Canadian Pharmaceutical Bar Coding to Improve Patient Safety

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David U and Sylvia Hyland

Institute for Safe Medication Practices Canada

Institute for Safe Medication Practices Canada (ISMP Canada)

- Independent not for profit organization

- Established to review and analyze medication error reports and to develop recommendations and programs 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 Services

- Individual practitioner medication incident reporting program (Canadian Medication Incident Reporting and Prevention System – CMIRPS)

- Publication and distribution of safety bulletins and newsletters

- Medication Safety Self Assessment® (a QA tool)

- Analyze-Err® software program

- Root cause analysis of sentinel events

- Medication system reviews

- Root Cause Analysis (RCA) training

- Failure Mode and Effects Analysis (FMEA) training

ISMP Canada's key Initiatives:

- Canadian Medication Incident Reporting and Prevention System (CMIRPS)

- Medication Safety Support Services (MoH-ON)

- BC Patient Safety Task Force

- Health Quality Council of Alberta

- Other Provincial Medication Safety Initiatives (SK, MB, NS, NFD)

- Safer Healthcare Now (Medication Reconciliation)

5×3 mL   DIN 02025248

Novolin®ge 30/70 Penfill®   30/70

Insulin Injection 30% and Insulin Isophane 70%,
Human Biosynthetic

100 IU/mL

Shake carefully. Do not freeze.
Refrigerate between 2° and 10° C.

Dose and directions for use: Read enclosed leaflet.
A Penfill® cartridge must not be used by more
than one person.

0.15% m-cresol and 0.065% phenol added
as preservative

HUMAN

novo nordisk®

5×3 mL   DIN 02244353

NovoRapid® Penfill®

Insuline asparte, Solution pour injection s.c.

100 U/mL

Ne pas congeler. Conserver entre 2° et 10° C.

Dose et mode d'emploi : Lire le feuillet ci-joint.

Une cartouche Penfill® ne doit pas être utilisée par
plus d'une personne.

1,5 mg/mL phénol et 1,72 mg/mL metacrésol
comme agents de conservation.

Garder hors de la portée des enfants.

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Manufactured by:
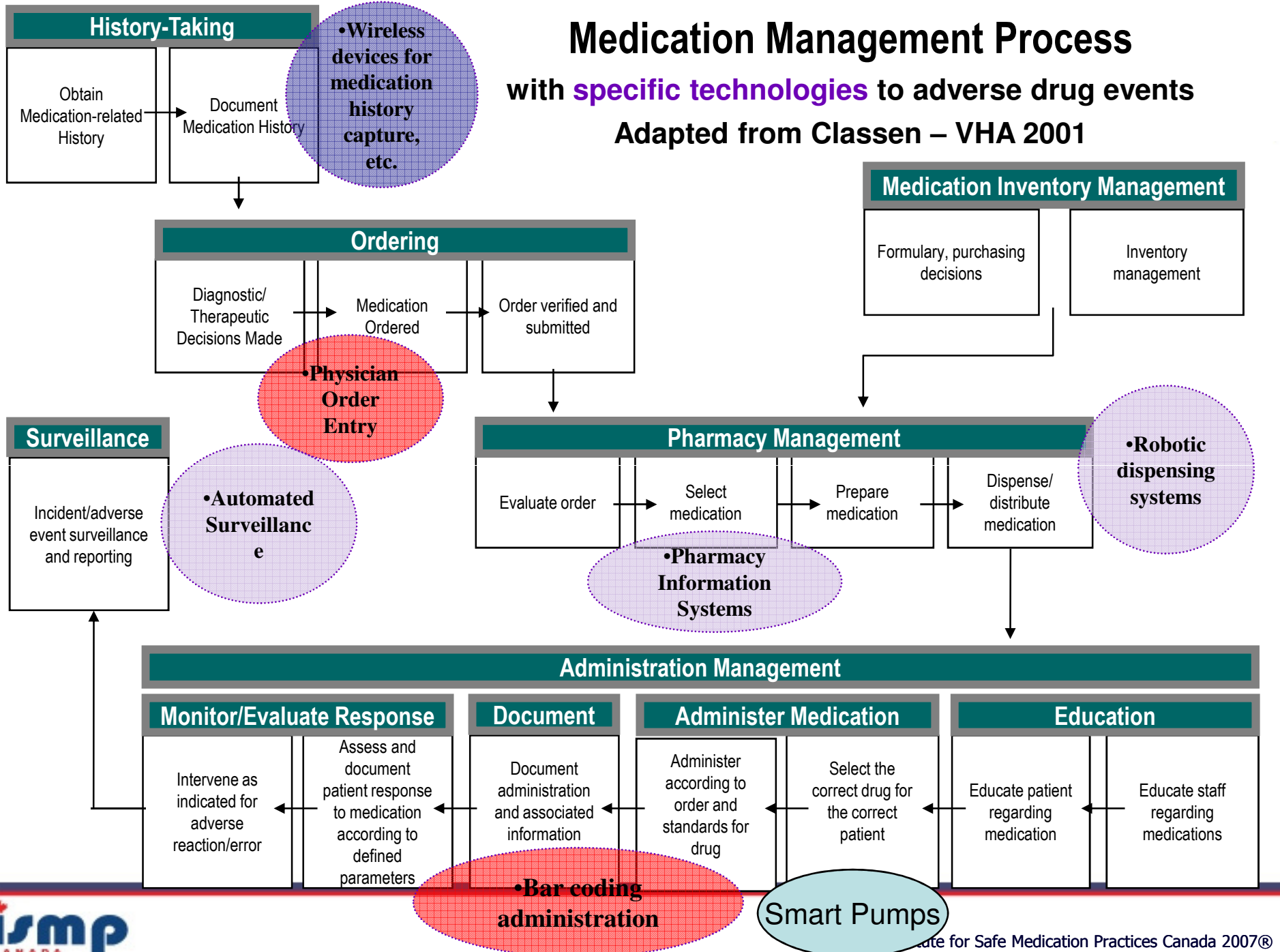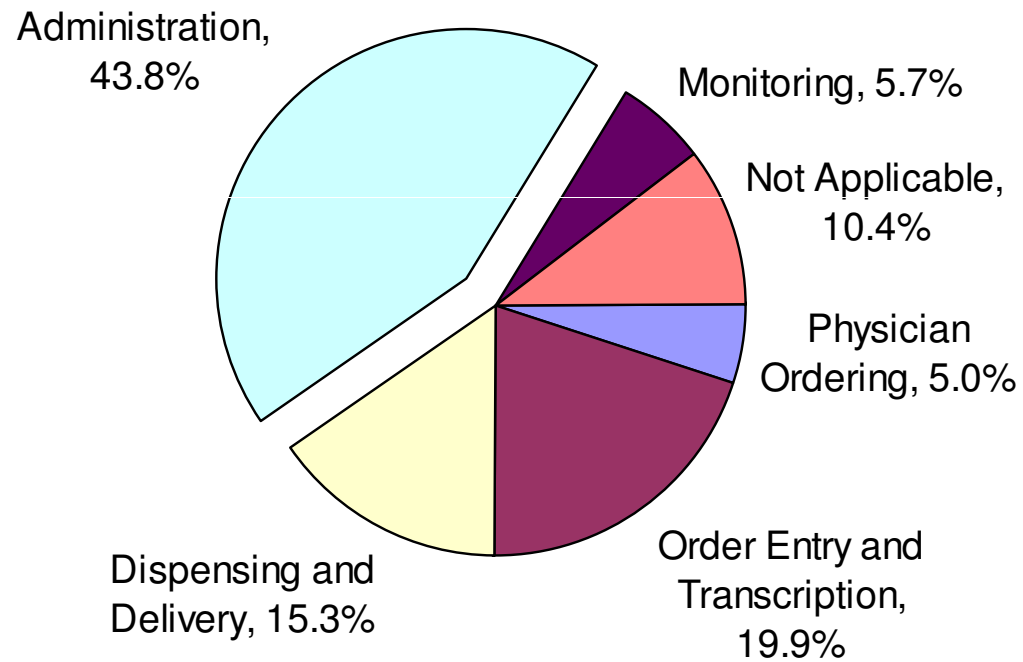Fabriqué par :
Novo Nordisk A/S
DK-2880 Bagsvaerd,
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0 59014 25249 3

Medication Management Process
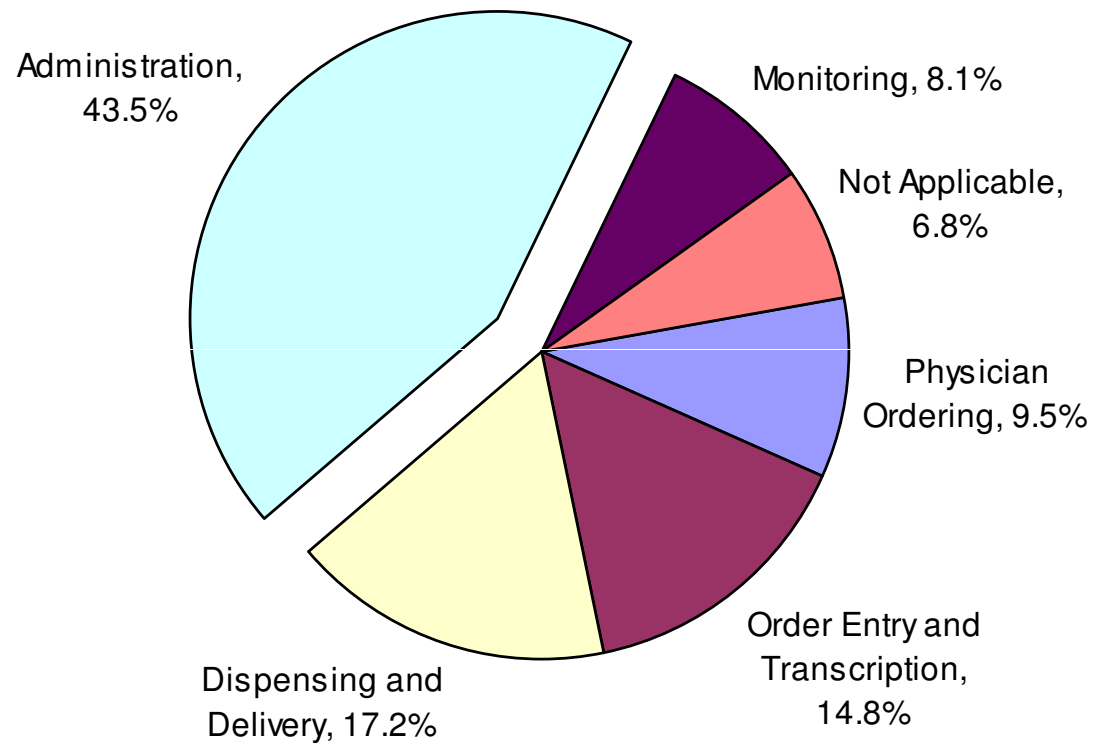## with specific technologies to adverse drug events
Adapted from Classen – VHA 2001

History-Taking

Obtain Medication-related History → Document Medication History

- Wireless devices for medication history capture, etc.

Medication Inventory Management

Formulary, purchasing decisions | Inventory management

Ordering

Diagnostic/ Therapeutic Decisions Made → Medication Ordered → Order verified and submitted

- Physician Order Entry

Surveillance

Incident/adverse event surveillance and reporting

- Automated Surveillance

Pharmacy Management

Evaluate order → Select medication → Prepare medication → Dispense/ distribute medication

- Pharmacy Information Systems

- Robotic dispensing systems

Administration Management

Monitor/Evaluate Response

Intervene as indicated for adverse reaction/error ← Assess and document patient response to medication according to defined parameters

Document

Document administration and associated information

Administer Medication

Administer according to order and standards for drug ← Select the correct drug for the correct patient

Education

Educate patient regarding medication ← Educate staff regarding medications

- Bar coding administration

Smart Pumps

ISMP CANADA

...ute for Safe Medication Practices Canada 2007®

Events by Stages
(ISMP Canada Database, n=42893)

Administration, 43.8%

Monitoring, 5.7%

Not Applicable, 10.4%

Physician Ordering, 5.0%

Order Entry and Transcription, 19.9%

Dispensing and Delivery, 15.3%

Events by Stages (Harm or Death only)
(ISMP Canada Database, n=1987)

Administration, 43.5%

Monitoring, 8.1%

Not Applicable, 6.8%

Physician Ordering, 9.5%

Order Entry and Transcription, 14.8%

Dispensing and Delivery, 17.2%

ISMP Canada Database search, 12th June, 2008

Event by Stages
(MEDMARX Data Report, n=197313)

Procurement 0%

Monitoring 1%

Prescribing 22%

Administering 30%

Transcribing/ documenting 21%

Dispensing 26%
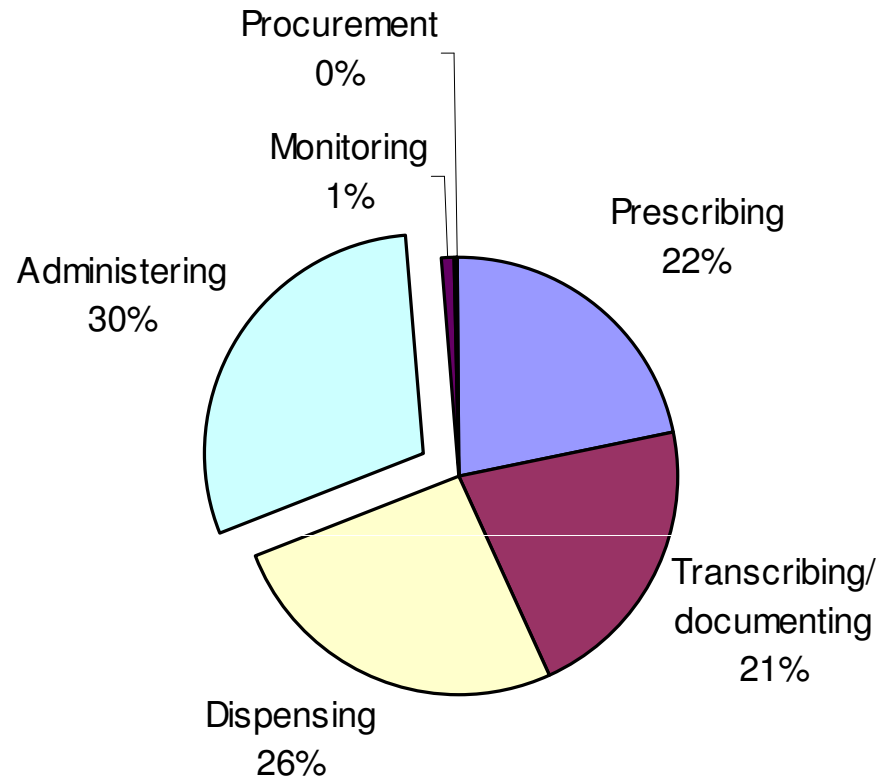
Hicks, R.W., Becker, S. C., and Cousins, D. D. (2006).
MEDMARX® Data Report: A Chartbook of Medication Error Findings from the Perioperative Settings from 1998-2005.
Rockville, MD: USP Center for the Advancement of Patient Safety.

Errors in the medication use process

Errors   **39%**   **12%**   **11%**   **38%**

Prescribing   **Transcribing**   **Dispensing**   **Administering**
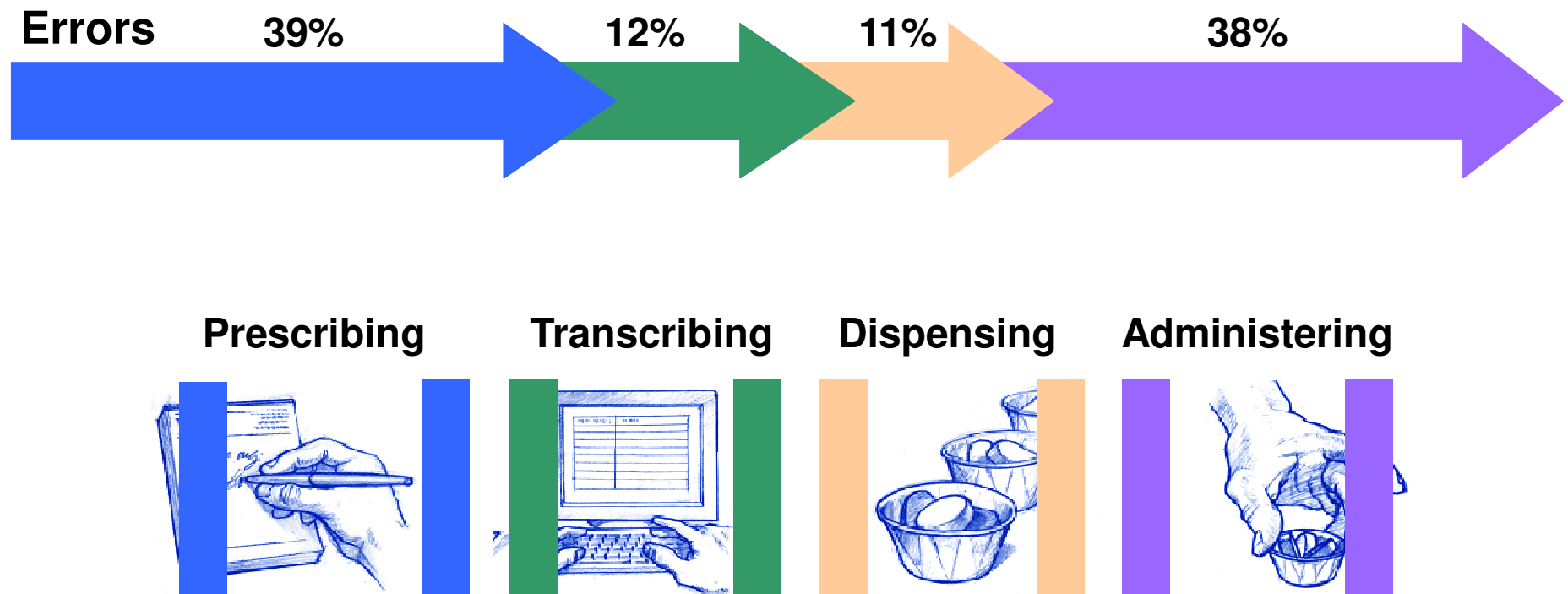
Source   JAMA 1995;274:35-43

Sources of harm

Errors	**28%** 39%	**11%** 12%	**10%** 11%	**51%** 38%
	Prescribing	Transcribing	Dispensing	Administering
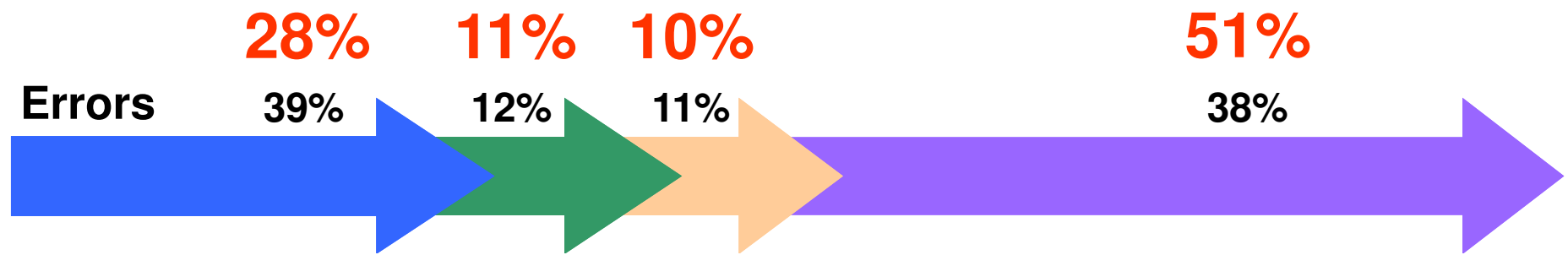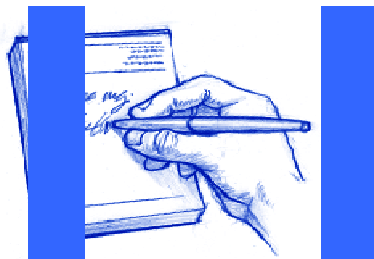
Source: JAMA 1995;274:35-43

Rank Order of Error Reduction Strategies

Forcing functions

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Automation and computerization

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Standardization and protocols

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Checklists and double check systems

↓

Rules and policies

↓

Education / Information

IOM on bar code technology

- The main impact of CPOE is on ordering and transcription errors; the technique has relatively little impact on administration errors. For reducing the frequency of the latter errors, machine identification techniques such as bar coding – especially when linked to an electronic medication administration record – hold substantial promise, although the evidence for their efficacy is less strong than is the case for CPOE.

Bar-coding

Mature technology used in virtually every American industry except….
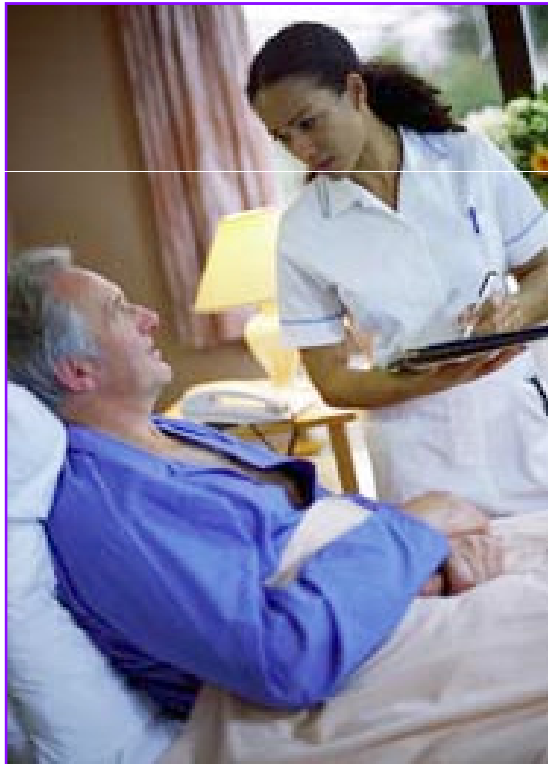
Bedside Bar-Coding...
at the Point-of-Care

Basic components of a bedside bar-coding system

- Patients issued a wrist band with a bar-coded unique patient identifier

- Medications dispensed in unit-doses with a readable bar-code listing at least a drug identification number

- Bedside scanners that are linked to other IT systems are available during drug administration

- Drug administered to patient only after scanning provider, patient, and drug

Dispensing Errors and Potential ADEs: Before and After Barcode Technology Implementation
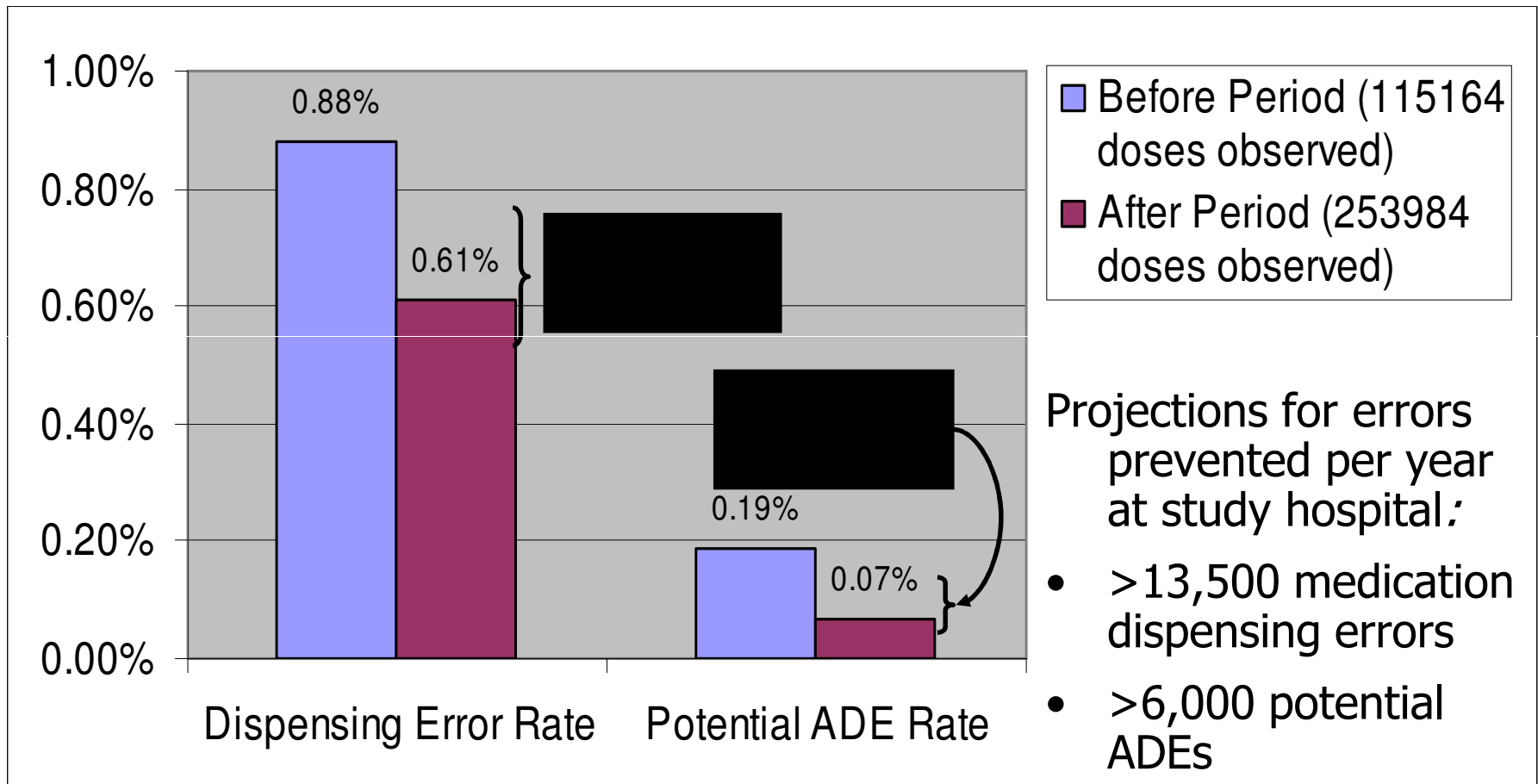
* p<0.0001 (Chi-squared test)

Common challenges

- Staffing and other resources

- Technology

- Leadership and culture

- Unit-dose dispensing

- Pharmacy and nursing workflow

Other challenges

- Hardware troubleshooting

- Readable bar code on all packages

- Lack of trust or over reliance on technology

- Managing data

- Cross-departmental lack of knowledge of medication use processes

- Non-standard orders

- Responsiveness

Use of Bar Code Technology in USA

- FDA mandated bar code on all pharmaceuticals including unit of use package by January 2006

- Approximately 20-25% hospitals have fully implemented BCMA

Use of Bar Code Technology in Canada

- No regulatory requirement on bar code in pharmaceuticals for now

- Most if not all bulk containers have bar code (but not standardized)

- Application so far for material management purpose

- A handful of hospitals have started BCMA projects

- All SDM pharmacies have new computer system requiring bar code verification of medications to be dispensed

ERROR: stackunderflow
OFFENDING COMMAND: ~

STACK: