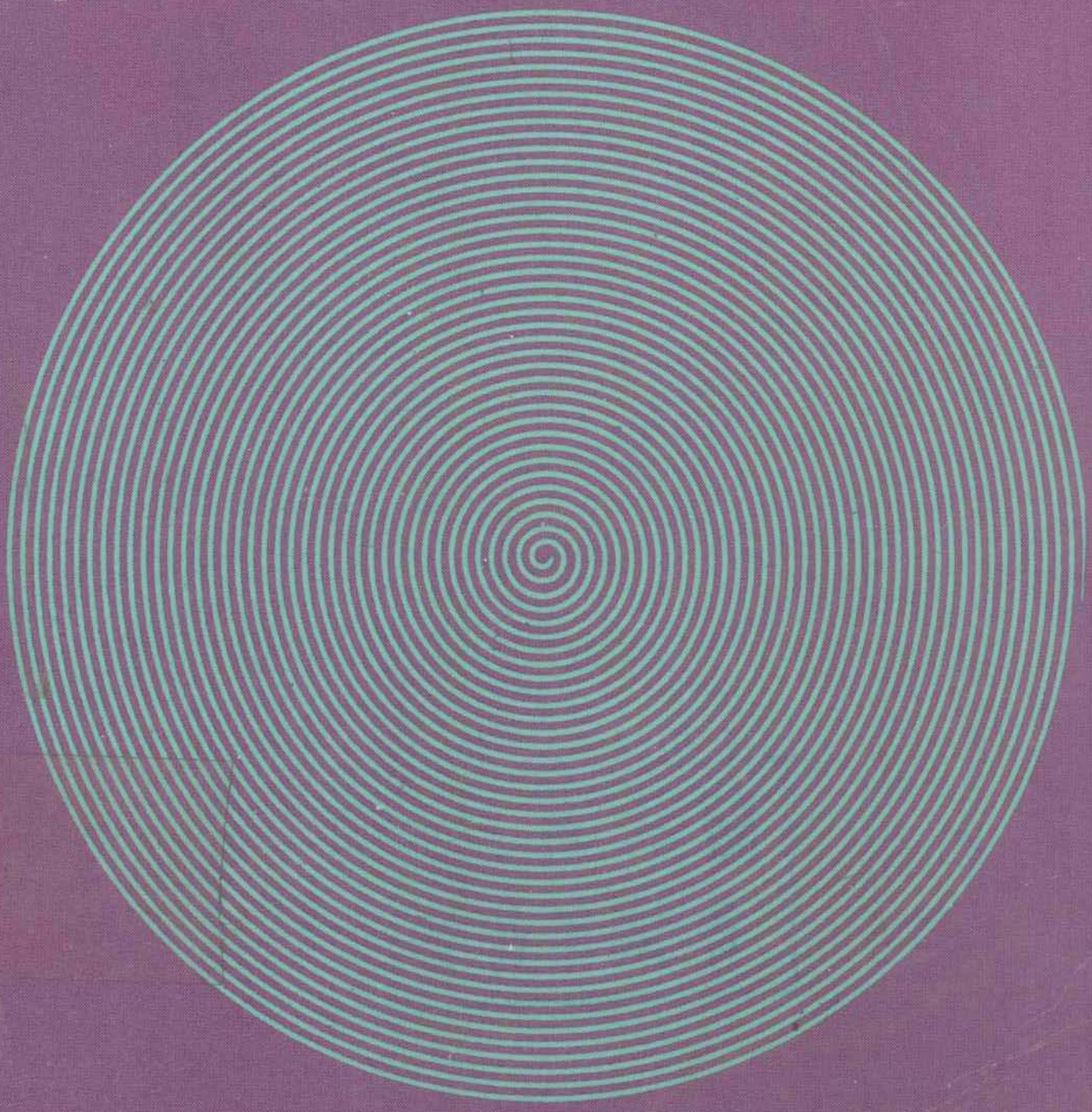
Drug Guide for *Psychiatric Nursing*

Mary C. Townsend



DRUG GUIDE FOR PSYCHIATRIC NURSING

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NOTE: As new scientific information becomes available through basic and clinical research, recommended treatments and drug therapies undergo changes. The author(s) and publisher have done everything possible to make this book accurate, up-to-date, and in accord with accepted standards at the time of publication. However, the reader is advised always to check product information (package inserts) for changes and new information regarding dose and contraindications before administering any drug. Caution is especially urged when using new or infrequently ordered drugs.

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INTRODUCTION

PHARMACOLOGY: ADJUNCT PSYCHOTHERAPY

What sort of behavior warrants the label of "mental illness"?[1] Horwitz has suggested a strong cultural influence in the application of this label. Behaviors considered indicative of mental illness in one society may not necessarily be considered as such in another. Standards by which behaviors are measured include:

(1) The degree to which the behavior conforms to societal norms;
(2) The ability of an observer to comprehend the behavior (or the motivation behind the behavior).

Historically, reaction to and treatment of the mentally ill ranged from benign involvement to intervention some would consider inhumane. Mentally ill individuals were feared due to common beliefs associating them with demons or the supernatural. They were looked upon as loathsome and often were mistreated.

Beginning in the late 18th century, a type of "moral reform" in the treatment of the mentally ill began to occur. This resulted in the establishment of community and state hospitals concerned with the needs of the mentally ill. Considered a breakthrough in the humanization of care, these institutions, however well intentioned, fostered the concept of custodial care. Patients were assured the provision of food and shelter, but had little or no hope of change for the future. As they became increasingly dependent upon the institution to fill their needs, the likelihood of their return to the family or community diminished.

The early part of the 20th century saw the advent of the somatic therapies in psychiatry. Mentally ill individuals were treated with insulin shock therapy, wet sheet packs, ice baths, electroconvulsive therapy, and psychosurgery. Before 1950, no important chemical agents existed in psychiatric practice except sedatives and amphetamines, which had limited use due to their toxicity and addicting effects.[2] Since the 1950s, the development of psychopharmacology has expanded to include widespread use of antipsychotic, antidepressant, and antianxiety medications. Research into how these drugs work has provided an understanding of the etiology of many psychiatric disorders.

Psychotropic medications are not intended to "cure" mental illness. Most physicians who prescribe these medications for their patients use them as an adjunct to individual or group psychotherapy. Although the contribution of these drugs for psychiatric care cannot be minimized, it must be emphasized that psychotropic medications relieve only physical and/or behavioral symptoms. They do not resolve the underlying condition or emotional problems.

Nurses must understand the legal implications associated with administration of psychotropic medications. Laws differ from state to state, but most adhere to the patient's right to refuse treatment. Exceptions exist in emergency sit-

[1]Horwitz, AV. The Social Control of Mental Illness. Academic Press, New York, 1982, pp. 14–30.

[2]Burgess, AW. Psychiatric Nursing in the Hospital and the Community, ed 4. Prentice-Hall, Englewood Cliffs, NJ, 1985, p. 755.

uations when it has been determined that patients are likely to harm themselves or others.

It is important for nurses to be familiar with the psychotropic medications being administered. This text is designed to provide the information needed to administer medications in a safe manner and to provide a framework of the nursing process for delivery of care. Common psychotropic medications are included, as well as other medications that have implications in psychiatry. Each medication monograph includes GENERIC and TRADE NAMES, CONTROLLED SUBSTANCE and PREGNANCY CATEGORIES, CLASSIFICATION, MECHANISM OF ACTION, INDICATIONS, CONTRAINDICATIONS AND PRECAUTIONS, PHARMACOKINETICS, ADVERSE REACTIONS AND SIDE EFFECTS, INTERACTIONS, ROUTE AND DOSAGE, and PHARMACODYNAMICS sections. In addition, application of the nursing process as it relates specifically to each medication is discussed. This includes assessment data necessary for safe administration, NANDA-accepted nursing diagnoses potentially relevant to necessary for administration of the medication, nursing actions important in the implementation of drug administration (including a section on patient/family education), and evaluation of patient response to the medication regimen.

This integration of psychopharmacology with the nursing process will provide the nurse with a useful, quick, and up-to-date reference for systematic and accurate administration of psychotropic medications.

HOW TO USE DRUG GUIDE FOR PSYCHIATRIC NURSING*

The purpose of DRUG GUIDE FOR PSYCHIATRIC NURSING is to provide readily accessible, easy-to-understand information on the most commonly prescribed drugs for use in psychiatric/mental health clinical settings. The sections below describe the organization of the book and the information provided for each drug.

Special Dosing Considerations

In many clinical situations, the average dosing range can be inappropriate. This section presents general guidelines for situations in which special dosing considerations must be made to assure optimum therapeutic outcome.

Classifications

Brief summaries of the various drug classifications are provided, along with a list of drugs contained in each classification and the page numbers on which the individual drug monographs may be found.

Drugs

The following information appears for each drug:

Generic/Trade Name: The generic name appears first, followed by the pronunciation key (in parentheses). Next is an alphabetical listing of popular trade names. Canadian trade names appear in brackets. If the generic name is not known to the reader, he or she may refer to the Comprehensive Index. It contains entries both for trade names and generic names, as well as for classifications, and is designed to provide this information quickly and easily.

Classification(s): The classification of a drug by its most common use in psychiatric/mental health nursing is listed first, followed by other classification(s) for which the drug is used. For example, amantadine (Symmetrel) is classified first as an antiparkinsonian agent for its primary use in psychiatry, and secondly as an antiviral agent. Refer to the Classification section, which provides brief summaries of the classifications contained within the book, lists the drugs included in each classification, and identifies the page numbers on which the drugs can be found.

Controlled Substance Category: If a drug is a controlled substance, the category under which it has been scheduled in terms of abuse potential is listed. This information alerts the reader to observe necessary regulations when handling these drugs. As a further aid, an explanation of controlled substance categories is contained in Appendix A. The appendix describes the five categories and lists the drugs included in this book under each category, along with the

*Adapted from Deglin, J and Vallerand, A: Davis' Drug Guide for Nurses. FA Davis, Philadelphia, 1988.

page numbers on which they appear.

Pregnancy Category: The Food and Drug Administration has established five categories to which a drug may be assigned, based on documentation of risk to the fetus balanced against potential benefits to the patient. If a drug has been assigned, its category is listed. The reader may refer to the Key to FDA Pregnancy Control Categories in Appendix B for an explanation of these ratings, along with a list of the drugs included in this book within each category and the page numbers on which they appear.

Action: This section contains a concise description of how a drug is known or believed to act in producing the desired therapeutic effect.

Indications: The indications for use of the drug as commonly prescribed in psychiatry are listed. Those indications not approved by the Food and Drug Administration (FDA) are listed as "Investigational Uses."

Pharmacokinetics: This section describes what happens to a drug following administration. It includes information on absorption, distribution, metabolism, excretion, and half-life (the amount of time for drug levels to decrease by 50%). Such information is useful because, for example, if only a small fraction of a drug is absorbed when administered orally (diminished bioavailability), the oral dose must be much larger than the parenteral dose.

Following absorption, drugs are distributed, sometimes selectively, to various body tissues and fluids. These factors become important in choosing one drug over another, as in avoiding drugs that cross the placenta in pregnancy or concentrate in breast milk during lactation. If drugs are extensively metabolized in the liver, patients with severe liver disease may require a reduction in dosage. If the kidney is the major organ of elimination, dosage adjustment may be necessary in cases of renal impairment. Premature infants, neonates, and persons over age 60 have diminished renal excretory and hepatic metabolic capacities, and so may require dosage adjustments.

The half-life of a drug is useful to know in planning effective regimens, since it correlates roughly with the duration of action. Half-lives given are based on patients with normal renal and hepatic functions. Conditions that may alter the half-life are noted.

Contraindications and Precautions: Situations in which use of the drug should be avoided or alternatives strongly considered are listed as contraindications. In general, most drugs are contraindicated in pregnancy or lactation unless the potential benefits outweigh the possible risks to the mother, fetus, or neonate (e.g., anticonvulsants). Absolute contraindications—that is, situations in which the drug in question should be avoided completely—are introduced by the heading "Contraindicated in." Relative contraindications, in which certain clinical situations may allow the cautious use of a drug, are introduced by the heading "Use Cautiously in." The contraindications and precautions section includes disease states or clinical situations in which drug use involves particular risks or in which dosage modification may be necessary.

Adverse Reactions and Side Effects: This information is organized using a systems approach. Although it is not possible to include all reported reactions, an effort has been made to include all major side effects. Life-threatening adverse reactions or side effects are capitalized. The problems encountered most commonly are underlined.

The following abbreviations are used to designate affected systems: CNS, central nervous system; CV, cardiovascular; DERM, dermatologic; ENDO, endocrinologic; GI, gastrointestinal; GU, genitourinary; HEMAT, hematologic; MS,

musculoskeletal; NEURO, neurologic; PSYCH, psychiatric; RESP, respiratory; OTHER, miscellaneous reactions not otherwise listed.

Interactions: As the number of medications a patient receives increases, so does the likelihood of drug interaction. The most clinically important interactions are explained under the headings "Drug-Drug" and "Drug-Food."

Route and Dosage: The usual routes of administration relating to psychiatric/mental health are listed, as well as recommended dosages for adults and children (including specific age groups when necessary). Dosage units are listed using the terminology in which they are most commonly prescribed. Dosage intervals are also presented in the manner in which they usually are ordered. This section also includes routes and dosages of drugs with investigational uses that have implications for psychiatry.

Pharmacodynamics: This information is provided so that the drug's onset of action, peak effect, and duration of action can be anticipated and considered in planning dosage schedules. The pharmacodynamics of all routes of administration are tabulated for easy comparison.

Nursing Implications: This section has been developed to help the nurse apply the nursing process to pharmacotherapeutics. It is divided into subsections whose headings are consistent with those of the nursing process, providing the nurse with a systematic framework for the provision of medication therapy.

Assessment

This subsection includes parameters for patient history, lab tests, and physical and behavioral data that should be assessed prior to and during drug therapy. Separate headings for "Lab Test Alterations," "Withdrawal (signs and symptoms)," "Withdrawal Management," "Toxicity and Overdose" (therapeutic serum drug levels and signs and symptoms of intoxication or overdose), and "Overdose Management" are also included, when appropriate.

Potential Nursing Diagnoses

Nursing diagnoses approved through the Eighth National Conference of the North American Nursing Diagnosis Association (NANDA) are used. Those diagnoses that may be identified for a patient receiving the medication are listed, along with possible etiological ("related to") factors.

Plan/Implementation

Specific guidelines for medication administration are discussed in this subsection. Information is further specified according to whether it is general or related specifically to PO, IM, or IV administration. These subsections describe actions appropriate for administration regardless of route (e.g., take vital signs prior to administration) as well as actions specific to PO administration (e.g., may be taken with food; may crush tablet or empty capsule), IM administration (e.g., do not mix with any other solution in syringe; administer deep into large muscle mass), and IV administration (e.g., administer at rate of 5 mg or fraction thereof over one minute).

Patient Family Education

This section includes material that should be taught to patients receiving a specific medication, or to family members/caregivers who may be administering or assisting with the administration of the medication. Most commonly reported side effects, details of administration, and follow-up requirements are pre-

sented. Although most of the pertinent information is included, the nurse should also refer to the "Adverse Reactions and Side Effects" and "Interactions" sections for additional data to complete the patient teaching plan.

Evaluation

Measurable objectives for determination of the therapeutic effectiveness of a medication are provided.

Appendices

The following appendices are intended to provide additional reference information:

Appendix A. Controlled Substance Categories
Appendix B. Key to FDA Pregnancy Control Categories
Appendix C. Measurement Conversion Table
Appendix D. Dietary Guidelines for Food Sources
Appendix E. Common Street Names of Drugs
Appendix F. Alphabetical Listing of NANDA Nursing Diagnoses
Appendix G. Classification of NANDA Nursing Diagnoses by Doenges'/Moorhouse's Diagnostic Divisions
Appendix H. Classification of NANDA Nursing Diagnoses by Gordon's Functional Health Patterns

Bibliography

Comprehensive Index

An alphabetical listing that includes generic names, trade names (in capital letters), and classifications (in italics).

SPECIAL DOSING CONSIDERATIONS*

For almost every drug there is an average dosing range. In many common situations however, this average range can become either toxic or ineffective. The purpose of this section is to describe situations in which special dosing considerations must be evaluated in order to ensure a successful therapeutic outcome. The guidelines presented here are general, but should lead to a finer appreciation of individual dosing parameters. When these clinical situations are encountered, dosage for the drugs ordered should be reviewed, and necessary adjustments made.

The Pediatric Patient

The most obvious reason for adjusting dosages in pediatric patients is smaller body size. Many drug dosages for this population are given on a mg/kg body weight basis, or even more specifically, on the basis of body surface area.

The neonate and the premature infant require drug dosage adjustments in addition to those made on the basis of size. With this population, absorption following oral administration may be incomplete or altered, due to changes in gastric pH or GI motility; distribution may be altered due to varying amounts of total body water; and metabolism and excretion may be delayed because liver and kidney function have not yet matured. Hepatic and renal maturation as well as weight changes may necessitate frequent dosage adjustments during the course of therapy. Dosages for the premature infant or neonate may have to be readjusted to reflect improved drug handling, within even a period of several days.

In addition to the evaluation of pharmacokinetic variables, other nursing considerations should be assessed. The route of administration chosen for pediatric patients often reflects the seriousness of the illness. The nurse should consider the child's developmental level and ability to understand the situation. Medications that must be administered intravenously or by intramuscular injection may seem frightening to a young child or cause undue concern to the parents. The nurse should allay these fears by educating the parents and child. As with any age group, intramuscular or subcutaneous injection sites should be carefully selected to prevent any possibility of nerve or tissue damage.

The Geriatric Patient

The pharmacokinetic behavior of drugs changes considerably in patients over the age of sixty. Drug absorption may be delayed secondary to diminished GI motility (resulting from age or other drugs), or passive congestion of abdominal blood vessels (as seen in congestive heart failure). Distribution of the drug may

*Adapted from Deglin, J and Vallerand, A: Davis' Drug Guide for Nurses. FA Davis, Philadelphia, 1988

be altered due to low levels of plasma proteins, particularly in malnourished patients. Because plasma proteins are decreased, a larger proportion of free or unbound drug will result in an increase in drug action. This may cause the patient to exhibit toxicity while receiving a standard dose of a drug. Drug metabolism by the liver and excretion by the kidneys are both slowed as part of the aging process, and may cause prolonged and exaggerated drug action. Body composition also changes with age. There is an increase in fatty tissue and a decrease in skeletal muscle and total body water. Height and weight also usually decrease. A dosage of medication that was fine for the robust 50-year-old patient may be excessive in the same patient 20 years later.

An additional concern is that most elderly patients are already receiving numerous drugs. With increasing numbers of drugs being used, there is greater risk of one drug negating, potentiating, or otherwise altering the effects of another drug (drug–drug interaction). In general, doses of most medications should be decreased in the geriatric population.

Dosing regimens should be kept simple in this patient population, since many of these patients are taking multiple drugs. Doses should be scheduled so that the patient's day is not interrupted numerous times to take medications. The use of fixed-dose combination drugs may help to simplify dosing regimens. However, some of these combinations are more expensive than the individual components.

In explaining medication regimens to elderly patients, bear in mind that hearing deficits are common in this age group. Patients may find it embarrassing to disclose this information and full compliance may be hindered.

The Obstetrical Patient

During pregnancy both the mother and the fetus must be considered. The placenta, once thought to be a protective barrier, is simply a membrane that is capable of protecting the fetus from only extremely large molecules. The placenta may transfer drugs to the fetus by both passive and active processes. The fetus is particularly vulnerable during two of the three stages of pregnancy: the first trimester and the last trimester.

Many drugs have been categorized by the Food and Drug Administration (FDA) according to potential risk to the fetus weighed against benefit to the mother. Refer to Appendix B for a key to the definitions of these categories.

The possibility of medications altering sperm quality and quantity in potential fathers is also becoming an area of increasing concern. These considerations should be explained to patients who are trying to conceive.

During the first trimester the vital organs of the fetus are being formed. Ingestion of drugs that cause harm (potential teratogens) during this stage of pregnancy may lead to fetal malformation or miscarriage. Unfortunately, this is the time when a woman is least likely to know that she is pregnant. Therefore, it is wise to inform all patients of childbearing age of this potential harm to an unborn child.

In the third trimester, the major concern is that drugs administered to the mother and transferred to the fetus may not be safely metabolized and excreted by the fetus. This is especially true of drugs administered near term. After the infant is delivered, he/she no longer has the placenta available to help with drug excretion.

There are situations in which, for the sake of the mother's health and to protect the fetus, drug administration is required throughout pregnancy. Two

examples of this are the epileptic patient and the hypertensive patient. In these circumstances, the safest drug in the smallest possible dose is chosen. Because of changes in the behavior of drugs that may occur throughout pregnancy, dosage adjustments may be required during the progression of pregnancy and after delivery.

A special situation related to the drug behavior of women during pregnancy is that of the mother who abuses drugs. Infants born to mothers addicted to alcohol, sedatives (including benzodiazepines), heroin, or cocaine may be of low birth weight and may go through drug withdrawal shortly after birth. A careful history should alert the nurse to these possibilities.

Renal Function

The kidneys are the major organs of drug elimination. Some drugs are excreted only after being metabolized or biotransformed by the liver. Others may be eliminated by the kidneys unchanged. The premature infant has immature renal function. Elderly patients have an age-related decrease in renal function. To make dosage adjustments for patients with renal dysfunction, one must know the degree of renal impairment in the individual patient, and the percentage of drug that is eliminated by the kidneys. The degree of renal function can be quantitated by laboratory testing, most commonly by using the creatinine clearance value. The percentage of each drug excreted by the kidneys can be determined from references on pharmacokinetics. In addition, the dosage frequently can be optimized by measuring blood levels of the drug in the individual patient and making any further necessary changes.

Liver Disease

The liver is the major organ for the metabolism of drugs. For most drugs, this is an inactivation step. Most inactive metabolites are subsequently excreted by the kidneys. The conversion process usually changes the drug from a relatively lipid- or fat-soluble compound to a more water-soluble substance. Liver function is not as easily quantified as renal function, therefore it is difficult to predict the correct dosage for a patient with liver dysfunction based on laboratory tests alone. In addition, it appears that only a minimal level of liver function may be required for complete drug metabolism.

A patient who is severely jaundiced or has very low serum proteins (particularly albumin) may be expected to have some problems metabolizing drugs. Chronic alcoholic patients are at risk for developing this type of problem. In advanced liver disease, drug absorption may be impaired secondary to portal vascular congestion. Drugs that require the liver for activation should also be avoided in patients with severely compromised liver function.

Congestive Heart Failure

Patients with clinical congestive heart failure also require dosage modifications. In these patients, drug absorption may be impaired due to passive congestion of blood vessels feeding the GI tract. This same passive congestion slows drug delivery to the liver and delays metabolism. In addition, renal function may be compromised, leading to delayed elimination and prolonged drug action. Many patients who have congestive heart failure are already in a special dosing category because of their age. Dosages of drugs that are mainly metabolized by the liver or mainly excreted by the kidneys should be decreased in patients with apparent congestive heart failure.

Obesity

In most situations, drug dosing is based on total body weight. Some drugs selectively penetrate fatty tissues. If the drug is known to not penetrate fatty tissues and the patient is obese, dosage should be determined by ideal body weight or estimated lean body mass. These quantities may be determined from tables of desirable weights or may be estimated using formulas for lean body mass when the patient's height and weight are known. If this type of adjustment is not made, considerable toxicity may result.

Delivery to Sites of Action

To have a successful therapeutic outcome, a drug must reach its intended site of action. Under the most desirable of conditions, a drug may have only a minimal effect on other tissues or body systems (for example, drugs that are applied topically for skin conditions are only minimally absorbed systemically). Sometimes unusual routes of administration must be used to guarantee the presence of a drug at the intended site of response. In some cases, local absorption may not occur, and therefore the desired systemic effect will not occur. In patients with shock or poor tissue perfusion due to other causes, drugs may not be absorbed into systemic circulation from subcutaneous sites. When considering the route of administration, remember where the drug is intended to have its primary action. To achieve its maximal effect it must be delivered to its intended site of action.

Drug Interactions

The presence of other drugs may necessitate dosage adjustments. Drugs that are highly bound to plasma proteins may be displaced by other highly protein-bound drugs. When this phenomenon occurs, the drug that has been displaced exhibits an increase in its activity, since it is the free, or unbound, drug that is active.

Some agents decrease the ability of the liver to metabolize other drugs. Drugs that can have this effect include cimetidine and chloramphenicol. Concurrently administered drugs that are highly metabolized by the liver may therefore need to be administered in decreased dosages. Other agents, such as phenobarbital, other barbiturates, and rifampin, are capable of stimulating (inducing) the liver to metabolize drugs more rapidly, requiring larger doses to be administered.

Drugs that significantly alter urine pH can affect excretion of other drugs for which the excretory process is pH-dependent. Alkalinizing the urine will hasten the excretion of acidic drugs. Acidification of the urine will enhance reabsorption of acidic drugs, prolonging and enhancing drug action. Drugs that acidify the urine will hasten the excretion of alkaline drugs.

Dosage Forms

The nurse will frequently encounter problems that relate to the dosage form itself. Some medications may not be commercially available in liquid or chewable dosage forms. The pharmacist may have to compound such dosage forms for an individual patient. It may be necessary to disguise the taste or appearance of a medication in food or a beverage so that a patient will fully comply with a given regimen. Finally, some dosage forms, such as aerosol inhalers, may not be suit-

able for very young patients because their use requires cooperation beyond the patient's developmental level.

Before altering dosage forms (crushing tablets or opening capsules), check to be sure that the effect of the drug won't be altered by doing so. In general, extended or prolonged release dosage forms should not be crushed, nor should capsules containing beads of medication be opened. Altering these dosage forms may shorten and intensify their intended action. Enteric-coated tablets, which may appear to be sugar-coated or candy-coated, also should not be crushed. This coating is designed to protect the stomach from irritating effects of the drugs. Crushing them will expose the stomach lining to these agents and increase GI irritation. If a dosage form must be crushed, it should be ingested right away. A glass of water should be taken prior to administration of powders or crushed tablets to wet the esophagus and prevent the material from sticking to upper GI mucosal surfaces.

Environmental Factors

Cigarette smoke can induce liver enzymes to metabolize drugs more rapidly. Patients who smoke may need larger doses of liver-metabolized drugs to compensate for this. Patients who are passively exposed to cigarette smoke may also exhibit otherwise unexplained needs for larger doses of medications.

Nutritional Factors

Certain foods can alter the dosing requirement for some medications. For example, foods that are high in pyridoxine (vitamin B_6) can negate the antiparkinsonian effect of levodopa (this can be counteracted with coadministration of carbidopa). The absorption of some medications is facilitated if they are taken on an empty stomach. Foods that alter urine pH may affect the excretion patterns of medications, thereby enhancing or diminishing their effectiveness. There are no general guidelines for nutritional factors. It is prudent to check whether or not these problems exist (or if they could explain therapeutic failures) and to make any necessary dosage adjustments.

Summary

The average dosing range for drugs is intended for an average patient. However, every patient is an individual with specific drug-tolerance capabilities. Taking into account these special dosing considerations allows the planning of an individualized drug regimen that is more likely to result in a desired therapeutic outcome while minimizing the risk of toxicity to the patient.