

From the Counting Tray to the Robot:



The Last 50 Years

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The speaker conflicts have been resolved through peer review.

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Hospital Pharmacy – The Early Days



1950s and 1960s, hospital pharmacies stocked bulk pharmaceuticals in medicine closets on the nursing ward - decentralized ward stock.

Nurses had immediate access to medications, but the pharmacy lacked adequate control.

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Hospital Pharmacy – The Early Days



In 1961 Brewer Pharmacol (Upper Darby, PA) develops the first automated dispensing system.

With just 600 drugs being dispensed, Brewer promoted a machine that stocks and dispenses 95% of the medications on the nursing ward.

Pharmacists filled the locking the Brewer Cabinets.

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Hospital Pharmacy – The Early Days



Nurses would read the doctor's orders, load meds from the cabinets into drawers on a cart and then dispense the unit-of-use meds at bedside.

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Retail Pharmacy – The Early Days



Up to the early 1970s drug selection is limited, technology is simple, automation is non-existent and the typical independent pharmacy fills each prescription, manually, with the counting tray.

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Retail Pharmacy – The Early Days



In the early and mid 1970s we see the introduction of two very different automated counting systems.

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Retail Pharmacy – The Early Days




And, the first pharmacy computer is introduced in the late 1970s – QS1 is one of the first to develop software for pharmacy.

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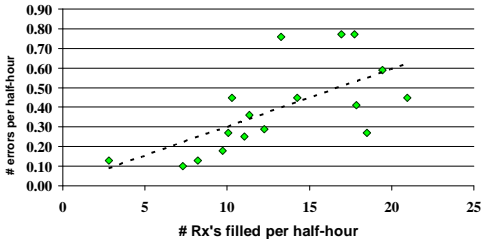
1990s – A Flood of Changes & Technology

- 1990 – Windows NT is released
- 1992 – Sharp increase in new drugs and prescription volumes
- 1996 – Decline of pharmacy graduates, profession changes
- 1997 – First Retail Robot is released



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Groundbreaking Research is Conducted



Allan EL
Relationships Among Facility Design Variables and Medication Errors in a Pharmacy
PhD Dissertation, Auburn University, AL, 1994.

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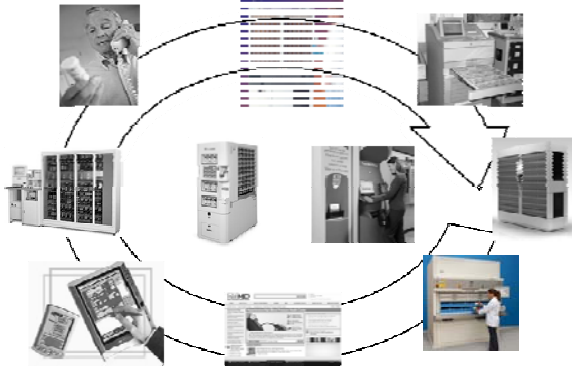
Groundbreaking Research is Conducted

83% of the prescription errors in a community pharmacy are discovered during patient counseling and are corrected before the patient leaves the pharmacy.

Deadly Dispensing: An exclusive survey of Rx Errors by Pharmacists, pages 100 - 111
Drug Topics, Illinois C, 1997

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Automation and Technology Explosion



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Additional Research is Conducted

“Utilization of simple prescription technologies, like bar codes and onscreen drug images, can reduce medication dispensing errors by one full percentage point.”

KN Barker et al
Journal of the American Pharmaceutical Association
Vol. 43, No. 2
March/April 2003

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Additional Research is Conducted

Manual Counting Accuracy...
95.79%

Thomson GJ, Liu AE
Automating the Prescription Filling Process
The Thomson Group/University of Cincinnati, 2005

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Automate the Workflow Process

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Automate the Workflow Process

- Creates a standardized prescription filling process
- Establishes clear and precise responsibilities
- Increases workflow efficiency by 30% to 50%
- Reduces lost and/or misplaced prescriptions
- Reduces prescription filling/dispensing errors

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Roles Begin to Change

“Production Line or Care Giver?”
Dr. Ken Barker, Auburn University

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Roles Continue to Change

Service	Percentage
Immunizations	70%
Diabetes Treatment	69%
Blood Pressure Monitoring	67%
Smoking Cessation	33%
Light Monitoring	26%
Weight Management	24%
Asthma Management	23%
Osteoporosis	22%
HIV/AIDS Services	13%
Anticoagulation Monitoring	9%
Cancer Assessment/Education	5%

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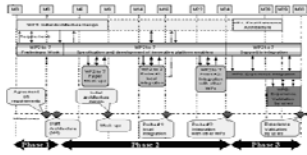
Pharmacy Layout & Design is Crucial

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Teamwork and Evaluation is Critical



- What are our top priorities?
- What are we willing to spend/invest?
- What is our timeframe for these changes?
- What types of changes have the biggest impact?
- Have we developed an ROI Model?
- Who will be in charge of this/these project(s)?
- What is our plan and how and when do we begin?



What Lies Ahead?

What Lies Ahead?



Bottom Line...

Focus on the Patient



“It is important to utilize my technicians and technology so that I can get out from behind the counter and focus on my patients”

Jimmy Yuen, Owner Advanced Medical Pharmacy, GNP

Focus on the Patient



“So long as we focus on the patient, the correct business outcomes will follow”

Timothy Davis, Owner of Beaver Health Mart



Thank You!

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0121-0000-13-058-L04-P
0121-0000-13-058-L04-T
Christopher Thomsen, BS, BA

Post Test Questions:

1. One of the first types pharmacy automation that was used to control the dispensing of medications was:
 - a) The Baker Cassette System
 - b) The Kirby Lester Counting Machine
 - c) The Brewer Dispensing Cabinet
 - d) The battery operated spatula.

2. Simple changes to the pharmacy design and layout can help to improve:
 - a. The look, feel and ambience of the pharmacy.
 - b. Face-to-face interaction between the patient and the pharmacist.
 - c. The bottom line and profitability of the pharmacy operation..
 - d. Workflow, efficiency and productivity.

3. One of the most significant aspects of an Automated Workflow System is the fact that it can:
 - a) Reduce staffing costs.
 - b) Increase productivity by a factor of 50%.
 - c) Dispenses both oral solids and liquid medications.
 - d) Bring the reality of standardization to the prescription filling process.

4. The utilization of bar codes, bar code scanning and onscreen drug images can:
 - a) Provide no significant reduction.
 - b) Reduce medication dispensing errors by one percentage point.
 - c) Increase medication dispensing errors by one percentage point.
 - d) None of the above.

5. In the coming years, one of the most important pieces of technology, in your pharmacy, will be:
 - a) Robotic systems that store and retrieve data from “the cloud.”
 - b) Software, integrated with social networks, that will allow you to monitor your patients and manage and enhance medication adherence.
 - c) Fully automated home medication dispensing and tracking machines.
 - d) All of the above.