PHARMACOLOGY

Drug Therapy and Nursing Considerations

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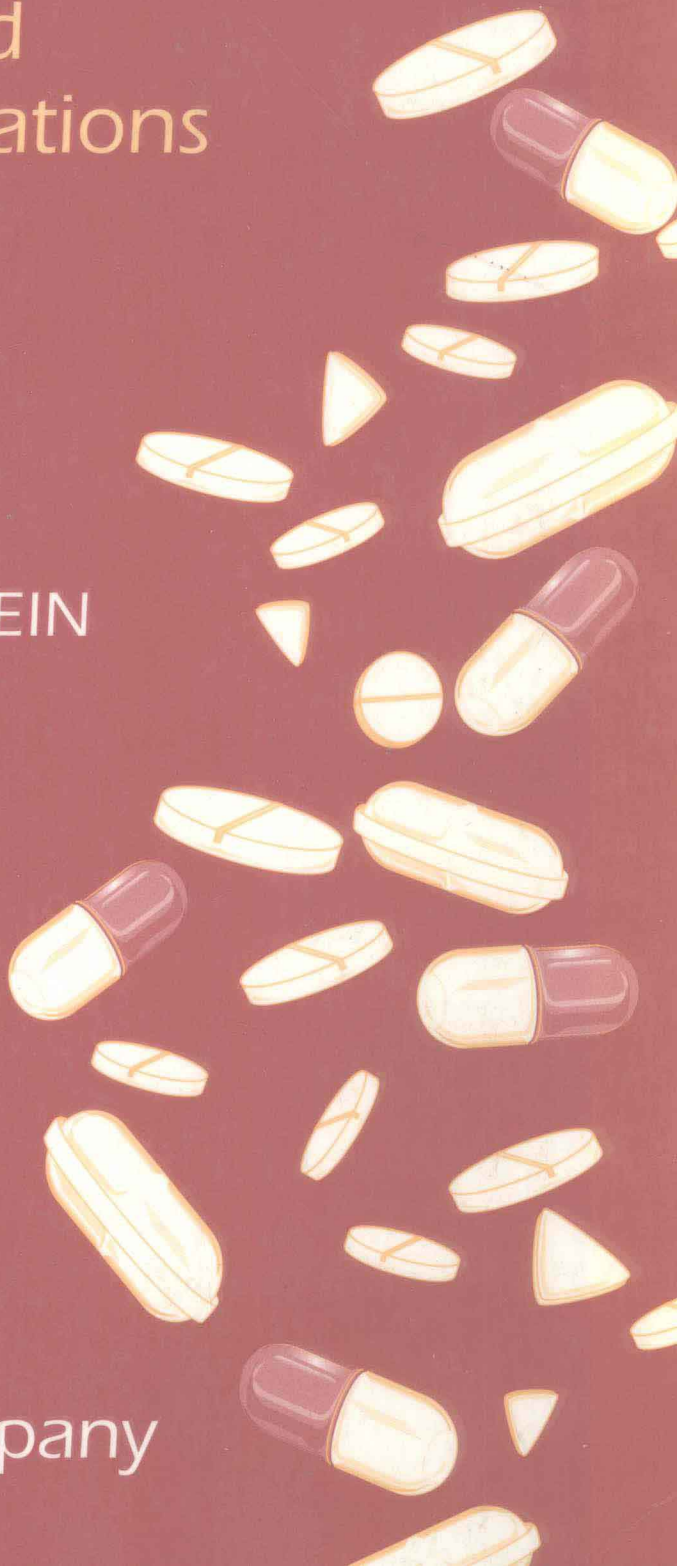

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Pharmacology

Drug Therapy and Nursing Considerations

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To my children, Mark and Natalie, for their continued commitment to excellence in their own educational endeavors.

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Preface

The provision of adequate health care is the responsibility of numerous members of a therapeutic team. Increasingly, the nurse's role in the delivery and maintenance of safe and efficient drug treatment of disease is expanding, and with such expansion comes the necessity for a broadened base of knowledge relating to the administration and monitoring of drug therapy. Responsible and appropriate intervention on the part of the nurse represents a primary determinant of the overall success of drug treatment. With an increasing number of therapeutic agents available for treatment of disease states, the need for nurses to have access to a current comprehensive source of drugs—one that provides not only detailed pharmacologic information but also topical relative nursing considerations—is acute.

The completely revised and updated fourth edition of *Pharmacology: Drug Therapy and Nursing Considerations* offers just such a source for both the nursing student as well as the practitioner. While the easy-to-use format found in the first three editions of the book has been retained in this new edition, many changes have been introduced in both content and style in order to provide readers with a detailed information base from which they may quickly extract the information needed to administer and monitor drug therapy in the safest and most efficient manner. Most importantly, two additional authors have been employed to bring their expertise and experience to bear in the shaping of the pharmacologic and nursing content. In addition, several other contributors have been recruited to update and expand those sections of the book that relate to their areas of specialty. The result of these additional contributions is evident in the expanded and updated content of many chapters as well as the extensive and relevant nursing content that has been reconceptualized and re-refined.

Among the salient pedagogical features of the fourth edition are:

- Five new chapters dealing with the nurse's role in management of drug therapy, therapeutic drug monitoring, new macrolide antibiotics, dermatologic drugs, and immunomodulatory agents, including a concise review of the functioning of the immune system
- The addition of over 100 new drugs, with both pharmacologic and nursing considerations
- A current bibliographic list following each chapter, encompassing both pharmacologic and nursing-oriented references from recent literature sources
- Revised physiologic review chapters, providing new terminology, including discussions of G-proteins, new second messengers, regulatory digestive peptides, and the role of inflammatory processes in bronchial asthma
- Updated information on anti-infective drugs of choice for treating common infections, including new treatment regimens for tuberculosis and AIDS

In addition, the nursing content has been completely revised and reorganized for the fourth edition, recognizing the prominent position that the nursing profession is assuming in health care. Regardless of educational background, specialty credentials, or practice setting, nurses plan and implement care regimens within the context of a patient's actual and/or potential health problems. Patient advocacy, principles of patient education, and the recognition that each patient is a unique individual and member of a social unit are themes that are central to this process. Within this spirit, the nursing alerts, nursing considerations, and nursing care plans appearing in previous editions have been replaced with guidelines for the nursing management of drug therapy. Specifically, attention is focused on assessment (pretherapy) and the nursing interventions of medication administration, surveillance during therapy, and patient teaching.

The book is divided into 13 sections. Section I presents general principles of pharmacology, including drug administration, pharmacokinetics, sites and mechanisms of drug action, adverse drug effects, interactions, and a new chapter on therapeutic drug monitoring. In addition, revised chapters devoted to pediatric and geriatric aspects of drug therapy present important information regarding proper monitoring procedures in these patient populations. Finally, the legal aspects of drug usage, particularly as they relate to the nurse, are considered as well.

Sections II through XI feature the principal classes of drugs in clinical use today, arranged according to organ system (ie, drugs acting on the nervous system, the cardiovascular system, the renal system, and so forth). Most sections begin with a chapter discussing the physiology of the organ system involved, followed by chapters detailing the individual classes of drugs that affect that particular system. The drugs to be discussed in each chapter are listed at the beginning of the chapter. Aspects of each drug or drug class considered include *Mechanism*, *Uses*, *Dosage*, *Fate*, *Common Side Effects*, *Significant Adverse Reactions*, *Contraindications* (*including Cautions*), *Interactions*, and *Nursing Management*. Tables are used frequently throughout the text to group similar drugs, thus facilitating comparisons.

Section XII of the text addresses the problem of drug abuse and dependence. Many different drugs that have the potential for abuse are discussed, and guidelines for recognition and treatment are offered. An extensive listing of "street names" for drugs favored by abusers also is provided.

The Appendices, Section XIII, contain listings of common abbreviations, laboratory values, pregnancy categories, and an IV drug compatibility guide. A general bibliography also is included.

Today, nurses and other health care providers must administer and monitor an enormous array of drug products and are faced with the challenging task of maintaining their knowledge base regarding these drugs as current and accurate as possible.

The fourth edition of *Pharmacology: Drug Therapy and Nursing Considerations* represents a joint effort by several health care professionals and academicians to provide a comprehensive, relevant, and up-to-date source from which nurses and other health care providers may quickly obtain the requisite information to dispense and monitor drugs in a safe and efficient manner.

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Contents

I

General Principles of Pharmacology

1 The Nurse's Role in the Management of Drug Therapy

From a historical perspective, the past 50 years have been a time of change within nursing. Nurses are defining the profession in terms of its uniqueness, addressing practice issues, and moving the profession into a prominent position within healthcare.

Nurses are educated to recognize and respect the uniqueness of the individual and the effects of this uniqueness on maintenance of health, recovery from illness, the progression of chronic illness, and attainment of peaceful death. They claim to be holistic in their practice, emphasizing a collaborative nurse–patient relationship that recognizes the whole person (biologic, psychological, social, and spiritual) framed within the context of his or her environment.

Regardless of educational background, specialty credentials, or practice setting, nurses are united by the definition of professional nursing, which empowers them to "diagnose and treat human responses to actual and potential health problems" (American Nurses Association, 1980, p. 9), within the context of health promotion (Neuman, 1989; Rogers, 1970). This is true for nurses in staff positions as well as for those nurses who are specially educated and credentialed for advanced practice to diagnose and prescribe.

The nurse's role in the management of drug therapy is intentionally positioned against this backdrop. Medication administration should not be viewed simply as a task-oriented function, emphasizing the five rights of medication administration (right drug, right dose, right time, right route, right patient). Instead, it is an opportunity to combine these basic principles with the nursing process (assessment, diagnosis, planning, implementation, evaluation) to develop safe, appropriate, and effective nursing interventions to 1) prepare and administer drugs, 2) evaluate responses to therapy, 3) teach the patient/family, 4) seek consultation, and 5) make appropriate referrals.

Pretherapy Assessment

An ongoing, accurate, and detailed nursing assessment of the client's physical, psychosocial, and functional characteristics is perhaps the most essential component of the nursing process as it relates to the nursing management of drug therapy. Diagnosis (North American Nursing Diagnosis Association nursing diagnoses), planning (goal setting), implementation (intervention), and evaluation all depend on skilled assessment. Assessment provides the data base from which all planning and intervention are derived. The evaluation of outcomes also depends on an accurate, unbiased assessment.

The assessment process begins before the initiation of drug therapy and continues on an ongoing basis throughout therapy. The nurse should obtain, record, or review important baseline data that will assist in making nursing judgments and in the early detection of expected and undesirable adverse effects. The type of data to review varies from drug to drug, but usually includes nursing assessment data (subjective and objective), baseline vital signs, height and weight, and laboratory work and diagnostic studies. In addition, medical history should be reviewed to determine the presence of conditions that may contraindicate the use of a drug or suggest that it be administered with caution. Such conditions include current physical status, history of chronic illness, patient age, allergy to drug or drug family, and pregnancy or lactation (Table 1-1).

Specific interventions related to the pretherapy assessment are as follows:

- Assess and record important baseline data necessary for detection of adverse effects (perform a detailed, individualized nursing assessment).
- Review past medical history and documents for evidence of existing or previous medical history related to conditions that require cautious administration of a prescribed drug.
- Review past medical history and documents for evidence of existing or previous medical history related to conditions that contraindicate use of a drug.

Assessing and Recording Baseline Data

The purpose of the use of a therapeutic medication is to provide a beneficial effect. The decision to use pharmacologic therapy is fundamentally based on the assessment of the benefit-to-risk ratio. The more difficult component of this assessment often is the determination of risk, the potential for a detrimental outcome in the patient as a result of the use of the drug. Sometimes, this is not realized until the patient actually has received the medication, is experiencing its therapeutic effect, and begins to experience an adverse or toxic effect as well. The adverse effects of drugs appear in many forms and may present in subtle ways, often indistinguishable from "normal" aberrations in physiologic function. In addition, adverse effects, like therapeutic responses, may develop slowly. An accurate baseline assessment focused on those physiologic functions where the typical adverse effects of the drug are expressed is crucial for the detection of incipient changes due to the drug. Some baseline parameters are target organ focused (cardiovascular [blood pressure, heart rate, electrocardiogram] or central nervous system [orientation, bilateral grip strength]), whereas others are derived from laboratory data (liver function tests, hematologic parameters).

From a practical perspective, it is not unusual for the nurse to suspect that a patient is beginning to experience an adverse response to therapy and to report his or her perception to the practitioner–prescriber. Often the detection of an adverse effect is contingent on the observation of a *change* in the patient's condition or physiologic and biochemical parameters.

Table 1-1. **Nursing Management of Drug Therapy**

Pretherapy Assessment

- Assess and record important baseline data necessary for detection of adverse effects (perform a detailed, individualized nursing assessment).
- Review past medical history and documents for evidence of existing or previous medical history related to conditions that
  a. require cautious administration of a prescribed drug: pregnancy; lactation; patient age; patient medical history.
  b. contraindicate use of a drug: allergy to prescribed drug or drug family; pregnancy; lactation; patient age; patient medical history.

Nursing Interventions

Medication Administration

- Administer drugs to maximize their intended effects and minimize their adverse effects. For example, administer diuretics in the morning to reduce the need to void at night.
- Plan and implement individualized nursing interventions that
  a. inform the patient about the expected actions and adverse effects of a prescribed drug.
  b. identify the early onset of (expected or undesirable) adverse effects and intervene appropriately.
  c. minimize the symptoms produced by the expected adverse effects of the prescribed drug.
  d. identify the safety needs of the patient and intervene appropriately to minimize environmental hazards or risk of injury.

Surveillance During Therapy

- Always monitor the drug dose being administered. Rationale: to ensure that it is within acceptable limits for the diagnosis and patient being treated.
- Compare current status with previous status to detect improvements or deterioration in the patient's condition.
- Monitor patient for therapeutic drug effect.
- Monitor for adverse effects, toxicity, and interactions.
- Monitor for signs of hypersensitivity, which may require discontinuation of drug.
- Facilitate acquisition of diagnostic tests ordered for ongoing assessment of drug response.
- Monitor diagnostic test results obtained over the course of therapy.
- Interpret results of diagnostic tests and contact practitioner–prescriber as appropriate.
- Monitor for possible drug–laboratory test interactions.
- Monitor for possible drug–drug and drug–nutrient interactions.

Patient Teaching

- Instruct patient about expected actions and possible adverse effects of prescribed drug.
- Instruct patient about appropriate action to take if adverse effects occur:
  a. how to manage symptoms related to expected adverse effects of prescribed drugs.
  b. when to notify practitioner–prescriber.
  c. under which conditions to discontinue administration of prescribed drug before notification of practitioner–prescriber.
  d. under which conditions to seek immediate medical attention if adverse side effects develop.
- Instruct patient about the importance of completing the full course of therapy as prescribed, that is, not to discontinue the drug once signs and symptoms have subsided.
- Inform patient of the consequences of not taking or abruptly discontinuing a prescribed drug.
- Instruct patient that a prescribed drug is to be taken only in the manner and for the condition for which it is prescribed.
- Instruct patient to keep all medications out of the reach of children.

Medication History

A medication history should be obtained during the pretherapy assessment. This includes a listing of all prescribed drugs and over-the-counter (OTC) drugs, as well as alcohol (ethanol), caffeine, nicotine, and illegal drugs. The medication history is used to identify drugs the patient is currently taking as well as those that the patient may have taken in the past.

The *profile of current medications* provides the necessary data (type of medication, route of administration, frequency of administration) required to determine the 1) adequacy/efficacy of the current therapeutic drug regimen, 2) the degree of patient compliance with therapy, and 3) the presence of expected and/or unanticipated and adverse effects.

A *profile of drugs previously taken* often is elicited while obtaining the past medical history. Such information provides valuable insight into the progression of disease, the patient's responsiveness to treatment, the effectiveness of teaching, compliance with therapy, and drug hypersensitivity or adverse reactions.

Over-the-Counter Drugs

A careful history of OTC drugs also is warranted. Because OTC drugs are available without prescription and may be taken at will, the identification of their use in the patient's medical record often is overlooked. Although OTC medications generally are considered "weaker" drugs, which have a wider margin of safety in their use, the interaction of OTC pharmaceuticals with legend (prescribed) pharmaceuticals remains a significant problem.

It is not unusual to find that OTC products are being used by the patient, without the knowledge of the prescriber, to mask or symptomatically deal with side effects produced by prescription medications the patient is currently using—for example, the use of nasal decongestants to offset the side effects of antihypertensive agents, or the use of laxatives or antacids to ameliorate gastrointestinal side effects. The patient may not even be aware that the symptoms the OTC product is being used to treat are a side effect of a prescribed drug, but a careful assessment of potential OTC drug use can uncover such use and the patient's reasons for it.

Alcohol

Alcohol (ethanol) is the most frequently used drug in today's society. Obtaining an accurate history of past and current alcohol consumption provides information necessary for patient teaching regarding alcohol consumption in relation to the medication about to be prescribed. Many medications cannot be used with patients who ingest alcohol because the drug effect can be additive or diminutive in the presence of alcohol. In addition, an accurate history regarding alcohol usage may provide insights into possible contraindications or cautions to the use of the prescribed medication in view of possible diminished hepatic or renal function.

Nicotine

A careful history of current and past use of nicotine-containing products also is important before drug administration. Nicotine-containing products include tobacco that is smoked (cigarettes, cigars, pipe tobacco) as well as tobacco that is chewed or self-

administered buccally. Nicotine has powerful effects on the body, including the liver, where it may enhance or retard metabolic capacity. There are numerous examples of the impact of nicotine (tobacco use) on drug metabolism, which may alter the dose of the medication that the patient requires.

For the smoker, the extent of tobacco use is commonly characterized in the form of "pack-years" of use; represented by the number of packs of cigarettes smoked per day multiplied by the number of years of smoking. For example, a person who has smoked one pack of cigarettes per day for the last 20 years would be described as having smoked 20 pack-years. For those who smoke cigars or use a pipe, there is no comparable characterization; however, it is important to ascertain in these people the degree to which inhalation of the smoke from these sources occurs. For those who use tobacco products orally, careful documentation of the frequency of use is often important.

Illegal Drugs

The use of an illegal drug while being treated with a prescribed medication can result in life-threatening outcomes. Typical illegal drugs that are commonly abused today include marijuana, cocaine, opioids, amphetamines, central nervous system depressants, and volatile inhalants, such as butane and nitrous oxide. It also is important to remember that a *prescription medication* used by a person without a prescription is an *illegal use* of a drug.

It often is difficult to get a patient to reveal illegal drug use, because identification of such carries strong social connotations. It is very important, however, to identify such use because of the potential impact of these agents on responses to prescribed medications, and because of the impact of this information on patient teaching.

Reviewing Conditions That Require Cautious Administration of a Prescribed Drug

All prescribed medications have associated with their use situations or conditions in which the benefit-to-risk ratio is diminished compared to the "average" patient. Typical considerations include impaired liver and/or renal function that may impede the elimination of the drug from the body; altered cardiovascular function, which may alter the manner in which the drug is distributed in the body; altered central nervous system responsiveness, which may affect the way the person behaves in response to the drug; and preexisting hematologic, gastrointestinal, pulmonary, and other system disorders that place the patient at greater risk for adverse effects.

An important area of concern that requires caution in drug administration relates to the impact of maternal drug usage on the fetus (use of a medication in pregnancy) and on the neonate (use of a medication in the nursing mother).

Fetal Risk

The framework for the consideration of use of a medication in the pregnant patient *or* the patient who intends or desires pregnancy has been codified by the Food and Drug Administration (FDA) in the form of Pregnancy Categories. Almost all prescription medications are characterized by a Pregnancy Category. The following summarizes the FDA risk factor categories for drugs used in the pregnant patient:

Pregnancy Category A: controlled studies in women fail to demonstrate a risk to the fetus in the first trimester (the most sensitive teratogenic period) and no evidence exists for risk in later trimesters; therefore the possibility of fetal harm related to the use of the drug by the mother appears remote.

Pregnancy Category B: no controlled studies have been performed in pregnant women, but animal studies have not demonstrated a fetal risk related to maternal drug use, *or* adverse effects seen in animal reproductive studies have not been confirmed in controlled studies with women pregnant in the first trimester. In addition, there is no evidence of risk to the fetus in later trimesters.

Pregnancy Category C: Either animal studies have revealed teratogenic, embryotoxic, or other adverse effects on the fetus (and no controlled studies have been performed on pregnant women), *or* no studies of the drug have been performed on animals or women. The risk to the human fetus is unknown. The drug should be administered in pregnancy only if the potential benefit justifies the potential risk to the fetus.

Pregnancy Category D: Positive evidence of adverse risk to the human fetus has been obtained; however, the benefits of use in the pregnant woman may outweigh the risk to the fetus (ie, use of a drug in a life-threatening situation, or for a serious disorder for which safer drugs are not available or are ineffective). A careful assessment of the benefit-to-risk ratio is a requirement for Category D drugs before they can be used in the pregnant woman.

Pregnancy Category X: Fetal abnormalities have been demonstrated in animals or women, and there is evidence of significant fetal risk based on human experience. The risk of fetal hazard as a result of the use of the drug in the pregnant woman clearly outweighs any possible benefit. Here the drug is *contraindicated* in women who are or *may become* pregnant.

Pregnancy Category NR: The drug has not been rated by the FDA for a pregnancy risk factor category.

Neonatal Risk

An equally important concern is that of neonatal exposure to a drug as a result of administration of that drug to the mother, where the neonatal exposure occurs as a result of breast-feeding. Most drugs administered to the mother appear in breast milk. The evaluation of the possible effect of this occurrence on the neonate often is complicated by the absence of information on many drugs, or the lack of complete information relating drug concentrations in breast milk to dose and dose timing. In addition, some information on drugs in breast milk is derived solely from animal studies, and in some cases, reports of toxic effects in the neonate do not include the information on the quantity of the drug in breast milk or the quantity of breast milk ingested. These are necessary for the estimation of the neonatal dose.

Because of these uncertainties, the recommendations regarding the use of a medication in the nursing mother may fall within three broad categories:

No reported effects: either the drug is not secreted in breast milk *or* the concentrations of the drug in breast

milk are far below those consistent with the production of a pharmacologic or toxicologic effect in the neonate.

Use with caution: concentrations of the medication are known to be present in breast milk and are possibly sufficient to produce a pharmacologic effect; however, such an effect is considered to be of minimal significance or hazard to the neonate.

Use is contraindicated: The drug is secreted in breast milk in concentrations sufficient to produce an undesired response in the neonate; therefore the drug should not be administered to the nursing mother, *or* the mother should discontinue nursing the infant while on the medication. Examples of drugs known to be contraindicated during the breast-feeding period include cimetidine, cyclophosphamide, cyclosporine, doxorubicin, ergotamine, gold salts, methimazole, methotrexate, and lithium.

Reviewing Conditions That Contraindicate Use of a Drug

Contraindication

A contraindication is basically an absolute warning that, in certain conditions or situations, a particular drug must never be used or the patient almost certainly will be severely harmed. A careful consideration of any preexisting conditions in relation to known contraindications (as published by the manufacturer and appearing in the medication's package insert) is an important safety measure for the protection of the patient. If a contraindicating condition is identified, the drug normally would not be appropriate for use; the benefit-to-risk ratio would be strongly shifted in the risk direction. A common contraindication for all drugs is that of hypersensitivity or allergy to that particular drug or drug group.

Allergy

Drug allergy can occur in four different ways:

1. *Immediate reactivity (Type I)* may result in life-threatening anaphylaxis.
2. *Drug-induced autoimmune disorders (Type II)* typically are reflected in disturbances of hematologic function.
3. *Tissue reactions (Type III)* are evidenced by skin eruptions, painful joints, and drug fever.
4. *Reexposure episodes (Type IV)* (dermatologic) usually are exhibited in the form of contact dermatitis.

Once sensitization has occurred, the allergic reaction produced by a drug may vary in intensity from an immediate, life-threatening anaphylactic reaction to a delayed reaction in the form of contact dermatitis.

Other common contraindicating conditions to use of many drugs include hepatic and renal disorders, cardiovascular disease, psychiatric disorders, and disturbances of endocrine function.

Nursing Interventions

Three nursing interventions are central to the nursing management of drug therapy: *Medication Administration*, *Surveillance During Therapy*, and *Patient Teaching*. They serve as broad categories within which other interventions are included as appropriate for each drug and clinical situation.

Medication Administration

Medication administration, as an intervention, focuses on methods for 1) giving medications, 2) evaluating response to drug therapy (surveillance during therapy), 3) patient/family teaching, and 4) providing for patient safety. It is expected that these interventions will be specific for each drug and reflect the requirements of each patient as a unique individual (see Table 1-1).

Surveillance During Therapy

The assessment process continues throughout drug therapy and includes the periodic comparison of baseline data with current data to identify actual and potential problems and assess outcomes of nursing interventions, patient responses to drug therapy (evaluation), the need for patient/family teaching, and the need for consultation and referral. If necessary, the nursing process is updated; that is, diagnoses, plans (goals), and interventions are modified and made current to correspond with changes noted (see Table 1-1).

Typical ongoing assessment considerations include the following:

Monitoring the drug dose being administered.

It is important to ensure that the dose is within acceptable limits for the diagnosis and patient being treated. This is particularly important in situations in which the drug is being used to treat a chronic disorder. Chronic disorders exhibit a variety of disease severity profiles that have one common feature: The severity of the disease state is in a continual state of change. The implication of this observation is that the dose of a therapeutic medication used in the treatment of a chronic disorder would be expected to change.

Comparing current status with previous status to detect improvements or deterioration in the patient's condition.

Comparative evaluation of the patient's condition often provides the best reflection of the effectiveness or lack thereof of the therapeutic regimen.

Monitoring patient for therapeutic drug effect.

Therapeutic effects of a drug during the early phases of therapy may be present only during a portion of the dosage interval. Once steady-state concentrations have been attained, the response of the patient to the drug would be expected to exhibit a sustained pattern. The absence of a sustained response over the dosage interval may be an indication for dose adjustment. Monitoring the response of the patient to the medication can identify whether the patient's disorder is responsive to the pharmacotherapeutic regimen. Monitoring pharmacotherapeutic response also can identify changes in the patient's ability to respond, secondary to factors such as the development of drug tolerance or an increased rate of drug metabolism. In the case of antibiotic therapy, changes in the patient's status may point to the development of superinfection induced by the antibiotic therapy.

Monitoring for adverse effects, toxicity, and interactions.
In the care of a patient, there is one constant factor that provides for continuity in the clinical setting: the continuing presence of the patient's nurse! The nurse is in the optimum position to identify changes in the patient's status reflecting the onset of adverse effects, drug toxicity, or interaction between therapeutic modalities.

Monitoring for signs of hypersensitivity, which may require discontinuation of drug.
The typical presentations of drug allergy have been discussed. It is important that the nurse be aware of the symptoms of drug hypersensitivity, so that if a patient manifests a drug allergy, it will be recognized, and the drug regimen discontinued before the development of possible life-threatening anaphylactoid symptoms.

Facilitating and monitoring diagnostic test results obtained over the course of therapy.
As stated, adverse drug responses occur in many forms. Often, adverse responses to drug regimens initially are indicated by changes in laboratory parameters, ranging from changes in serum electrolytes or serum enzymes to changes in hematologic parameters. Significant changes often are recognized first by the nurse. The nurse needs to be aware of the potential for drug-induced changes in laboratory parameters.

Monitoring for possible drug–laboratory test interactions.
In addition to observing for adverse drug effects as reflected in changes in the patient's laboratory findings, the nurse also needs to be aware of the potential of some drugs to alter the results of laboratory measurements. This can make accurate interpretation of laboratory findings difficult.

Monitoring for possible drug–drug and drug–nutrient interactions.
The necessity for recognizing potential drug–drug and drug–nutrient interactions continues throughout the patient's therapeutic course as new medications are added to the therapeutic regimen. The nurse should be continually vigilant of the possibilities for drug–drug and drug–nutrient interactions that are harmful to the patient.

Patient Teaching

Patient teaching is central to the nursing management of drug therapy, because it begins with the pretherapy nursing assessment and continues for the duration of therapy. Patient teaching may be informal and incidental, as, for example, when a patient is taught the proper method of drug administration or what to expect in terms of drug response during an emergency situation. Patient teaching also is formal, such as teaching a newly diagnosed type I diabetic about insulin, its administration, and how to obtain and monitor blood glucose by fingerstick. To teach, the nurse must assess the learner (readiness to learn, mental and physical abilities) and devise a teaching plan that is tailored to the individual. Formal teaching should be planned and initiated well enough in advance so that modifications can be made as needed, and ample time is allowed for return demonstration and evaluation of "student" achievement. Family should be taught along with the patient, especially if they will be copartners in care (see Plan of Nursing Care 1-1).

Compliance With Drug Therapy

Compliance with drug therapy or the potential for poor compliance or noncompliance lie within the framework of nursing management of drug therapy because they are directly linked to the accurate evaluation of patient responses to drug therapy (therapeutic outcomes) and outcomes of nursing interventions.

Compliance, to do what is asked with regard to drug therapy, is a desired patient outcome. Poor compliance or noncompliance are labels commonly used when an unsuccessful therapeutic regimen can be linked to patient behavior. These labels easily shift responsibility away from the health professionals, suggesting that the patient or family has done something wrong. Instead, one might consider poor compliance or noncompliance with pharmacologic therapy as a "symptom" indicating failure of the healthcare system adequately to assess and anticipate a patient or family's needs, and plan appropriate interventions and follow-up.

Poor compliance may result in inadequate therapy, prolongation of treatment, recurrence of illness, unnecessary hospitalization, adverse effects and toxicity, and added financial expense. Several factors typically impair compliance with drug therapy, and should be assessed. They include the patient's: 1) attitude toward his or her illness (especially in the presence of long-term therapy or chronic disease); 2) health beliefs; 3) knowledge of the disease process and its management; 4) mental–cognitive functioning; 5) physical ability (presence of physical disability, vision impairment, decreased manual dexterity); 6) social and emotional support systems; 7) access to care; and 8) financial status and health insurance coverage (because drugs are expensive and may not be reimbursed by a health plan). The nurse also must be aware that certain prescriptive practices such as prescribing dosage forms that are inappropriate for the patient or difficult to use, prescribing multiple drugs (polypharmacy), use of frequent dosing schedules, and using multiple prescribers increase the risk of poor compliance (see Plan of Nursing Care 1-2).

Summary

Certain behaviors, if observed by the nurse, indicate the need for immediate reassessment of a drug regimen because patient safety is at risk. They include: 1) the inability of a patient to give an adequate current drug history (drug, indication for use, dosing, and so forth); 2) acute changes in physical status, behavior, or mental–cognitive function; 3) evidence (or reports) of injury or falls; 4) intense symptoms of expected or undesirable adverse drug effects; 5) requests for changes in drug therapy; 6) frequent requests for prescription refills or long periods between prescription refills; 7) excessive or inappropriate use of OTC drugs; and 8) saving previously prescribed drugs when no longer indicated for use.

Nursing assessment before and during drug therapy assists the practitioner–prescriber in uncovering issues related to compliance and facilitates the initiation of timely interventions on the patient's behalf, such as the reevaluation of therapy; adjusting the dosing regimen, route of administration, or method of administration; or patient education.