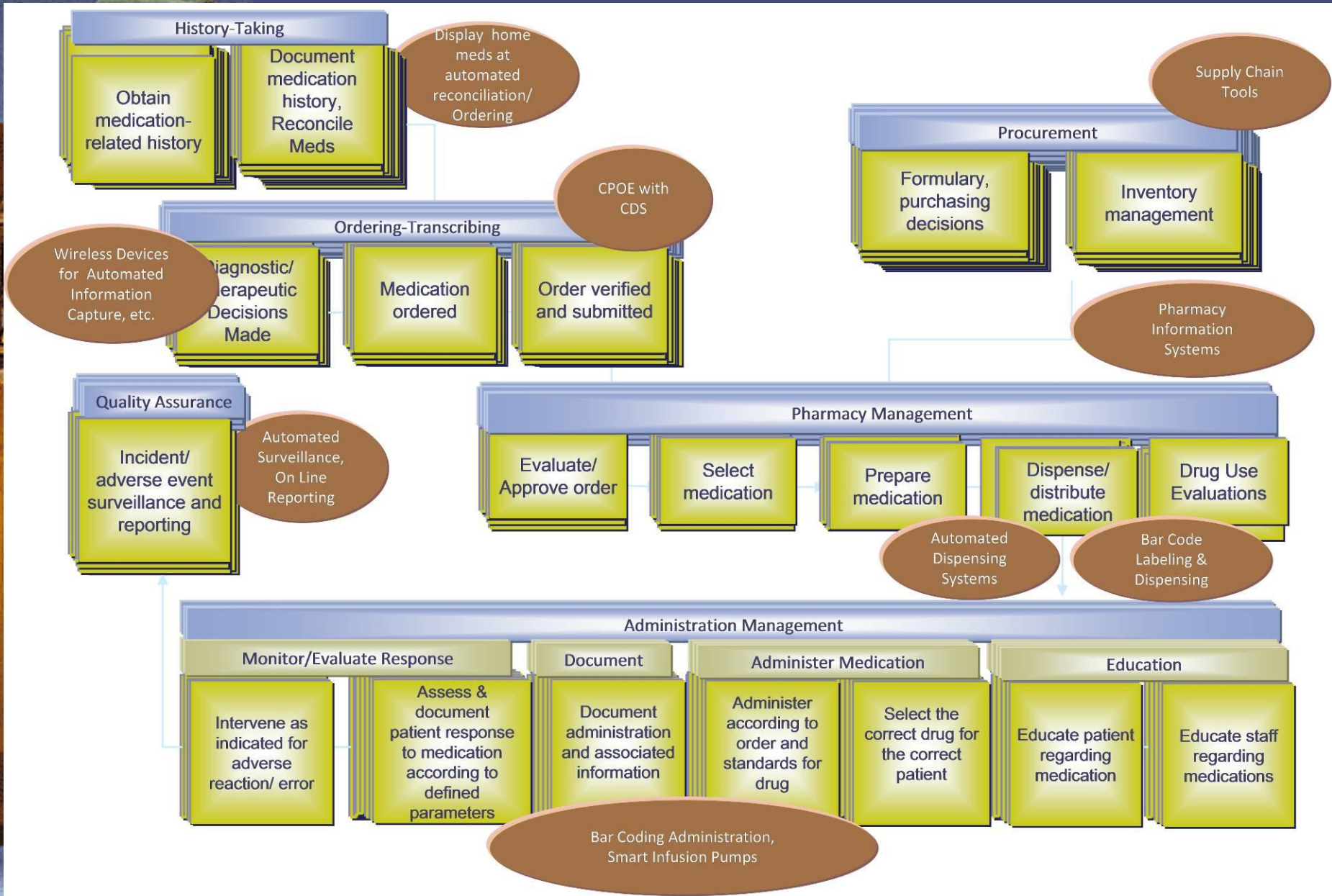




# Pharmacy Informatics Perspective – Behind the Beige Walls

Robert L. Stein, Pharm.D., Esq.  
Hoag Memorial Hospital Presbyterian

# Medication Use Process – Enabling Technology Touch Points

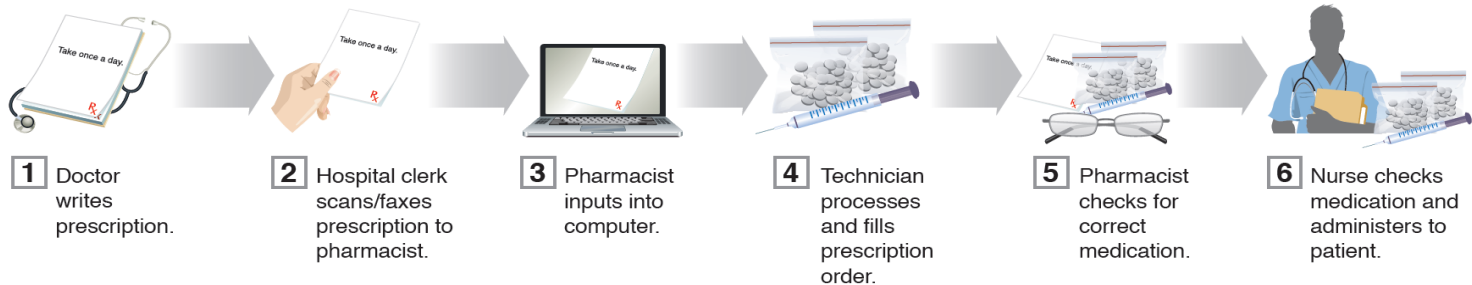


# Example of Highly Automated Hospital Pharmacy

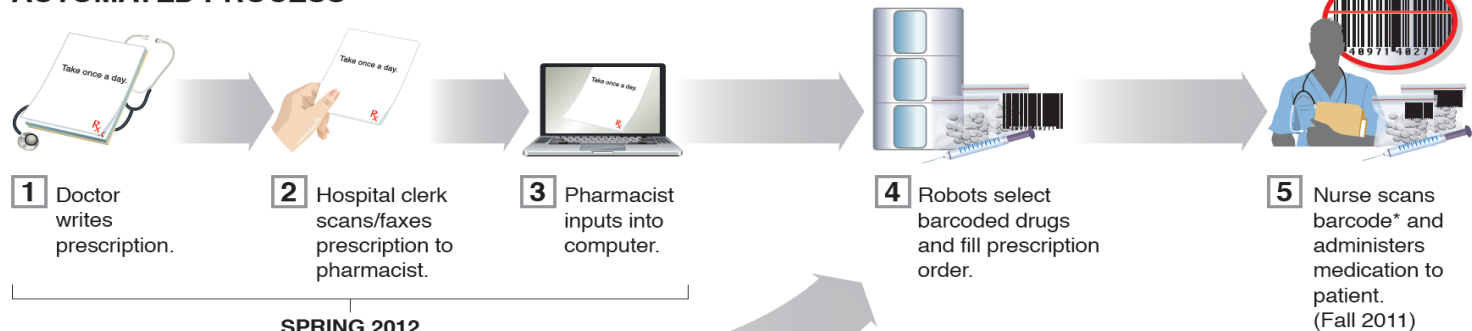
## UCSF Automated Pharmacy Streamlines Hospital Medication

Path of a prescription: Standard vs. Automated Pharmaceutical Process

### STANDARD PROCESS



### AUTOMATED PROCESS



SPRING 2012



- 1** Doctor enters prescription into computer.

# Robotic Unit Dose Fill



# Robotic Unit Dose Fill



## Operation

Medication orders along with additional information, e.g. patient name, ID number, room number, drug, dose and administration time, are automatically dispensed from the storage module (DrugNest) and assembled onto the plastic ring.

The PickRings can be transported to nursing units in cassette drawers, carts, or by pneumatic tube systems.

# Robotic IV Chemo Preparation



Courtesy UCSF Healthcare



# Bedside Musing

- The nurse is the last hope for prevention of medication errors and resulting patient harm
  - Corollary: Virtually 100% of undetected medication errors in inpatient units are administered by the nurse
- Bar Coded Medication Administration (BCMA) to the rescue (?)
  - If designed, implemented, and used properly, BCMA can significantly reduce medication administration errors
  - But most serious medication errors are from IV medications administered by infusion pump
    - BCMA *by itself* cannot eliminate errors in pump programming

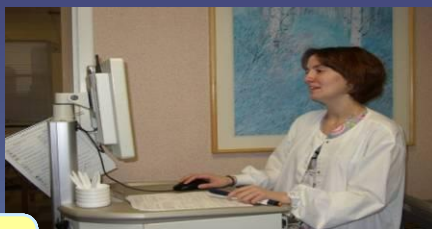


# Smart IV Pumps

- First Generation of Smart Pumps
  - Library built on central server, hard-wired connection of each pump to update drug library
  - Relies on manual input of drug and concentration
- Second Generation
  - *Wireless connectivity to library* allows update of drug library
  - Still relies on manual input of drug and concentration
- Generation Three
  - Wireless connectivity to *library and EMR* allows patient-specific orders to automatically program pump with drug and concentration
  - Works in conjunction with Bar Coded Medication Administration
- Holy Grail!
  - Automatic population of flow rates and volumes from pump to EMR
- EMR and pump vendors are getting braver about integrating EMR and pumps

# At the point of care: The ~~8~~ 6 Rights

Nurse reviews EMAR for Medications to be administered



Nurse scans bar coded Employee ID badge

Identifies provider

Nurse scans patient arm band



Right Patient

Patient list of medications displays on handheld scanner



Right Medication



Right Dose



Right Route

Nurse scans each medication



Right Time



Nurse resolves alerts, completes documentation on handheld scanner and signs

Medication administration details display on eMAR for all providers



Right Documentation

# The Bottom Line

- Medication management is a complex, cross-discipline responsibility
- “Silos” of unique workflows are inevitable
  - compounding and dispensing processes behind the doors of the hospital pharmacy
  - Surgery suite
- Technology provides the tools that enable the health care team to work collaboratively
  - Shared databases
  - Provide a *complete picture of the patient* for all care providers
  - Ultimate Goal: Make it **HARD TO DO THE WRONG THING AND EASY TO DO THE RIGHT THING**