Chapter 2

Drug Classes and Schedules

Drug Are Organized in Two Ways

- Therapeutic classification
- Pharmacologic classification

Therapeutic Classification of Drugs

- Based on what the drug does clinically
- Examples
  - Anticoagulants
  - Antidepressants
  - Antineoplastics

Pharmacologic Classification of Drugs

- Based on how the drug produces its effect
  - At molecular, tissue, or body-system level
- More specific than therapeutic classification
- Requires understanding of biochemistry and physiology

Examples

- Calcium-channel blockers
- Angiotensin-converting enzyme inhibitors
- Proton-pump inhibitors

“Prototype” Drug—Serves as Model for a Drug Class

- Is well understood
- Has known action and adverse effects
- Is used to compare other drugs in same pharmacologic class
Newer drugs in same class

- Newer drugs in same class may have replaced its use because they:
  - Are more effective
  - Have more favorable safety profile
  - Have longer duration of action

Most Drugs Have Three Names

- Chemical
- Generic
- Trade

Drug Has One Chemical Name

- Assigned using standard nomenclature established by International Union of Pure and Applied Chemistry (IUPAC)
- Describes physical and chemical properties of drug

Drug Has One Chemical Name

- Complicated, difficult to remember and pronounce
  - Example: chemical name for diazepam: 7-chloro-1, 3-dihydro-1-methyl-5-phenyl-2H-1, 4-benzodiazepin-2-one

Drug Classification

- Drugs are sometimes classified by a portion of their chemical structure:
  - Cephalosporins, phenothiazines, benzodiazepines
### A Drug Has One Generic Name

- Assigned by the US Adopted Name Council
- Less complicated and easier to remember
- Describes active ingredients

### A Drug Has One Generic Name

- Used by many organizations
  - Food and Drug Administration (FDA)
  - US Pharmacopoeia
  - World Health Organization
- Written in lower case
- Example: diazepam

### A Drug Has Several Trade Names

- Assigned by company marketing the drug
- Short, easy to remember
- Also called proprietary, product, or brand name
- Drug developer has exclusive rights to name and market a new drug for 17 years in US.
- Trade name is capitalized
- **Example:** trade name for diazepam is Valium

### Communication Enhanced

- Health-care providers and other health organizations use generic names
- Written in lower case

### Some States Have a Negative Formulary List

- List of trade-name drugs that pharmacists may not dispense as generic-drug substitutes
- Claim there are differences in bioavailability between generic and trade-name drugs
- Pharmaceutical Companies and Some Health-Care Practitioners Support List
- Claim differences could adversely affect patient outcomes
Controlled Substances Are Drugs That

- Are frequently abused
- Have a high potential for addiction or dependence
  - Physical dependence
  - Psychological dependence
- Have restricted use
- Are placed into one of five schedules

Controlled Substance Act of 1970

- Also known as Comprehensive Drug Abuse Prevention and Control Act
- Restricts use of drugs with potential for abuse
- Restricted drugs placed into five schedules
- Hospitals and pharmacies must maintain complete records of scheduled drugs

Schedule II Drugs Have More Restrictions

- Need special order form to obtain
- Orders must be written
- Orders must be signed by health-care provider
- Telephone orders to pharmacies not permitted
- No refills permitted
- Client must see health-care provider first

Drug Enforcement Administration (DEA) Regulates Controlled Substance Act

- Hospitals and pharmacies must register with DEA
  - Must use assigned registration number to purchase scheduled drugs

Not All Drugs with Abuse Potential Are Regulated

- Tobacco, alcohol, and caffeine

Controlled Substances

- Anyone Convicted of Unlawful Manufacturing, Distributing, and Dispensing of Controlled Substances Faces Severe Penalties
Schedule I Drugs
- Highest abuse potential
- High physical and psychological dependence
- Limited or no therapeutic use

Examples of Schedule I Drugs
- Heroin
- LSD
- Methaqualone

Schedule II Drugs
- High abuse potential
- High physical and psychological dependence
- Therapeutic use with prescription
- Some drugs no longer used

Examples of Schedule II Drugs
- Morphine
- PCP
- Cocaine
- Methadone
- Methamphetamine

Schedule III Drugs
- Moderate abuse potential
- Moderate physical dependence
- High psychological dependence
- Therapeutic use with prescription

Examples of Schedule III Drugs
- Anabolic steroids
- Codeine with aspirin or Tylenol
- Hydrocodone with aspirin or Tylenol
- Some barbiturates
### Schedule IV Drugs
- Lower abuse potential
- Lower physical and psychological dependence
- Therapeutic use with prescription

### Examples of Schedule IV Drugs
- Dextropropoxyphene
- Pentazocine
- Meprobamate
- Diazepam
- Alprazolam

### Schedule V Drugs
- Lowest abuse potential
- Lowest physical and psychological dependence
- Therapeutic use without prescription
- Examples
  - OTC cough medicines with codeine

### Part III, Schedule G, of Canadian Food and Drugs Act
- Controlled substances only dispensed for specific conditions and diseases
- Drugs must be labeled with letter “C” on outside of container
- Examples
  - Amphetamines
  - Barbiturates
  - Methaqualone
  - Anabolic steroids

### Part IV, Schedule H, of Canadian Food and Drugs Act
- Restricted drugs not intended for human use
  - Drugs used in chemical or analytical procedure
  - Medical, laboratory industrial, educational, or research purposes
- Restricted drugs, such as
  - LSD
  - MDMA
  - DOM (street name, STP)

### Schedule F Drugs, Canadian Narcotic Control Act and Amended Schedules
- Require prescription
- Include
  - Methylphenidate (Ritalin)
  - Diazepam (Valium)
  - Chlordiaepoxide (Librium)
- Narcotic drugs must be labeled with the letter N on the outside of the container