DE BAXTER INTERNATIONAL INC**

Baxter 88-70-19-914

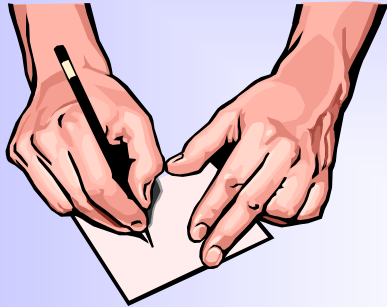
Baxter Corporation
Clintec Nutrition Division
Toronto Ontario Canada

NO NATURAL RUBBER LATEX  **SANS LATEX NATUREL**

Changes Needed to Improve the Medication Use Process

- Need to be proactive vs reactive
- Use external information learned from other organizations
- Eliminate any use of “low error rates” reported as a quality measurement
- Implementation of proper error tracking methods
- Non-punitive approach

Where Medication Errors Occur...



PRESCRIBING
39% of errors



TRANSCRIPTION
12% of errors



DISPENSING
11% of errors



ADMINISTERING
38% of errors

What can we do?



"Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has."

*Margaret Mead
(as quoted by Helvarg, 1995)*

What we can do?

- Ensure orders are complete
- Do not use/ accept dangerous abbreviation
- Develop culture of safety
 - ◆ Report errors/ near misses/ hazardous conditions
 - ◆ Amongst ourselves

What we can do?

- Medication reconciliation
 - ◆ transfers
- Authority gradient challenge
- Read back/ repeat back orders (e.g., “five zero”)

What we do?

- If performing a double check ensure that it is truly *independent*

Research show that people find 95% of mistakes when double checking the work of others

Grasha et al. Process and Delayed Verification Errors in Community Pharmacy. Tech Report Number 112101. (2001) Cognitive Systems Performance Lab

What can we do?

- Embrace patient/ family into process
- Avoid work-a-rounds
- **Trust your intuition!** “if it doesn’t feel right, it probably isn’t”

Safety converges with Best Practices and EBM

■ Examples:

- ◆ VAP
- ◆ Sedation
- ◆ DVT prophylaxis

Rank Order of Error Reduction Strategies for Hospitals

1. **Forcing functions and constraints**
2. **Automation and computerization**
3. Simplify, standardize and differentiate
4. Reminders, check lists and double check systems
5. Rules and policies
6. Education
7. Information
8. Punishment (no value)

Constraint:



Computerization/ Automation

Computerized Physician Order Entry:

- Prescriber orders are electronically inputted and sent
 - ◆ Most things that happen in hospitals occur as a result of orders
- Nursing transcription eliminated
- Therapeutic prescribing optimization
- Lab and diagnostic interface (Reminders, Alerts)
- Current & past orders easily reviewed

Bar Coding

- provides a safeguard against errors at the most vulnerable stage of the medication process-administration
- can save lives and dollars while increasing overall staff efficiency

Bar Coding



Accurate Administering

Automated bedside verification

- Ensures accuracy in medication, dosage, patient, time against prescribers order
- Provides legible on-line MAR
- Enhances team communication



Bar Code and Medication Administration

- Between 1993 and 1999:
 - 74% improvement in wrong drug errors
 - 57% improvement in wrong dose errors
 - 91% improvement in wrong patient errors
 - 92% improvement in wrong time errors
 - 70% improvement in missing doses.

Bar-code potential limitations:

- Patients without name bracelets or inaccessible
- Orders written/transcribed/entered on wrong patient
- Sensitivity of bar code scanner and ability to scan on curved surfaces

Smart Pumps examples:

◆ Medley by Alaris



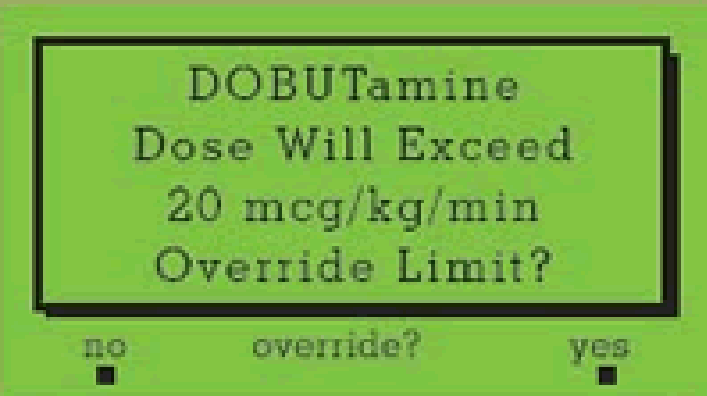
- *Protect against harm at the point of infusion delivery and*
- *Promote best practice guidelines*

◆ Colleague CX by Baxter



Smart Pumps

- ◆ Comprehensive drug libraries to accommodate hundreds of drugs
- ◆ Specific for care areas
- ◆ Detects and warns out-of-range dose
- ◆ Maximum and Minimum dose and infusion rate
- ◆ Intervention Log
- ◆ CQI Report



DOBUTamine
Dose Will Exceed
20 mcg/kg/min
Override Limit?

no override? yes

The image shows a green rectangular alert screen from a smart pump. The text on the screen reads: 'DOBUTamine', 'Dose Will Exceed', '20 mcg/kg/min', and 'Override Limit?'. Below the text are three options: 'no' with a radio button, 'override?' with a radio button, and 'yes' with a radio button. The 'no' option is selected.

“Technically the biggest ‘safety system’ in healthcare is the minds and hearts of the workers who keep intercepting the flaws in the system and prevent patients from being hurt. They are the safety net, not the cause of injury”.

Don Berwick

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