Hospital Pharmacy Practice
Learning Outcomes

• Describe differences between centralized & decentralized pharmacies
• List at least 2 types of services provided by hospital pharmacy departments
• Explain purpose of pharmacy policy and procedure manuals
• List at least 3 different methods of drug distribution
Learning Outcomes

• List components of medication management process
• Describe role accrediting & regulatory agencies play in hospital pharmacy
• List 2 types of technology in hospital pharmacy
• Describe quality control & improvement programs
• List 3 organizations involved with patient safety
• Describe financial impact 3rd party payers have on hospitals
Key Terms

- Automated medication dispensing device
- Centralized pharmacy
- Clinical pharmacy services
- Closed formulary
- Decentralized pharmacy
- Drug distribution services
- Hospital formulary
- Investigational drug services
Key Terms

- Medication use evaluation (MUE)
- Non-formulary drug
- Open formulary
- Pharmacy satellite
- Quality control
- Quality improvement
- Unit dose
- Unit dose distribution system
Historical Perspective

• Pharmacy services were performed from a central pharmacy
  – often located in the basement of the hospital
  – services were often limited

• Focus
  – procurement
  – repackaging & labeling bulk supplies
  – delivery to patient care areas
Floor Stock Was OK

• Bulk medications was stored on nursing stations
• Nurse took medication from floor stock
• Nurses prepared all intravenous (IV) medications
• Potential for medication errors was very high
• Mid 1960s—pharmacies assumed more accountability
Organizational Structure

- Typically, at the top, board of directors
- Chief executive officer (CEO), president, or hospital director
  - sets direction by creating vision & mission
  - reports to the hospital’s board of directors
  - responsible for budget, personnel, & operations
Second Level of Hospital Mgmt

• Medical staff/second level of management
  – report directly to CEO

• Chief operating officer (COO)
  – responsible for daily operations

• Chief financial officer (CFO)
  – responsible for financial management

• Vice president of patient care services
  – responsible for direct patient care departments (pharmacy, nursing, and respiratory therapy)
Additional Levels of Mgmt

• Depends on
  – size & scope of services provided
  – financial status of facility
  – management philosophy of CEO

• Patient-focused care model
  – managers responsible for all employees & activities provided to specific patient types
  – health care workers function as a team regardless of discipline or tasks performed
Pharmacy Department

Structure

- Director or chief of pharmacy services
  - budget & drug expenditures
  - medication management
  - regulatory compliance
  - medication safety
Pharmacy Department

• Manager 1 coordinates:
  – pharmacy students
  – residency program

• Manager 2 coordinates:
  – staff development,
  – clinical pharmacy services

• Pharmacy technicians may supervise other technicians
  – lead technician responsible for management functions
Centralized Pharmacy Services

• Central location
  – sterile preparation area (clean room)
    • aseptic preparation of IV medications
  – medication cart filling area
  – outpatient prescription counter;
  – storage area for medications and supplies
  – advantage of centralized services: fewer staff members
  – disadvantages:
    • lack of face-to-face interactions with patients/providers
    • Increased time to deliver medications to patient care areas.
Decentralized Pharmacy

• Services provided from patient care areas

• Pharmacy satellites
  – on patient care units
  – drugs are stored, prepared, & dispensed for patients
  – may be staffed by 1+ pharmacists & technicians
Decentralized Pharmacy

• Advantages
  – pharmacist interacts with patients
  – more opportunities to discuss the plan of care, answer drug information
  – technicians -close to medication storage used by nurses

• Disadvantage
  – require additional resources
    • personnel to staff a decentralized satellite
    • equipment (laminar flow hoods, computers, and printers)
Clinical Practitioners

• Involved in all aspects of drug therapy
  – ensure appropriate, safe, cost-effective care
  – ensure problems requiring drug therapy are treated
  – check appropriateness of medication
  – check dose, dosage form, administration technique
  – monitor effects of medication
    • laboratory results
    • patient-specific parameters
Committee Participation

• Pharmacy and Therapeutics (P&T) Committee
  – standing committee
  – multidisciplinary
  – makes decisions about use of medications
  – makes decisions for the institutions’ formulary

• Computer implementation committee
  – example of ad hoc committee
Policy & Procedure Manuals

• The Joint Commission requires policy & procedure manual
• Contains
  – descriptions of all of pharmacy functions & services
  – policies for operations
  – procedures explaining how to execute policies
• Allows for standardized procedures
  – method for communication & education
• Many policies & procedures in hospitals are multidisciplinary
Drug Distribution Services

• Steps required to get drug to patient
• Methods vary in each hospital
• Pharmacy is responsible
• Sequential processes
  – procuring, storing, preparing, delivering medications
• Physician orders drug ⇔ Patient received drug
Steps in Drug Distribution

1. Drug must be in inventory
2. Medication order must be written
3. Order reviewed & verified by pharmacist
4. Medication order must be processed
5. Drug dispensed/delivered to nursing station/cabinet
6. Drug administered to patient & documented in MAR
7. Physicians, nurses, pharmacists monitor patient
Unit Dose Drug Distribution

• Unit dose is individually packaged medication
  – ready to be dispensed & administered to patient
  – labeling requirements (drug name, strength, lot number, expiration date, etc.)

• Two primary methods
  – automation
  – manual

• Automated Medication Dispensing Cabinets
  – Technicians play a key role
    • Maintain appropriate inventory-frequent adjustments
Manual Cart-Fill Process

• Requires use of medication carts or cassettes
  – medication drawers labeled with patient names
  – fill-list report is generated
    • for specific time period–medications scheduled to be given will print
  – technician will fill each patient’s drawer from fill-list
  – pharmacist will check the carts for accuracy
  – tech-check-tech process in some states
  – technician exchanges cassettes in patient care areas
Emergency Crash Carts

• Carts or trays with medications used in emergencies
  – defined list of medications
• Carts/trays are filled by techs & checked by pharmacist
  – locked and sealed
  – delivered to designated patient care area
Clinical Services

• Pharmacists provide patient-focused services
  – pharmacokinetic dosing
  – infectious disease consultations
  – drug information
  – nutritional support services

• Pharmaceutical care
  – Pharmacist is advocate for patient

• Patient is involved in decision-making process for care
Role of the Technician

• Pharmaceutical care model allows for new roles for technician
  – use of technicians to record laboratory results
  – screening orders for non-formulary status
  – identifying orders on the hospital’s restricted list
  – review & collect missing information for patient
    • allergies
    • height
    • weight
Investigational Drug Services

• Clinical trials evaluate efficacy/safety of medications
• Study protocol is developed, reviewed, approved by Institutional Review Board (IRB)
• Protocol is operating manual for clinical trial
• Specific requirements /procedures must be followed
Clinical Trials

• Following protocol accurately important
• Patient randomized to receive study drug or placebo
• Results & recordkeeping may be audited by FDA
• Investigational medications must be
  – stored in a separate section of the pharmacy
  – limited access
Medication Management

• Entire medication process involved
• Selection & procurement of drugs
• Storage
• Prescribing
• Preparation & dispensing
• Administration
• Monitoring effects
• Evaluation of entire system
Selection & Procurement

• Pharmacy & Therapeutics (P&T) Committee establishes hospital formulary based on:
  – indications for use
  – effectiveness
  – drug interactions
  – potential for errors and abuse
  – adverse effects
  – cost
Formularies

• Closed formulary means choice of drugs limited

• Drugs are admitted to formulary by process
  – physician requests to add a drug to formulary
  – pharmacists anticipates need
  – drug monograph is written (by pharmacy)
  – P&T Committee uses information in monograph to decide whether to add drug to formulary
  – drugs removed from formulary
    • when better drugs become available
    • when purchasing trends show drug longer being used
Formulary & Non-Formulary

• Pharmacy technicians key role in procurement
• Specific procurement process
• Pharmacist may suggest formulary medication to replace non-formulary medication
• Pharmacy has procedures to allow for temporary use of non-formulary drug
Storage

• Proper storage of medications is critical
  – temperature
  – light sensitivity

• All medications in hospital are inspected monthly
  – inspections primarily performed by technicians
  – referred to as unit inspections
Storage of Controlled Drugs

• Specific storage & documentation requirements
• Requirements are stringent
  – based on abuse & diversion potential
• Must comply with all legal & regulatory requirements
• Technicians need to be trained & knowledgeable about these requirements
Prescribing

• Policies & procedures for prescribing medications
• Verbal orders are not recommended
• Procedures for verbal orders to minimize errors
• Helpful if indication is on medication order
• Prescribers can enter order electronically or write out
• Pharmacists must review medication orders
MAR

- Medication order information appears on MAR
- MAR=Medication Administration Record
  - Used by nursing to administer meds
- Pharmacist must review all orders before medication administered unless emergency situation
- Some hospitals outsource this function to remote sites
Preparation & Dispensing

• Unit-ready-to-use form should be provided to nurse

• Pharmacy should dispense patient specific unit dose packages to nursing units because:
  – reduction in incidence of medication errors
  – decrease in total cost of medication-related activities
  – more efficient use of pharmacy & nursing personnel
  – improvement in overall drug control and drug use
  – more accurate patient billing for drugs
IV Medications

• Some IV medications available in unit dose form
• Some meds not stable in solution
  – must be mixed by pharmacy just prior to administration
• Technicians: main preparers of IV medications
• Prep requires knowledge/skill of aseptic techniques
Extemporaneous Prep

• Doses based on patient-specific characteristics
• Pediatric patients
  – require very small doses
  – unique doses not commercially available
  – special dilutions made for IV solutions
• Extemporaneous oral solutions/suspensions
  – compounded if patients unable to swallow tablet
  – crush tablets-follow recipe for solution or suspension
Final Prep Steps

• Proper labeling
  – patient’s name
  – patient’s location in hospital
  – medication name
  – dose
  – route of administration
  – expiration date
  – special directions
  – bar-codes
Administration

• Procedures to ensure timely administration of meds
• Procedures to check 5 rights
  – right medication
  – right dose
  – right patient
  – right time
  – right route
• Some hospitals add 6th right of documentation
Bar Code Systems

• Computer systems linked so that
  – Nurse scans the patient’s wrist band & med bar code
  – Confirms 6 rights:
    • Right Patient
    • Right Drug
    • Right Dose
    • Right Time
    • Right Route
    • Right Documentation-added on to original 5 rights because without documentation, dose may be given
Monitoring

• Monitoring effects of medications mandatory
  – adverse effects
  – positive outcomes
  – important component in process

• Monitoring uses patient information
  – laboratory results
  – patient’s clinical response
  – medication profile (anti-allergic or antidote orders)

• Technicians may gather info for pharmacists
Evaluating Medication Process

• Tracking & identifying trends
  – adverse drug events
  – medication errors
  – performing medication-use evaluation (MUE)

• MUE is commonly performed for
  – high-use drugs
  – high-cost drugs
  – high-risk drugs
MUE Process

• Data is collected for evaluation of
  – appropriate use
    • indications, dose, route, clinical response

• Data is tabulated & presented to
  – appropriate health care providers
  – hospital committees.

• Appropriate recommendations/actions might include
  – education & training to health care providers
  – pharmacist authority for automatic changes
Regulatory Agencies

• Standards from best practices
• Regulatory and accrediting agencies
  – make site visits
  – meet with hospital administrators, health care providers, hospital staff
  – review hospital’s guidelines, policies & procedures
The Joint Commission (TJC)

- Formerly known as the Joint Commission on the Accreditation of Healthcare Organizations, or JCAHO).
- Independent, not-for-profit organization
- Accredits more than 15,000 health care organizations
- Publishes guides to prepare for onsite inspections
- Pharmacy staff including technicians need to know requirements/standards
Benefits of Accreditation

• Strengthens community confidence
  – quality
  – safety
• Competitive edge in marketplace
• Improves risk management & risk reduction
• Provides education on good practices
• Provides professional advice & counsel
• Helps staff education, recruitment, development
Technology

- Wireless telecommunications
- Cellular phones
- Pagers
- Fax machines
- Computer networks
- Built-in alarms to alert health care providers
- Accurate record keeping (e.g., inventory control)
- Decreased prep of medications due to unit dosing
Automation

• Automated compounders
• Automated medication dispensing system
• Robotics
• Inventory Control
• Reduced diversion
• Data mining opportunities
• Surveillance of health care information
• Technicians play key & innovative roles
Computer Systems

- CPOE=Computerized Physician Order Entry
- Prevents extra step of transcription (error prone)
- Pharmacist can more quickly review & verify order
  - label will automatically print in pharmacy to be filled
  - or nurse removes drug from automated medication cabinet
Quality Programs

• Quality improvement
  – aka performance improvement
  – main initiative for institutions
  – quality improvement departments

• Encouraged by
  – Centers for Medicare and Medicaid Services (CMS)
  – The Joint Commission

• Quality may be defined by what customers perceive
Quality Control

• Process of checks and balances at critical points

• Requires
  – complete written procedures
  – training for all staff involved

• Quality control
  – prevents defective products from reaching patient.

• Disadvantage of quality control
  – time & resources
Quality Improvement (QI)

• Organized approach to analyzing system performance
• Goal is to improve system or process
  – make process more efficient
  – reduce number of defects or errors
• Focus of QI is to apply steps/techniques to analyze problems within system, not within people
• QI models
  – Six Sigma, Zero Defects, Total Quality Management (TQM), and Continuous Quality Improvement (CQI)
QI Methods

• Prospective
  – Failure Mode and Effects Analysis (FMEA)

• Retrospective
  – Root Cause Analysis (RCA)
Infection Control

• Hospital acquired = nosocomial infections

• Policies & procedures related to infection control
  – hand washing
  – surveillance of antibiotic utilization
  – bacteria susceptibility trends
  – creation of formulary restrictions on broad spectrum antibiotics
  – technician can alert the pharmacist & follow the approved procedure for this restriction
Medication Safety

• At the heart of many decisions & processes
  – implementing new technology or automation
  – ordering drugs that are labeled clearly and ready to administer to patients without manipulation
  – applying performance improvement techniques
Organizations

- The Institute for Safe Medication Practices (ISMP)
- American Society of Health-System Pharmacists (ASHP)
- Institute for Healthcare Improvement (IHI)
- The Joint Commission (TJC)
- Institute of Medicine (IOM)
- Agency for Healthcare Research and Quality (AHRQ)
- The Leapfrog Group
- National Quality Forum (NQF)
- Centers for Medicare and Medicaid Services (CMS)
- National Committee for Quality Assurance (NCQA)
Financial Implications

• Reduce costs & improve quality of care by:
  – developing alternative practice settings
  – establishing reimbursement guidelines
  – streamlining patient care services

• Health maintenance organizations (HMOs)
  – focus on preventive care & wellness

• Hospital pharmacy department continues to play key role in cost-effective medication use