**Schedule of Controlled Drugs**

### Schedule I

(All nonresearch use illegal under federal law.)

**Flunitrazepam (Rohypnol)**

**Narcotics:**
- Heroin and many nonmarketed synthetic narcotics

**Hallucinogens:**
- LSD
- MDA, STP, DMT, DET, mescaline, peyote, bufotenine, ibogaine, psilocybin, phencyclidine (PCP; veterinary drug only)

**Marijuana**

**Methaqualone**

### Schedule II

(No telephone prescriptions, no refills.)

**Opioids:**
- Opium
- Opium alkaloids and derived phenanthrene alkaloids: codeine, morphine, (Avinza, Kadian, MSContin, Roxanol), hydromorphone (Dilaudid), oxymorphone (Exalgo), oxycodone (dihydrocodeine, a component of Oxycontin, Percodan, Percocet, Roxicodone, Tylox).
- Designated synthetic drugs: meperidine (Demerol), methadone, levorphanol (Lego-Dromoran), fentanyl (Duranestic, Actiq, Fentora), alfentanil (Alfenta), sufentanil (Sufenta), remifentanil (Ultiva), tapentadol (Nycityn).

**Stimulants:**
- Coca leaves and cocaine
- Amphetamine
- Amphetamine complex (Biphetamine)
- Amphetamine salts (Adderall)
- Dextroamphetamine (Dexedrine, Procentra)
- Lisdexamfetamine (Vyvanse)
- Methamphetamine (Desoxyn)
- Methylenedidate (Ritalin, Concerta, Methylin, Daytrana, Medadate).

**Cannabinoids:**
- Nabilone (Cesamet)

**Depressants:**
- Amobarbital (Amytal)
- Pentobarbital (Nembutal)
- Secobarbital (Seconal)

### Schedule III

(Description must be rewritten after 6 months or five refills.)

**Opioids:**
- Buprenorphine (Buprenex, Subutex)
- Mixture of above Buprenorphine and Naloxone (Suboxone)
- The following opioids in combination with one or more active non-opioid ingredients, provided the amount does not exceed that shown: Codeine and dihydrocodeine: not to exceed 1800 mg/dL or 90 mg/tablet or other dosage unit.
- Dihydrocodeinone (hydrocodeinone in HycoDan, Vicodin, and Lortab): not to exceed 300 mg/dL or 15 mg/tablet.
- Opium: 500 mg/dL or 25 mg/5 mL or other dosage unit (paregoric)

**Stimulants:**
- Benzphetamine (Didrex)
- Phenidimetrazine (Bontril)

**Depressants:**
- Schedule II barbiturates in mixtures with noncontrolled drugs or in suppository dosage form
- Butabarbital (Butisol)
- Ketamine (Ketalar)

**Cannabinoids:**
- Dranabinol (Marinol)

### Schedule IV

(Prescription must be rewritten after 6 months or five refills; differs from Schedule III in penalties for illegal possession.)

**Opioids:**
- Butorphanol (Stadol)
- Difenoxin 1 mg + atropine 25 mcg (Motofen)
- Pentazocine (Talwin)

**Stimulants:**
- Armodafinil (Nuvigil)
- Diethylpropion (Tenuate) not in US
- Modafinil (Provigil)
- Phentermine (Ionomin, Adipex-P)

**Depressants:**
- Benzodiazepines
  - Alprazolam (Xanax)
  - Clorazepate (Librium)
  - Clonazepam (Klonopin)
  - Clorazepate (Tranxene)
  - Diazepam (Valium)
  - Estazolam (ProSom)
  - Flurazepam (Dalmane)
  - Halazepam (Paxipam)
  - Lorazepam (Ativan)
  - Midazolam (Versed)
  - Oxazepam (Serax)
  - Prazepam (Centrax)
  - Quazepam (Doral)
  - Temazepam (Restoril)
  - Triazolam (Halcion)
  - Chloral hydrate (Somnate)
  - Eszopiclone (Lunesta)
  - Meprambarate (Equanil, Miltown, etc)
  - Methobarbital (Mebaral)
  - Methohexital (Brevital)
  - Paraldehyde
  - Phenobarbital
  - Zaleplon (Sonata)
  - Zoledim (Ambien)

### Schedule V

(As any other nonopioid prescription drug)

- Codeine: 200 mg/100 mL
- Difenoxin preparations: 0.5 mg + 25 mcg atropine
- Dihydrocodeine preparations: 10 mg/100 mL
- Diphenoxylate (not more than 2.5 mg and not less than 0.025 mg of atropine per dosage unit, as in Lomotil)
- Ethylmorphine preparations: 100 mg/100 mL
- Opium preparations: 100 mg/100 mL
- Pregabalin (Lyrica)
- Pyrovalerone (Centroten, Thymergix)

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2. Emergency prescriptions may be telephoned if followed within 7 days by a valid written prescription annotated to indicate that it was previously placed by telephone.
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Preface

The twelfth edition of Basic & Clinical Pharmacology continues the important changes inaugurated in the eleventh edition, with extensive use of full-color illustrations and expanded coverage of transporters, pharmacogenomics, and new drugs. Case studies have been added to several chapters and answers to questions posed in the case studies now appear at the end of each chapter. As in prior editions, the book is designed to provide a comprehensive, authoritative, and readable pharmacology textbook for students in the health sciences. Frequent revision is necessary to keep pace with the rapid changes in pharmacology and therapeutics; the 2–3 year revision cycle of the printed text is among the shortest in the field and the availability of an online version provides even greater currency. In addition to the full-color illustrations, other new features have been introduced. The Case Study Answer section at the end of chapters will make the learning process even more interesting and efficient. The book also offers special features that make it a useful reference for house officers and practicing clinicians.

Information is organized according to the sequence used in many pharmacology courses and in integrated curricula: basic principles; autonomic drugs; cardiovascular-renal drugs; drugs with important actions on smooth muscle; central nervous system drugs; drugs used to treat inflammation, gout, and diseases of the blood; endocrine drugs; chemotherapeutic drugs; toxicology; and special topics. This sequence builds new information on a foundation of information already assimilated. For example, early presentation of autonomic nervous system pharmacology allows students to integrate the physiology and neuroscience they have learned elsewhere with the pharmacology they are learning and prepares them to understand the autonomic effects of other drugs. This is especially important for the cardiovascular and central nervous system drug groups. However, chapters can be used equally well in courses and curricula that present these topics in a different sequence.

Within each chapter, emphasis is placed on discussion of drug groups and prototypes rather than offering repetitive detail about individual drugs. Selection of the subject matter and the order of its presentation are based on the accumulated experience of teaching this material to thousands of medical, pharmacy, dental, podiatry, nursing, and other health science students.

Major features that make this book particularly useful in integrated curricula include sections that specifically address the clinical choice and use of drugs in patients and the monitoring of their effects—in other words, clinical pharmacology is an integral part of this text. Lists of the commercial preparations available, including trade and generic names and dosage formulations, are provided at the end of each chapter for easy reference by the house officer or practitioner writing a chart order or prescription.

Significant revisions in this edition include:

- In addition to the Case Studies used to open many chapters, Case Study Answers at the end of these chapters provide an introduction to the clinical applications of the drugs discussed.
- A Drug Summary Table is placed at the conclusion of most chapters; these provide a concise recapitulation of the most important drugs.
- Many new illustrations in full color provide significantly more information about drug mechanisms and effects and help to clarify important concepts.
- Major revisions of the chapters on sympathomimetic, sympatholytic, antipsychotic, antidepressant, antidiabetic, anti-inflammatory, and antiviral drugs, prostaglandins, nitric oxide, hypothalamic and pituitary hormones, and immunopharmacology.
- Continued expansion of the coverage of general concepts relating to newly discovered receptors, receptor mechanisms, and drug transporters.
- Descriptions of important new drugs released through August 2011.


This edition marks the 30th year of publication of Basic & Clinical Pharmacology. The widespread adoption of the first eleven editions indicates that this book fills an important need. We believe that the twelfth edition will satisfy this need even more successfully. Spanish, Portuguese, Italian, French, Indonesian, Japanese, Korean, and Turkish translations are available. Translations into other languages are under way; the publisher may be contacted for further information.

I wish to acknowledge the prior and continuing efforts of my contributing authors and the major contributions of the staff at Lange Medical Publications, Appleton & Lange, and McGraw-Hill,
and of our editors for this edition, Donna Frassetto and Rachel D’Annucci Henriquez. I also wish to thank my wife, Alice Camp, for her expert proofreading contributions since the first edition.

This edition is dedicated to the memory of James Ransom, PhD, the long-time Senior Editor at Lange Medical Publications, who provided major inspiration and invaluable guidance through the first eight editions of the book. Without him, this book would not exist.

Suggestions and comments about Basic & Clinical Pharmacology are always welcome. They may be sent to me in care of the publisher.

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San Francisco
December, 2011
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*Deceased
Key Features of
Basic & Clinical Pharmacology, 12e

The most comprehensive, authoritative, and engaging pharmacology textbook for students in the health sciences

Key Features

• More than 300 full-color illustrations
• Emphasis is placed on discussion of drug groups and prototypes within each chapter
• NEW case studies open several chapters, adding clinical relevance to the material
• NEW case study answers at the end of the chapters provide an introduction to the clinical application of the drugs discussed
• NEW drug summary tables conclude most chapters, providing a concise summary of the most important drugs
• Expanded coverage of general concepts relating to newly discovered receptors, receptor mechanisms, and drug transporters
• Lists of the commercial preparations available, including trade and generic names and dosage formulations, are provided at the end of each chapter
• Selection of the material and order of presentation is based on the author’s years of experience in teaching this material to thousands of students
• Material is organized according to the sequence used in most pharmacology courses

Hundreds of full-color illustrations enrich the text