Pharmacy Technician Review

Drug Distribution Systems

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Program Disclosure

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- Gayle Mayer indicated that she had no actual or potential conflicts of interest in relation to this program. The speaker has indicated that off-label use of medications will not be discussed during this presentation.
- The program is delivered in this online format by the Collaborative Education Institute (CEI).

Objectives

- Explore the role of the pharmacy technician as related to the drug distribution and dispensing process.
- Identify important aspects of technology and automation.
- Outline principles of medication safety.
- Discuss features of pharmacy operations and medication control.
- Relate information about third party billing.
- Review processes for dispensing a new or refilled prescription.

Medications

- Brand or trade drugs
- Generic drugs
  - Same chemical compound, quality, strength, purity, and stability as brand
  - Manufacturers submit Abbreviated New Drug Approval (ANDA) when brand patent is up
    - Safety and efficacy data not required
  - Equivalency rated by the FDA

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**Medications**

- Generic drug equivalency rating
- Two-letter coding system
- Published by the FDA in the Orange Book
  - A – drug products considered therapeutically equivalent
  - B – drug products are not therapeutically equivalent

**Over-the-Counter (OTC) Medications**

- Can be purchased without a prescription
- Labeled for a layperson’s safe and effective use
- Counseling can be an important part of community pharmacy practice because if not used as labeled, can be dangerous

**WHAT'S ON THE LABEL**

- Brand and/or generic name of the drug
- Strength of the drug
- Quantity in the container
- Manufacturer’s name
- National Drug Code
- “Caution: Federal Law Prohibits Dispensing Without a Rx” or “Rx Only”
- Unique UPC or bar code
- Expiration date of the drug
- Lot number
- Recommended storage conditions

**-prescription Medications**

- Habit-forming or not safe for unsupervised use
- Required by law to display words “Rx only” on the manufacturer’s container
- Further classified by federal and state law into schedules depending on their degree of physical and psychological dependence

**Manufacturer’s Label**
**National Drug Code (NDC)**

- Unique 10-digit, 3-segment number
- Used by the pharmacy to inform a third party insurance company what drug was dispensed so that reimbursement can be determined
- Ex. 0310-0201-30
- [http://www.fda.gov/cder/ndc/database/default.htm](http://www.fda.gov/cder/ndc/database/default.htm)

**Labeler code**
- Identifies the manufacturer
- Assigned by the FDA

**Product code**
- Identifies a specific strength, dosage form, and formulation for a particular manufacturer
- Assigned by the manufacturer

**Package Code**
- Identifies package sizes and types
- Assigned by the manufacturer

### Prescription Order Required Elements

1. Patient name
2. Patient address (for controlled substances)
3. Date Rx issued
4. Medication name
5. Medication strength
6. Quantity to be dispensed
   - Number of tablets
   - Milliliters of liquid
   - Grams of ointment
7. Directions for use
8. Number of refills
9. Signature of prescriber or authorized representative
10. Prescriber DEA number (for controlled substances)
11. Prescriber printed name, address, and telephone number
12. DAW (dispense as written)
### Patient Medication Profiles and Drug Therapy Review

- Technician may be responsible for initiating and updating records
- By law, pharmacist responsible for completion of prospective drug therapy review each time a new medication is dispensed
- Review includes:
  - verifying prescription order indicated for patient
  - dose is appropriate
  - medication will not interfere with other medications

### Prescription Labeling

- Rx number
- Patient name
- Date Rx was filled
- Medication name
- Medication strength
- Quantity dispensed
- Directions for use written in full text
- Number of refills remaining
- Name of prescriber
- Pharmacy name, address, and telephone number
- Initials of pharmacist dispensing the Rx

### Inventory Procedures

**Return to Stock**

- If filled, but not picked up by the patient, medications can be returned to stock
- If claim was billed to a third party, the claim must be reversed
- If medication has left pharmacy, some states allow pharmacist judgment to determine whether to return the medication to stock
- Federal law prohibits return of controlled substances under any circumstances
Medication Safety

More people die in a given year as a result of medical errors than from motor vehicle accidents, breast cancer, or AIDS.

Medication Safety

Medication errors are defined as: Any preventable event that may cause or lead to inappropriate medication use or patient harm, while the medication is in the control of the healthcare professional, patient, or consumer.

Medication Safety

Important to know policies and procedures of pharmacy to ensure safety
- Independent double-check method
  - Two pharmacy team members verify a completed prescription before dispensing the medications independently
- Implement mandatory functions in dispensing process
  - Ex. computer systems that require the entry of additional pertinent patient information before an order is complete

Drug Distribution

Institutional Pharmacy Practice

Provision of patient-focused pharmacy services in a structured setting
May include:
- Hospitals
- Extended care facilities
- Long-term care facilities
- Extended stay ambulatory care clinics

Medication Order

- Written in a specific section of the patient’s medical record
- Pharmacist must receive a direct copy
  - Except emergencies
  - Self-copying
  - Non-carbon record (NCR)
  - Copy or fax
  - Computer
Medication Order Processing

Prioritization
- STAT = statim = immediately
- "Unverified" until pharmacist reviews and interprets medication order
- Tech-check-tech
- Physician/prescriber order entry

Medication Order Distribution Systems

- Individual Prescription System
- Floor-Stock System
- Unit-Dose System
- Centralized
- Decentralized
### Here We GO!

#### Individual Prescription System
- Orders are filled with a sufficient supply of medication for several days
- **Example**
  - Order for 350 mg IVPB ampicillin
  - Dispense ampicillin 500 mg vials to patient care area
  - Nurse must prepare IVPB
- **Cons**
  - Additional nursing time
  - Increased risk for dosage errors
  - Additional pharmacy time to process return of unused medication

#### Floor-Stock System
- Nurses in patient care area use a bulk supply of medication
- Dispense doses from multiple dose container or automated dispensing machine
- Patient care area processes patient charges
- **Cons**
  - Increased potential for errors
  - Decreased inventory control

#### Unit-Dose System
- Pharmacy-coordinated and delivered to patient care area
- Medications contained in single-unit packages
- Dispensed in a form that is ready-to-administer
- Usually not more than 24-hour supply
- **Pros**
  - Decrease chances of errors and missed doses
  - Increase communication between nursing and pharmacy staffs

#### Med-Surg

#### Unit-Dose System
- **Developed to:**
  - Reduce medication errors
  - Increase drug use control within institutions
  - Minimize drug waste and pilferage
  - Reduce nursing preparation time
  - Provide mechanism for accurate and efficient billing
  - Allow full utilization of professional training and capabilities of all involved members of the healthcare team
  - Enhance or improve the quality of patient care
Unit-Dose System

- Most medications available from manufacturer in single, unit of use, or unit dose packages
- Exceptions
  - Controlled substances – require special attention/record-keeping
  - Eye drops, ear drops, ointments, irrigating solutions – impractical/not economical
- If repackaging required, label must include:
  - Medication name(s) and dose strength
  - Manufacturer or pharmacy control number
  - Drug expiration date

Unit-Dose System Cassette Exchange

- Filled medication cassettes transported to patient care area at designated exchange time
- Medication cart unlocked and filled cassettes exchanged for previous period
- Unit-dose exceptions are transferred to replacement cassettes
- Upon completion, cart is locked and “used” cassettes returned to the pharmacy

Centralized Drug Delivery

- Orders interpreted, drug doses chosen, medication placed in patient drawers of unit-dose med carts from a centralized location
- Requires appropriate physical layout for timely delivery of medications
- Technician responsibility:
  - Delivery of medications to med carts
  - Preparation of non-unit dose in pharmacy

Decentralized Drug Delivery

- Satellite pharmacies are assigned throughout the hospital or institution and utilized to distribute medications
  - Pro: Provides an environment conducive to communication between health care providers and patients
  - Con: Less economical
  - Technician responsibility:
    - Maintaining appropriate inventory, reviewing stock for expiration, preparing unit dose, IV admixtures, floor stock kits and supplies
    - Maintaining equipment such as laminar flow hoods, computers, etc.

ICU/ ED

Combination Drug Distribution

- Certain distributive functions are performed in the patient care areas, rest performed centrally
- Economies of scale are centralized
  - Extemporaneous packaging and labeling
  - Physical function of filling medication carts
- Improving patient care is decentralized
  - Interpretation of physician’s order
  - Maintaining patient profiles
  - Communicating with physicians, nurses, patients
Mental Health Unit

Surgical Services---Steps---Home Base---Start Over Again

Emergency Medication Kits
- Crash carts, paramedic boxes, disaster kits, etc
- Stored throughout the facility
- Can be easily accessed and taken to a patient’s bedside quickly
- Predetermined, specific medications and supplies to handle medical emergencies
- Technician role:
  - Routinely checking status
  - Verify contents and expiration dates
  - Replacing used items

Return to Stock
- Medications can be returned to the pharmacy if they have not been given to the patient and have been within the control of a health professional since distribution
- Technician’s role:
  - Assessing and evaluating integrity
  - Verifying expiration dates
  - Returning to inventory

Bar Code Technology
- Improve accuracy, increase productivity, control inventory
- Assigned to nurse, patient and medication
- Scanned upon medication administration to determine right drug for the right patient

Automation
- Cart fill
  - Relies on barcode technology
  - Typically a robotic arm fills the patient drawers in the cart
- Robotic delivery systems
  - Robot navigates hallways to deliver medications to nurses
- Point-of-care medication dispensing machine
  - Similar to ATM
  - Nurse enters a code to open correct patient drawer with medications
  - Significant decrease in medication errors and missing doses
Hospital Formularies

- Determined by the institution’s P&T Committee (Pharmacy & Therapeutics)
- List of drugs approved for use in hospital
- Selection based on therapeutics, safety & cost
- "Prior authorization" drugs
- Potential for serious adverse events or high cost
- Attempts to assure appropriate use

Medication Substitution

- Therapeutic substitution
  - Chemically different but expect to produce same outcome and toxicity
  - Ex. Substitute ranitidine if famotidine is prescribed
- Generic substitution
  - Contain same active ingredient
- P&T Committee determines
  - To maintain or improve quality and cost containment through decreased duplication

Quality

- Quality Improvement
  - Monitoring and evaluating processes
  - Identifying problems
  - Developing and measuring impact of improvement strategies
- Quality Control
  - Checks and balances
  - Ensure that end products meet specified standards as related to accuracy and problems

Drug Distribution

OPERATIONS, MEDICATION CONTROL AND POLICIES AND PROCEDURES

Formulary System

- Medications that are considered by the professional staff of that setting to be the most useful in patient care
- Institutional practice
- Managed care
  - Non-formulary medications may be reimbursed if the patient pays a higher copay

Inventory Control

- Just in time
  - Little inventory is kept on hand, but delivery of stock is arranged just in time
- Pareto’s Law
  - Examines the frequency of ordering and maximizes inventory turnover of high usage items
  - 80/20 analysis – goal of having 80% of pharmacy’s sales from 20% of pharmacy’s inventory
- ABC inventory
  - A = very important, 20% of items and 65% of value
  - B = moderately important, 30% of items and 25% of value
  - C = least important, 50% of items and 10% of value
Inventory Control

- Returning medications
  - Credit and return policies vary
- Expired medications
  - To manufacturer
  - Handled by return goods specialty company
- Recalled medications
  - If the FDA deems a product unsafe or has reported problems
  - Manufacturer recall

Medication Purchasing

- Manufacturer
  - Advantages - Lowest price and larger quantities
  - Disadvantages – minimum order requirements and increased paperwork
- Wholesaler
  - Advantages – quick delivery, no minimum orders
  - Disadvantage – increased price
- Prime Vendor Agreement with wholesaler
  - Price includes very small markup in exchange for pharmacy's commitment to buy most of its drugs through the wholesaler

Medication Purchasing

- Group purchasing organization (GPO) or cooperative buying group
  - Request bids from manufacturers in return for the group’s commitment to buy the manufacturer’s product
  - Prime vendor will also honor these prices

Medication Purchasing Process

Ordering

- Purchase order
  - Business forms to record details of the order
  - Purchase order number, name of the company, date of the order, product ordered, quantity ordered, price
  - Payment terms and shipping addresses
  - Used as a reference number on the invoice

Medication Purchasing Process

Receiving

- Sign manifest indicating receipt of order
  - Verification of number of boxes
- Unpack and document any inaccuracies
  - Damage, shortages
- Place medications in inventory
  - Rotate stock – newest medications behind existing

Record Completion

- Following reconciliation of contents
- Packing slip and invoice attached to purchase order
- Processed by accounts payable
### Medication Storage
- Require refrigeration
- Light-sensitive
- Controlled substances
- Chemotherapy
- Chemicals and flammable items

### Packaging
- Identifies the medication
- Prevents deterioration of medication
- Protects medication from breakage, contamination or other damage
- Allows safe and ready access to the medication

### Packaging
- **Bulk package**
  - Large container of medication purchased to obtain low price
  - Eg. Bottle of 100 tablets
  - Not intended for direct dispensing
- **Dispensing package or “unit of use”**
  - Smaller containers with enough medication for a typical therapy
  - Eg. 100 ml cephalixin suspension

### Packaging
- **Prepackaging**
  - Packaging medication individually by manufacturer for sale in unit dose packages
  - Eg. Single dose or tablet
- **Repackaging**
  - Through a controlled process, a bulk medication is sealed in a single-dose package for use in a unit-dose dispensing system

### Compounding
- Preparing and packaging a prescription order for a specific patient
- Non-sterile and sterile
- Sterile requires:
  - A test of sterility after preparation
  - Clean rooms
  - Specific training and testing of personnel in principles and practices of aseptic technique
  - Air quality evaluations
  - Maintenance and sound knowledge of sterilization and solution stability principles and practices

### Packaging
- **Batch repackaging**
  - Repackaging a large number of doses into unit-dose packages
  - Eg. 500 tablets in one session
- **Extemporaneous repackaging**
  - Repackaging a smaller number of doses to provide a few days’ supply
  - Eg. 20 tablets in one session
- **Unit-dose package or single unit-of-use package**
  - Individually packaged drugs
  - Conceptually provides for one dose
Sterile Compounding Area

Compounding
Nonsterile

1. Look at prescription and determine if safe and for intended use
2. Perform necessary calculations to establish amount of ingredients needed
3. Identify equipment needed
4. Follow procedures for hand washing, etc.
5. Clean compounding area and needed equipment
6. Only one RX should be compounded at a time
7. Assemble all materials to compound Rx

Compounding
Nonsterile

8. Compound preparation following formulation record or reference
9. Assess weight, variation, adequacy of mixing, clarity, odor, color, consistency and pH
10. Document product in records
11. Label container to include name, internal id #, beyond-use date, initials of compounder, storage requirements, and other legal requirements
12. Sign and date the Rx or order
13. Clean all equipment and store properly
14. Clean compounding area

Compounding
Powders, crystals, ointments or other solid

- Class A prescription balance
  - Accurately weighs 120 mg – 15 g
- Class B prescription balance
  - Accurately weighs 650 mg – 120 g

Compounding
Liquids

- Conical graduates
  - Easier to handle and clean
- Cylindrical graduates
  - More accurate
- TC Graduate (to contain)
  - Volume measured on the scale is equal to the volume of liquid inside the graduate
- TD (to deliver)
  - Measure the amount of liquid needed by considering residual amount left inside graduate once liquid is poured out
- Meniscus

Manufacturing

- Produce commercially manufactured pharmaceuticals designed for sale to other pharmacies
- Must register with the FDA as a manufacturer
- Must operate under good manufacturing practices (GMP)
**Policies and Procedures**

- Collection of documents designed to ensure:
  - Safe and effective operations in the procurement, storage, preparation and use of medications
  - Consistency
- Policy
  - Broadly defines what needs to be done and sets limits to boundaries around decisions that are to be made
- Procedure
  - "How-to" guide to look at a process in a step-by-step approach
  - Describe steps to accomplish what is defined in the policy

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**Drugs Distribution**

**THIRD PARTY INSURANCE BILLING**

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**Medicare**

- Coverage responsibility of the Social Security Administration (SSA)
- Administered by the Centers for Medicare & Medicaid Services (CMS)
- Provides coverage to approx. 43 million Americans
  - Individuals age 65 or older
  - Certain individuals under age 65 with disabilities
  - Patients with end-stage renal disease (ESRD), which is permanent kidney failure requiring dialysis or a kidney transplant

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**Medicare Part A**

- Provides coverage of:
  - Inpatient hospital services
  - Skilled nursing facilities (non-custodial or long term care)
  - Home health services
  - Blood
  - Hospice care
- Automatically receive benefits beginning the first of the month after they become age 65

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**Medicare Part B**

- Helps pay for the cost of physician services, outpatient hospital services, medical equipment and other health services
- Services of physical and occupational therapists and some home health care
- Automatically enrolled, beginning the first day of the month after they become 65
- Pay a premium of approx. $78/month and a deductible of approx. $110
**Medicare Part C**
- Medicare Advantage (formerly Medicare Choice)
- Patients are eligible to “switch” to an MA plan if they are entitled to Part A and are enrolled in Part B
- Must be available in patient’s service area
- Patients can only go to providers in the plan’s network
- May pay a lower copay for services and receive extra benefits

**Medicare Part D**
- Prescription drug coverage
- Introduced by the Medicare Prescription Drug, Improvement and Modernization Act (MMA) of 2003
- Voluntary benefit
- Average per month premium is $32
- If dually eligible for both Medicaid and Medicare, no premium or deductible and no gap in coverage ($1/generic, $3/brand)

**Medicaid**
- Became law in 1965 as a jointly funded cooperative venture between the federal and state governments to assist states in the provision of adequate medical care to eligible needy persons
- Categories of eligibles include:
  1. Children
  2. Pregnant women
  3. Adults in families with dependent children
  4. Individuals with disabilities
  5. Individuals aged 65 years and older

**Managed Care**
- Grew out of concern for increasing health care costs
- Provision of health care with a corresponding concern for the appropriate use of resources
- Financial risks for members include cost sharing in the form of copayments, deductibles, and/or coinsurance

**Managed Care**
- HMO (Health Maintenance Organization)
  - Heterogeneous group of different providers that collectively offers comprehensive health care
- Types
  - Staff
  - Group practice
  - Network
  - Independent practice association (IPA)
- PPO (Preferred Provider Organization)
  - Homogenous group of providers that collective offers a single type of service
- Point-of-Service Health Maintenance Organization (POS HMO)
  - Members obtain care through an HMO provider network for the lowest out-of-pocket costs
- Exclusive Provider Organization (EPO)
  - Similar to PPO, but require members to access only contracted providers
- Physician-Hospital Organization (PHO)
  - Healthcare delivery systems jointly owned by hospitals and the affiliated physicians
- Mixed models also exist
**Medication Therapy Management Services (MTMS)**

- Mandated in MMA
- Must ensure that covered medications will be appropriately used by targeted beneficiaries to optimize therapeutic healthy outcomes through improved medication use and reduced risk of adverse drug reactions

**Pharmacy Benefit Managers (PBM)**

- Companies under contract with managed care organizations, self-insured companies, and government programs
- Manage pharmacy networks, drug utilization review, outcomes management, and disease management
- Goal = save money
- Formulary – designed to save money by mandating preferred list of drugs
- Prospective reviews – promote compliance with formulary and to ensure safety, quality, and efficacy

**Billing-Related Questions**

- Have you had prescriptions filled at this pharmacy?
- Do you have a prescription drug benefit card or will you pay with cash?
- Is this card the most recent?
- Do you have a secondary insurance plan or only this one?
- Do you know what your copayment is?
- Be sure to have:
  - Full name
  - Address and phone
  - Date of birth
  - Medication and food allergies
  - Physician address and identification number

**Prescription Drug Cards**

- Patient’s name
- Patient code – cardholder
- Group number – patient’s employer
- Contract number – ID
- Plan code – specific plan criteria
- Name of company
- Prescription BIN (bank id # for routing)
- Carrier code – claims processor and payor group

**Questions**