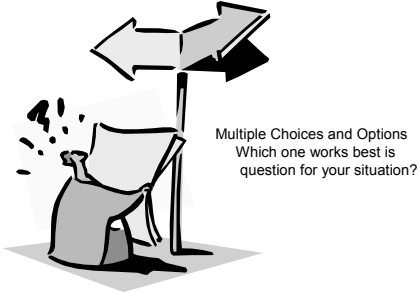


## Pharmacy Automation




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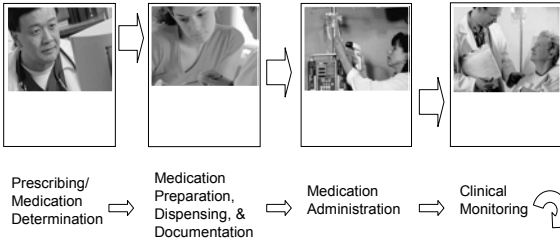
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## Medication Use Process




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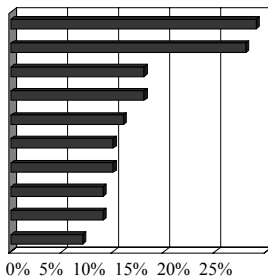
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## Why Errors Occur

- Wrong Drug
- Similar names
- Wrong dose
- Similar labeling/packaging
- Transcription error
- Omission error
- Inadequate safeguards
- Right drug, wrong strength
- Faulty drug distribution system
- Procedure not followed



U.S. Pharmacopeial Convention data from June 1, 1997 to May 31, 1998

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*“The biggest challenge is to get people in hospitals ... physicians, pharmacists, nurses, and administrators ... to recognize that errors are system problems and not people problems”*

Lucian Leape, MD  
Adjunct Professor of Health Policy  
Harvard School of Public Health

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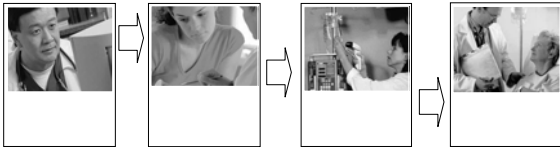
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### Medication Use Process



Prescribing/  
Medication  
Determination → Medication  
Preparation,  
Dispensing, &  
Documentation → Medication  
Administration → Clinical  
Monitoring ↻

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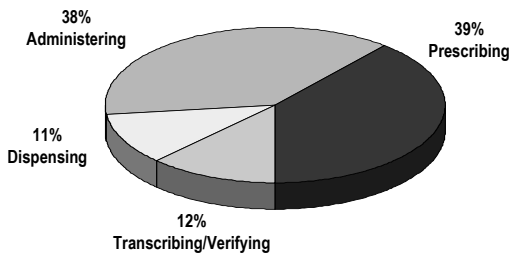
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### Medication Errors Occur



*Incidence of Adverse Drug Events and Potential Adverse Drug Events, JAMA 1995*

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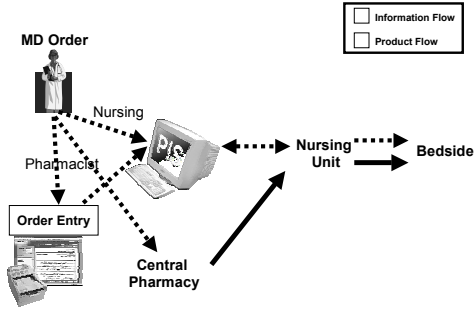
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## Physician Order Processing




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## For the Management of Prescriptions . . .

### Electronic Physician Order Entry

- Physician Order Management Solution
- Benefits, nursing, pharmacy, and patient
- Digital scanner/fax, e-prescribing
- Reduces transcribing




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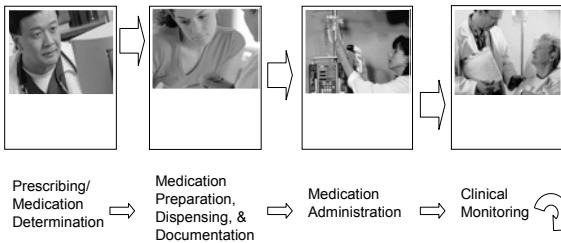
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## Medication Use Process




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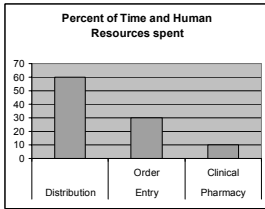
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## Where are Pharmacies Devoting Resources?

- Typical Hospital Pharmacy Devotes 90% of its Human Resources to Distribution and Order Entry Activities



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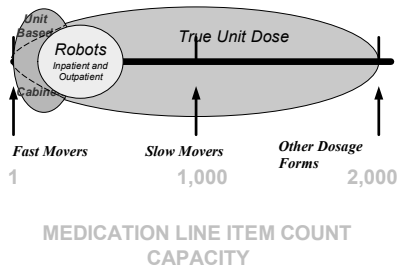
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## Automation Devices

“Formulary Reach”



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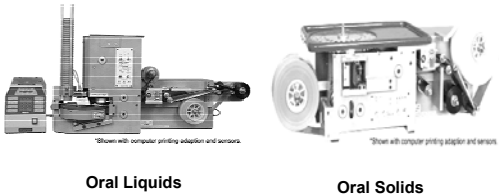
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## Unit Dose Packaging



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## Bar Code Packaging Solution

### Centralized Automation Bulk to U/D Packaging

- Automated bar code packaging
- Integrated cabinet restocking
- Patient-specific cart fill capability



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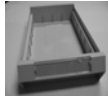
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## Centralized Automation



*Medication  
Dispensing*



Bags

Cubes

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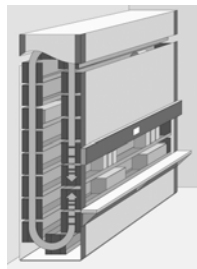
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## Carousel Robotics



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### Centralized Automation

*Medication Dispensing*

Bags

Cubes

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### IntelliFill<sup>™</sup>

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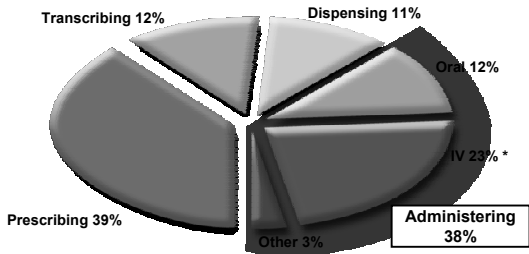
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## Where Medication Errors Occur - Hospitals



\* IV errors represent 61% of bedside administration errors.

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## Point of Care – I.V. Therapy

*Integrates bedside scanning with IV safety technology*

*Automates safety parameters*

*Reduces errors*



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## Results – The Eastern Kansas Health Care System

- 75% reduction in the wrong medication being administered
- 62% reduction in the wrong dose being administered
- 93% reduction in wrong patient errors
- 87% reduction in wrong time errors
- 70% reduction in missed medication errors

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## Technology In Outpatient Pharmacy

- Priority queuing
- Automated technician filling stations
- Labeling
- Bar code technology
- Efficient pharmacist review
- Structured workflow



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## Outpatient/Retail Pharmacy Automation

ScriptPro



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**Outpatient/Retail Pharmacy Automation**



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**Outpatient/Retail Pharmacy Automation**



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**Outpatient/Retail Pharmacy Automation**



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## Automation Impact on Pharmacy

### Inpatient and Retail

- Procurement practices
- Pharmacy information system compatibility
- Re-packaging standards
- Insuring bar code print quality
- Conformance to order interpretation standards
- Responsiveness/Timeliness
- Integrated systems require integrated efforts and integrated communications

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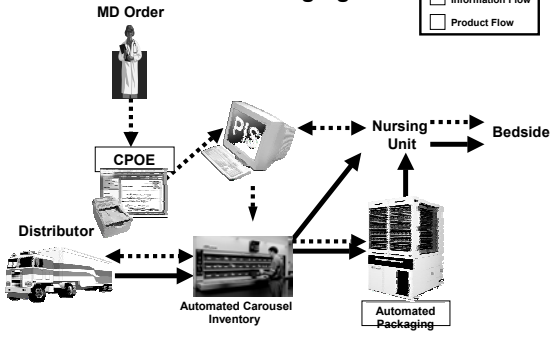
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## Medication Safety Starts in the Pharmacy

### Bar Code Unit Dose Packaging



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## Software Considerations

- 80% of medication orders fit into standard process models for order entry, packaging, delivery, and administration
- It's the remaining 20% that will occupy 90% of your time after implementation if you don't ask the hard questions first
- Are inpatient and outpatient the same software
- On to the hard questions.....

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## Automated Medication Use Process

### Results...

- Improved response time
- Reduced interruptions for pharmacy and nursing
- Improved efficiency of dispensing, delivery, and administration process
- Improved patient care
- Improved acceptance of the new technology

C. L. Tucker, National BCMA Project Manager,  
Veterans Health Administration/Eastern Kansas Healthcare System

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## Pharmacy Automation Outcomes

- Enhanced workflow through improved availability to dispensing, administration, and monitoring data
- Enhanced inter-service communications through integrated processes
- Improved efficiency through multi-disciplinary coordination of the medication management process
- Improved accountability
- Improved patient safety

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