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Popular Medications
and Drug Information You Should Know

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Reviewed: September 16, 2004



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From the Doctors of MedicineNet.com

By Doctors, For You

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In the modern day complex healthcare environment, patients, their physicians, nurses, and allied health professionals must be able to discuss the ever-changing aspects of health, disease, and biotechnology. An accurate understanding of medical terminology can assist communication and improve care for patients, as well as help to alleviate the concerns of families and friends.

We hope that you will find this content a valuable addition to your library. This information is current as of the print date. We invite you to visit us on the Internet at <http://www.medicinenet.com> for updates.

Sincerely,

-- The Medical Editors, MedicineNet.com

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Popular Medications

(Listed alphabetically by generic name with brand name in parentheses)

The editors of MedicineNet have organized a listing with brief descriptions of some of the more popular medications in use today. They have been chosen according to the popularity of requests by Internet viewers seeking medication information on the MedicineNet.com (<http://www.medicinenet.com/>) health information Web Site. For more detailed information, go to the Internet link provided next to each medication.

The medications here are listed alphabetically by generic name, with brand names in parentheses. Generic and branded medications may differ in the amount of drug they contain, the absorption of the drug into the body, and the distribution of the drug throughout the body.

acetaminophen (brand name: Tylenol)—A pain reliever and fever reducer. The exact mechanism of action of acetaminophen is not known. Acetaminophen relieves pain by elevating the pain threshold (that is, by requiring a greater amount of pain to develop before it is felt by a person). Acetaminophen reduces fever through its action on the heat-regulating center of the brain. Generic is available.

<http://www.medicinenet.com/acetaminophen/article.htm>

alprazolam (brand name: Xanax)—A benzodiazepine sedative that causes dose-related depression of the central nervous system. Alprazolam is useful in treating anxiety, panic attacks, insomnia, and muscle spasms. Generic is available.

<http://www.medicinenet.com/alprazolam/article.htm>

amitriptyline (brand names: Elavil, Endep)—An antidepressant medication. In some patients with depression, abnormal levels of brain chemicals called neurotransmitters may relate to the depression. Amitriptyline elevates mood by raising the level of neurotransmitters in brain tissue. Amitriptyline is also a sedative that is useful for depressed patients with insomnia, restlessness, and nervousness. It is also helpful in treating fibromyalgia and symptoms related to chronic pain. Generic is available.

<http://www.medicinenet.com/amitriptyline/article.htm>

amoxicillin (brand names: Amoxil, Polymox, Trimox)—An antibiotic of the penicillin type that is effective against different bacteria such as Haemophilus influenzae, Neisseria gonorrhoea, Escherichia coli, Pneumococci, Streptococci, and certain strains of Staphylococci, particularly infections of the middle ear, tonsillitis, throat infections, laryngitis, bronchitis, and pneumonia. Amoxicillin is also used in treating urinary tract infections, skin infections, and gonorrhea. Generic is available.

<http://www.medicinenet.com/amoxicillin/article.htm>

atenolol (brand name: Tenormin)—A medication that blocks the action of a portion of the involuntary nervous system that stimulates the pace of the heartbeat. By blocking the action of these nerves, atenolol reduces the heart rate and is useful in treating abnormally rapid heart rhythms. Atenolol also reduces the force of heart muscle contraction, lowers blood pressure, and is helpful in treating angina. It is also used for the prevention of migraine headaches and the treatment of certain types of tremors. Generic is available.
<http://www.medicinenet.com/atenolol/article.htm>

atorvastatin (brand name: Lipitor)—A medication that lowers the level of cholesterol in the blood. Atorvastatin belongs to a class of drugs referred to as statins. All statins prevent the production of cholesterol in the liver by blocking the enzyme that makes cholesterol, HMGCoA reductase. They lower total blood cholesterol as well as low-density lipoprotein (LDL) cholesterol levels. Lowering LDL cholesterol levels retards progression and may even reverse coronary artery disease. Unlike the other statins, atorvastatin can also reduce the concentration of triglycerides in the blood. (High blood concentrations of triglycerides have been associated with coronary artery disease.) Generic is not available.
<http://www.medicinenet.com/atorvastatin/article.htm>

bupropion (brand names: Wellbutrin, Zyban, Wellbutrin SR)—An antidepressant medication that affects chemicals within the brain that nerves use to send messages to each other. These chemical messengers are called neurotransmitters. The neurotransmitters that are released by nerves are taken up again by the nerves that release them for reuse (referred to as reuptake). Many experts believe that depression is caused by an imbalance among the amounts of neurotransmitters that are released. Bupropion is unrelated to other antidepressants. It works by inhibiting the reuptake of the neurotransmitters dopamine, serotonin, and norepinephrine, resulting in more of these chemicals being available to transmit messages to other nerves. Bupropion is unique in that its major effect is on dopamine. Wellbutrin and Wellbutrin SR are used for the management of depression. Zyban has been approved as an aid to patients who want to quit smoking. Generic is not available.
<http://www.medicinenet.com/bupropion/article.htm>

celecoxib (brand name: Celebrex)—A nonsteroidal anti-inflammatory drug (NSAID) that is used to treat arthritis and to relieve acute pain and the pain of menstrual cramps (primary dysmenorrhea). Celecoxib differs from traditional NSAIDs in that it causes less inflammation and ulceration of the stomach and intestine (at least with short-term treatment) and does not interfere with the clotting of blood. NSAIDs have been found to prevent the formation and reduce the size of polyps in patients with the genetic disease familial adenomatous polyposis (FAP), in which the patient develops large numbers of colon polyps that invariably become malignant. Celecoxib is approved as a treatment, along with polyp removal, for patients with FAP. Generic is not available.
<http://www.medicinenet.com/celecoxib/article.htm>

cephalexin (brand names: Keflex, Keftabs)—A semisynthetic cephalosporin antibiotic that is chemically similar to penicillin. Cephalexin is effective against a wide variety of bacterial organisms, such as *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Escherichia coli*, particular involving infections of the middle ear, tonsillitis, throat infections, laryngitis, bronchitis, and pneumonia. Cephalexin is also used in treating urinary tract infections and skin and bone infections. Generic is available.

<http://www.medicinenet.com/cephalexin/article.htm>

ciprofloxacin (brand name: Cipro)—An antibiotic that stops multiplication of bacteria by inhibiting the reproduction and repair of their genetic material (DNA). Ciprofloxacin is used to treat infections of the skin, lungs, airways, bones, and joints that are caused by susceptible bacteria. Ciprofloxacin is also frequently used to treat urinary infections caused by bacteria such as *Escherichia coli*. Ciprofloxacin is effective in treating infectious diarrheas caused by *E. coli*, *Campylobacter jejuni*, and shigella bacteria. Generic is not available.

<http://www.medicinenet.com/ciprofloxacin/article.htm>

citalopram (brand name: Celexa)—An antidepressant medication that affects neurotransmitters, the chemical messengers within the brain. Neurotransmitters manufactured and released by nerves attach to adjacent nerves and alter their activities. Thus, neurotransmitters can be thought of as the communication system of the brain. Many experts believe that an imbalance among neurotransmitters is the cause of depression. Citalopram works by preventing the uptake of one neurotransmitter, serotonin, by nerve cells after it has been released. The reduced uptake caused by citalopram results in more free serotonin being available in the brain to stimulate nerve cells. Citalopram is in the class of drugs called selective serotonin reuptake inhibitors (SSRIs). Generic is not available.

<http://www.medicinenet.com/citalopram/article.htm>

doxycycline (brand name: Vibramycin)—A synthetic broad-spectrum antibiotic that is derived from tetracycline and is effective against a wide variety of bacteria, such as *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Mycoplasma pneumoniae*, *Chlamydia psittaci*, *Chlamydia trachomatis*, and *Neisseria gonorrhoea*. Doxycycline is particularly helpful for treating respiratory tract infections and for treating nongonococcal urethritis (due to ureaplasma), Rocky mountain spotted fever, typhus, chancroid, cholera, brucellosis, anthrax, syphilis, and acne. Generic is available.

<http://www.medicinenet.com/doxycycline/article.htm>

fluoxetine (brand name: Prozac)—A class of antidepressant medications that affects chemical messengers within the brain. These chemical messengers are called neurotransmitters. Many experts believe that an imbalance in these neurotransmitters is the cause of depression. Fluoxetine is used in the treatment of depression and obsessive-compulsive disorders. Fluoxetine is believed to work by inhibiting the release of or affecting the action of serotonin. Generic is available.

<http://www.medicinenet.com/fluoxetine/article.htm>

gabapentin (brand name: Neurontin)—An anticonvulsant that is used to treat seizures (epilepsy) and herpes zoster (shingles). Gabapentin is also used to treat chronic pain disorders. Gabapentin is related to the brain chemical gamma aminobutyric acid (GABA), but exactly how it works is unknown. Generic is not available.

<http://www.medicinenet.com/gabapentin/article.htm>

hydrocodone/acetaminophen (brand names: Vicodin, Vicodin ES, Anexsia, Lorcet, Lorcet Plus, Norco)—A narcotic pain reliever and a cough suppressant that is similar to codeine and is used for the relief of moderate to moderately severe pain. The precise mechanism of pain relief by hydrocodone and other narcotics is not known.

Acetaminophen is a nonnarcotic pain reliever and fever reducer. It relieves pain by elevating the pain threshold and reduces fever through its action on the heat-regulating center of the brain. Generic is available.

<http://www.medicinenet.com/hydrocodoneacetaminophen/article.htm>

hydroxyzine (brand names: Vistaril, Atarax)—An antihistamine with anticholinergic (drying) and sedative properties that is used to treat allergic reactions and to relieve nasal and nonnasal symptoms such as those from seasonal allergic rhinitis. Histamine is released by the body during several types of allergic reactions and to a lesser extent during some viral infections, such as the common cold. When histamine binds to its receptors on cells, it causes changes within the cells that lead to sneezing, itching, and increased mucus production. Antihistamines compete with histamine for cell receptors; however, when they bind to the receptors, antihistamines do not stimulate the cells. In addition, antihistamines prevent histamine from binding and stimulating the cells. Generic is available.

<http://www.medicinenet.com/hydroxyzine/article.htm>

ibuprofen (brand names: Advil, Motrin, Medipren, Nuprin)—A traditional nonsteroidal anti-inflammatory drug (NSAID) that is effective in treating fever, pain, and inflammation in the body. As a group, NSAIDs are nonnarcotic relievers of mild to moderate pain of many causes, including injury, menstrual cramps, arthritis, and other musculoskeletal conditions. Generic is available.

<http://www.medicinenet.com/ibuprofen/article.htm>

levothyroxine sodium (brand names: Synthroid, Levoxyl, Levothroid, Unithroid)—A synthetic version of the principal thyroid hormone thyroxine (T4), which is made and released by the thyroid gland. Levothyroxine sodium is used to treat hypothyroidism and to suppress thyroid hormone release in the management of cancerous thyroid nodules and growth of goiters. Thyroid hormone increases the metabolic rate of cells of all tissues in the body. Thyroid hormone helps to maintain brain function, food metabolism, and body temperature, among other effects. Generic is available.
http://www.medicinenet.com/levothyroxine_sodium/article.htm

lorazepam (brand names: Ativan)—An antianxiety medication in the benzodiazepine family. Lorazepam and other benzodiazepines act by enhancing the effects of gamma-aminobutyric acid (GABA) in the brain. GABA is a neurotransmitter, a chemical that nerves in the brain use to send messages to one another. GABA inhibits activity in many of the nerves of the brain, and it is thought that this excessive activity is what causes anxiety and other psychological disorders. Lorazepam has fewer interactions with other medications and is felt to be potentially less toxic than most of the other benzodiazepines. Lorazepam is also used to treat insomnia and panic attacks. Generic is available.
<http://www.medicinenet.com/lorazepam/article.htm>

methotrexate (brand names: Rheumatrex, Trexall)—A drug that is capable of blocking the metabolism of cells (an antimetabolite). As a result of this effect, methotrexate has been found to be helpful in treating certain diseases associated with abnormally rapid cell growth, such as cancer of the breast and psoriasis. Recently, methotrexate has been shown to be effective in inducing miscarriage (for example, in patients with ectopic pregnancy). This effect of methotrexate is attributed to its action of killing the rapidly growing cells of the placenta. Methotrexate has also been found to be very helpful in treating rheumatoid arthritis, although its mechanism of action in this illness is not known. Methotrexate seems to work, in part, by altering aspects of immune function that may play a role in causing rheumatoid arthritis. Generic is available.
<http://www.medicinenet.com/methotrexate/article.htm>

metoprolol (brand names: Lopressor, Toprol XL)—A medication that blocks the action of a portion of the involuntary nervous system. The sympathetic nervous system stimulates the pace of the heart beat. By blocking the action of these nerves, metoprolol reduces the heart rate and is useful in treating abnormally rapid heart rhythms. Metoprolol also reduces the force of heart muscle contraction, lowers blood pressure, and is helpful in treating angina. Generic is available.
<http://www.medicinenet.com/metoprolol/article.htm>

naproxen (brand names: Naprosyn, Naprelan, Anaprox, Aleve)—A traditional nonsteroidal anti-inflammatory drug (NSAID) that is effective in treating fever, pain, and inflammation in the body. As a group, NSAIDs are nonnarcotic relievers of mild to moderate pain of many causes, including injury, menstrual cramps, arthritis, and other musculoskeletal conditions. Generic is available.

<http://www.medicinenet.com/naproxen/article.htm>

paroxetine (brand name: Paxil)—An antidepressant medication that affects the chemicals that nerves in the brain use to send messages to one another. Paroxetine is used for the management of depression, obsessive-compulsive disorders, and panic disorders. Paroxetine is felt to work by affecting chemical messengers, called neurotransmitters, in the brain. Many experts believe that an imbalance among the amounts of the different neurotransmitters that are released causes depression. Paroxetine works by inhibiting the reuptake of serotonin by the nerves that release it, an action that allows more serotonin to be available to be taken up by other nerves. Paroxetine is in a class of drugs called selective serotonin reuptake inhibitors (SSRIs). Generic is not available.

<http://www.medicinenet.com/paroxetine/article.htm>

phentermine (brand names: Adipex-P, Fastin, Obenix, Oby-Trim)—An appetite suppressor that decreases appetite by possibly changing brain levels of serotonin. Phentermine is a nervous system stimulator like the amphetamines, causing stimulation, elevation of blood pressure, and increased heart rates. Phentermine is used for short periods, along with diet and behavior modification, to treat obesity. Generic is available.

<http://www.medicinenet.com/phentermine/article.htm>

prednisone (brand names: Deltasone, Liquid Pred, Prednisolone, Pediapred Oral Liquid, Medrol)—An oral, synthetic corticosteroid that is used for suppressing the immune system and inflammation. Synthetic corticosteroids mimic the action of cortisol (hydrocortisone), the naturally occurring corticosteroid that is produced in the body by the adrenal glands. Corticosteroids have many effects on the body, but they most often are used for their potent anti-inflammatory effects, particularly in conditions in which the immune system plays an important role. Such conditions include arthritis, colitis, asthma, bronchitis, certain skin rashes, and allergic or inflammatory conditions of the nose and eyes. Generic is available.

<http://www.medicinenet.com/prednisone/article.htm>

sertraline (brand name: Zoloft)—A medication that is used to treat psychological illnesses, including depression, obsessive-compulsive disorder, panic disorder, and posttraumatic stress disorder. Sertraline belongs to a class of drugs called selective serotonin uptake inhibitors. Serotonin is a chemical messenger produced by nerve cells in the brain that is used by the nerves to communicate with one another. A nerve releases the serotonin it produces into the space surrounding it. The serotonin either travels across the space and attaches to receptors on the surface of nearby nerves or attaches to receptors on the surface of the nerve that produced it to be taken up, recycled, and released again (a process referred to as reuptake). A balance is reached for serotonin between attachment to the nearby nerves and reuptake. It is believed that some illnesses, such as depression, are caused by disturbances in the function of the receptors that alter the balance of serotonin. The leading theory is that drugs such as sertraline alter the receptors in a manner that restores the balance. Generic is not available.

<http://www.medicinenet.com/sertraline/article.htm>

simvastatin (brand name: Zocor)—A cholesterol-lowering medicine that inhibits the production of cholesterol by the liver. Simvastatin lowers overall blood cholesterol as well as blood low-density lipoprotein (LDL) cholesterol. Lowering LDL cholesterol levels retards progression and may even reverse coronary artery disease. Generic is not available.

<http://www.medicinenet.com/simvastatin/article.htm>

tetracycline (brand name: Achromycin)—A broad-spectrum antibiotic that is effective against a wide variety of bacteria, including *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Mycoplasma pneumoniae*, *Chlamydia psittaci*, *Chlamydia trachomatis*, and *Neisseria gonorrhoea*. Tetracycline is used to treat respiratory tract infections and for nongonococcal urethritis (due to ureaplasma), Rocky mountain spotted fever, typhus, chancroid, cholera, brucellosis, anthrax, syphilis, and acne. Generic is available.

<http://www.medicinenet.com/tetracycline/article.htm>

tramadol (brand name: Ultram)—A pain reliever (analgesic) that is used in the management of moderate to moderately severe pain. Its mode of action resembles that of narcotics, but tramadol has significantly less potential for abuse and addiction than narcotics. Tramadol is as effective as narcotics in relieving pain, but it does not depress respiration, which is a side effect of most narcotics. Generic is not available.

<http://www.medicinenet.com/tramadol/article.htm>

trazodone (brand name: Desyrel)—An antidepressant that affects the chemical messengers (neurotransmitters) within the brain that nerves use to communicate with each other. The major neurotransmitters are acetylcholine, norepinephrine, dopamine, and serotonin. Many experts believe that an imbalance among these different neurotransmitters is the cause of depression. Although the exact mechanism of action of trazodone is unknown, it probably improves symptoms of depression by inhibiting the uptake of serotonin by nerves in the brain. This results in more serotonin being available to stimulate other nerves. Trazodone may also directly increase the action of serotonin. Generic is available.

<http://www.medicinenet.com/trazodone/article.htm>

For more detailed information and additional medications, visit

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What You Should Know About Your Drugs

Whether synthetic or natural (herbal), drugs are intended to act on the body. There always is a chance that they will produce effects that we do not want. Also, if two or more drugs are taken at the same time, there is a chance that one drug will interact with another drug in either a positive or negative way. This does not imply that the drugs are bad, but rather that they should be used carefully in order to reap the greatest benefit while minimizing unwanted side effects. Indeed, when used properly, most drugs approved by the Food and Drug Administration do more good than harm. Below are ten questions that apply to most drugs and are worth discussing with your healthcare provider. Most of these issues are addressed by the information that is provided with the drug.

What is the drug used for?

Drugs often have more than one use. Understanding why a drug is prescribed improves your knowledge about the drug and the condition for which it is prescribed. This promotes compliance with treatment.

How does the drug work?

Knowing how the drug works provides the rationale for its use in the treatment of a particular disease. This also promotes adherence to treatment.

How should the drug be taken?

The optimal dose and timing of ingestion of a drug is determined by scientific studies. Drugs provide their greatest benefit when they are taken as prescribed. Deviating from the prescribed dose often leads to failure of the therapy or to side effects. However, in some circumstances (e.g., when severe side effects occur), changes in dose may be appropriate, but they should be discussed with a healthcare provider as soon as possible.

What should you do if you miss a dose?

Despite the best of efforts, eventually everyone misses one or more doses of a medication. The remedy for this situation depends on the drug. For some drugs, simply taking the missed dose as soon as possible is appropriate. For other drugs, it is more appropriate to wait and double the next scheduled dose. (However, this can be dangerous with some drugs.) Since the recommendations differ for each drug, knowing which is the correct remedy can prevent therapy from failing and side effects from occurring.

What are the drug's side effects?

Since drugs provide a benefit by modifying processes in the body, it is not surprising that they also have side effects. Successful drug therapy produces the desired beneficial effect without side effects. Therefore, it is important to know what a drug's side effects are so that they can be recognized, prevented, and acted upon appropriately when they occur.

What substances interact with the drug?

Interactions with drugs are common and they can cause side effects or reduce the beneficial effect of the drug. Sometimes, the interaction may promote a beneficial effect. Knowing which interacting agents to avoid while taking a drug (for example, food and herbal drugs) will prevent failure of therapy and side effects.

What should you expect the drug to do?

Some drugs cure the condition for which they are prescribed while other drugs provide only relief from symptoms. Some drugs provide an immediate benefit while other drugs require more time to work. To determine whether the drug is working as intended, it is important to know the expected result and how long it will take to see that result.

How should the drug be stored?

Most medications are stored at room temperature. However, some medications require special storage conditions in order to avoid premature deterioration of the drug.

Should you use a generic version of the drug?

Generic drugs work like the brand name drugs, but they are cheaper. Purchasing a generic instead of the brand name drug can often reduce the cost of therapy while providing the same benefit.

What laboratory tests should be done to monitor the effects of the drug?

Some drugs are monitored with laboratory tests. Adjustments of a medication's dose may be based on the results of the tests. For safe and effective use of these drugs, the laboratory tests should be performed at the recommended intervals.

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<http://www.medicinenet.com/script/main/art.asp?articlekey=16667>

Drug Interactions

Whenever two or more drugs are taken concurrently, there is a chance that there will be an interaction among the drugs. The interaction may increase or decrease the effectiveness and/or the side effects of the drugs. It also may result in a new side effect, that is, a side effect not seen with the use of any one drug alone. The likelihood of drug interactions increases as the number of drugs being taken by a patient increases.

Therefore, people who take several medications are at the greatest risk for interactions. Drug interactions contribute to the cost of healthcare because of the medical care costs that are required to treat them. Interactions can also lead to pain and suffering that could be avoided. This month's topic discusses the issue of drug interactions and several ways to avoid them.

What are drug interactions?

A drug interaction can be defined as an interaction between a drug and another substance that prevents the drug from performing as expected. This definition applies to interactions of drugs with other drugs (drug-drug interactions), as well as drugs with food (drug-food interactions) and other substances.

How do drug interactions occur?

There are several mechanisms by which drugs interact with other drugs, food, and other substances. An interaction can result when there is an increase or decrease in: (1) the absorption of a drug into the body; (2) distribution of the drug in the body; (3) changes made to the drug by the body (metabolism); and (4) elimination of the drug from the body. Most of the important drug interactions result from a change in the absorption, metabolism, or elimination of a drug. Drug interactions also may occur when two drugs that have similar (additive) effects or opposite (canceling) effects on the body are administered together. Another source of drug interactions occurs when one drug alters the concentration of a substance that is normally present in the body. The alteration of this substance reduces or enhances the effect of another drug that is being taken. The drug interaction between warfarin (Coumadin) and vitamin K-containing products is a good example of this type of interaction. Warfarin acts by reducing the concentration of the active form of vitamin K in the body. Therefore, when vitamin K is taken, it reduces the effect of warfarin.

Change in absorption

Most drugs are absorbed into the blood and then travel to their site of action. Most drug interactions that are due to altered absorption occur in the intestine. There are various potential mechanisms through which the absorption of drugs can be reduced. These mechanisms include an alteration in blood flow to the intestine, metabolism (alteration of the drug) by the intestine, increased or decreased intestinal motility (movement) within

the intestine, alterations in acidity in the stomach, and a change in the bacteria of the intestine. Drug absorption also can be affected if the drug's ability to dissolve (solubility) is changed by another drug, or if a substance (e.g., food) binds to the drug and prevents its absorption.

Change in drug metabolism and elimination

Most drugs are eliminated through the kidney in either an unchanged form or as a by-product that results from the metabolism (alteration) of the drug by the liver. Therefore, the kidney and the liver are very important sites of potential drug interactions. Some drugs are able to reduce or increase the metabolism of other drugs by the liver or their elimination by the kidney.

Metabolism of drugs is the process through which the body converts (alters or modifies) drugs into forms that are easier for the body to eliminate through the kidneys. (This process also converts drugs that are given in inactive forms into active forms that actually produce the desired effect.) Most drug metabolism takes place in the liver, but other organs also may play a role (e.g., the kidneys). The cytochrome P450 enzymes are a group of enzymes in the liver that are responsible for the metabolism of most drugs. They are, therefore, often involved in drug interactions. Drugs and certain types of food may increase or decrease the activity of these enzymes and therefore affect the concentration of drugs that are metabolized by these enzymes. An increase in the activity of these enzymes leads to a decrease in the concentration and effect of an administered drug. Conversely, a decrease in enzyme activity leads to an increase in drug concentration and effect.

What are the consequences of drug interactions?

Drug interactions may lead to an increase or decrease in the beneficial or the adverse effects of the given drugs. When a drug interaction increases the benefit of the administered drugs without increasing side effects, both drugs may be combined to increase the control of the condition that is being treated. For example, drugs that reduce blood pressure by different mechanisms may be combined because the blood pressure lowering effect achieved by both drugs may be better than with either drug alone. The absorption of some drugs is increased by food. Therefore, these drugs are taken with food in order to increase their concentration in the body and, ultimately, their effect. Conversely, when a drug's absorption is reduced by food, the drug is taken on an empty stomach.

Drug interactions that are of greatest concern are those that reduce the desired effects or increase the adverse effects of the drugs. Drugs that reduce the absorption or increase the metabolism or elimination of other drugs tend to reduce the effects of the other drugs. This may lead to failure of therapy or warrant an increase in the dose of the affected drug. Conversely, drugs that increase absorption or reduce the elimination or metabolism of other drugs increase the concentration of the other drugs in the body and lead to more

side effects. Sometimes, drugs interact because they produce similar side effects. Thus, when two drugs that produce similar side effects are combined, the frequency and severity of the side effect are increased.

How often do drug interactions occur?

Drug interactions are complex and chiefly unpredictable. A known interaction may not occur in every individual. This can be explained because there are several factors that affect the likelihood that a known interaction will occur. These factors include differences among individuals in physiology, age, lifestyle (diet, exercise), underlying diseases, drug doses, the duration of combined therapy, and the relative time of administration of the two substances. (Sometimes, interactions can be avoided if two drugs are taken at different times.) Nevertheless, significant drug interactions occur frequently and they add millions of dollars to the cost of healthcare. Moreover, many drugs have been withdrawn from the market because of their potential to interact with other drugs and cause serious healthcare problems.

How can drug interactions be avoided?

1. Give healthcare providers a complete list of all of the drugs that you are using or have used within the last few weeks. This should include over-the-counter medications, vitamins, food supplements, and herbal remedies.
2. Inform healthcare providers when medications are added or discontinued.
3. Inform healthcare providers about changes in lifestyle.
4. Ask your healthcare provider about the most serious or frequent drug interactions with the medications that you are taking.
5. Since the frequency of drug interactions increases with the number of medications, work with your healthcare providers to eliminate unnecessary medications.
6. Use the MedicineNet drug interaction tool to screen for possible drug interactions. However, always consult your healthcare provider before you make any adjustments to your therapy.
7. This brief overview of drug interactions does not cover every possible scenario. Viewers should not be afraid to use their drugs because of the potential for drug interactions. Rather, they should use the information that is available to them to minimize the risk of such interactions and to improve the success of their therapy.

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<http://www.medicinenet.com/script/main/art.asp?articlekey=19912>

Getting the Most Out Of Your Pharmacy Visit

Although most people have visited a pharmacy, very few are aware of all of the services that pharmacists can provide. What goes on behind the glass partition? Why does it take so long to get a prescription filled? This month's column discusses the role of the community pharmacist in healthcare and provides advice on getting the most out of each visit to the pharmacy.

The community pharmacist is primarily responsible for accurately filling prescriptions and ensuring that patients have enough information to effectively and safely use medications. Before a patient leaves the pharmacy with a medication, the pharmacist must be certain that the patient has the right medication, correct dose, and directions for use. The pharmacist also provides information about how the drug works and potential side effects and ensures that there are no contraindications to (medical reasons for a patient to avoid) the medication and no potentially important harmful drug-drug, drug-food, or drug-disease interactions. The pharmacist does this by transcribing the doctor's prescription accurately, interviewing and counseling the patient, and using his or her knowledge of the condition that is being treated and the effects of the prescribed drug. Since the pharmacist is usually the last healthcare professional to have contact with patients before they receive their medications, they are the final step in a system of checks and balances designed to ensure that medications are used safely and effectively. If the pharmacist believes that there is a problem with the prescription, he or she calls the prescribing doctor in order to review the prescription. For example, the wrong drug or dose may have been prescribed or the pharmacist may determine that there is a safer or more effective medication than the one that has been prescribed.

Apart from ensuring that patients leave the pharmacy with the right medication, pharmacists also provide drug information to healthcare professionals and the public. They assist physicians in appropriate drug selection, advise patients on appropriate over-the-counter remedies, and counsel the public on preventative therapies. Some community pharmacists offer monitor services for cholesterol, blood pressure, and blood glucose. They also may run smoking cessation and weight-loss programs.

This description of what pharmacists do seems straightforward. So why does it take so long to fill a prescription? There are a number of reasons. One major reason is that pharmacies are very busy and understaffed. It takes time and staff to complete all the steps needed to fill a prescription, counsel patients, and contact physicians if there is a question about the prescription. Insurance companies also share a portion of the blame. If payment for a drug is initially denied by an insurance company, it may take from a few hours to over 24 hours to receive authorization from the insurance company or a new prescription from the doctor. A good portion of a pharmacist's time is spent resolving insurance issues. Finally, pharmacy is one of the most regulated professions and the system of checks and balances that are in place to protect the public can result in

inefficiency. Everything from the height of the pharmacy's counter top to what goes on a prescription label is regulated.

Now that I have shed some light on what pharmacists do, here are some tips on how to save time and get the most out of your pharmacy visit.

1. Before leaving the doctor's office make sure that the prescription contains the name, dose, quantity (including number of refills), and directions for use of the drug. It also is a good idea to know why the drug was prescribed. In addition, the doctor or the doctor's representative must sign the prescription. Also find out from the prescriber whether the drug is covered by your insurance plan. If it is not covered and you do not want to pay cash or spend a long time at the pharmacy while the pharmacist calls your doctor, ask your doctor to prescribe a similar agent that is covered by your insurance plan.
2. Before you arrive at the pharmacy, make sure that your insurance information is accurate and up to date. Providing a date of birth or social security number that is different from the insurance company's records could lead to denial of coverage and unnecessary delay in obtaining your medication.
3. Ask the prescriber to fax or call in your prescription with instructions on when you will be picking up the medication. It is also a good idea to call ahead to check whether the prescription is ready. This will save a lot of time.
4. Avoid peak hours at the pharmacy. The peak hours vary for each pharmacy, but for most, lunchtime and the end of the business day are usually the busiest.
5. Plan to spend a few minutes with the pharmacist discussing your medications. This is one of the most valuable services that pharmacists provide, but few individuals take advantage of this free service.
6. If possible, fill your prescriptions at the same pharmacy so that they have your complete medication profile and will be able to detect drug interactions and duplicative therapy.
7. If you have to wait for your medications, spend the time reading about preventive therapies and your medications. Check your blood pressure, weight, glucose, and cholesterol or obtain other information that may improve the management of your condition.

With careful planning, a visit to the pharmacy can be painless and, in fact, rewarding. However, if for some unforeseen reason there is a delay in obtaining your prescription, take it in stride and keep it in perspective. After all, there are other services that we gladly wait for that are not as important as our health. Pharmacies should not be viewed as fast food restaurants. They should be viewed as part of the healthcare system. Sometimes, the delivery of good healthcare takes time.

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<http://www.medicinenet.com/script/main/art.asp?articlekey=19667>

How to Reduce Your Medication Costs

Anyone who takes prescription medications is aware that medications are expensive. For those taking several medications, the monthly expense can amount to a few hundred dollars. This month's Doctor's View will discuss several ways to reduce the costs for medications.

Eliminate Unnecessary Medications

The first step in reducing costs for medications is to eliminate unnecessary medications. To do this, you must know why you are taking each medication, what results to expect from taking it, and how long you should take it. If the medication does not do what it is supposed to within a reasonable amount of time, you should consult your healthcare provider about discontinuing the medication or trying alternative medications. There is no reason to take medications that provide no benefit. Individuals sometimes continue to refill prescriptions for medications that they should no longer be taking. The inappropriateness of continuing the medication may not be noticed until the prescription is no longer refillable, usually one year after it is written, and the pharmacist calls the healthcare provider for a new prescription. By then, a lot of money may have been wasted.

Duplication of medications is another potential problem. This usually happens when a patient receives a prescription for similar medications from different physicians. In addition to the unnecessary costs, there may be risks to taking two similar medications. To avoid these unnecessary medication-related expenses, it is a good idea to ask your health care provider and pharmacist to review your medications periodically.

Herbal medications (alternative medications), nutritional supplements, and vitamins are very popular. Most individuals do not need these products and in most cases they have not been proven to be effective for the conditions for which they are used. They can interact with other medications, cause side effects, and also be expensive. Before purchasing these products, you should ask your healthcare provider about their safety and effectiveness. If they do not provide additional benefit, there is no need to purchase them.

Use Combination Products

Several conditions, such as hypertension and diabetes, are treated with more than one medication at a time. Several pharmaceutical companies manufacture medications that combine two of the most frequently used medications. These combinations are convenient, since only one pill must be taken, which may enhance compliance with taking the medications. More over, some combinations may be less expensive than the individual drugs.

Generic Drugs

In most instances, generic drugs work as well as the brand name drugs. Unless your healthcare provider advises against the use of the generic product, it will be less expensive to use the generic product. All too often, individuals purchase the more expensive brand name drug because they believe that the generic equivalent is inferior. In most states, as long as the prescriber does not indicate otherwise, pharmacists are required by law to substitute generic products for brand name products.

Pill Cutting

Many drugs come in higher and lower strength tablets. If the price of a tablet that is twice the strength of a lower strength tablet is less than twice the price of the lower strength tablet, it is less costly to buy the higher strength tablet. A pill cutter can then be used to cut the pills in half. For example, if the cost of the 40 mg tablet is \$1.50 and the cost of the 20 mg tablet is \$1.00, it is less expensive to buy and split the 40 mg tablet than it is to buy the 20 mg tablet (\$0.75 verses \$1.00). This strategy only works, however, for tablets that can be split.

Comparison Shopping

Drugs are similar to other goods that we purchase, and pharmacies compete with one another. Therefore, it makes sense to compare prices among pharmacies. In some instances, mail order or Internet pharmacies offer better prices than local pharmacies. Some medical plans offer reduced co-payments when drugs are purchased through their mail order or Internet pharmacy.

Company programs

Major pharmaceutical companies may have programs that provide free medication to individuals who cannot afford them. There are income limitations and forms that have to be completed by a healthcare provider. If there is such a program and you cannot afford your medications, it is worth the effort to convince your healthcare provider to complete the necessary forms. These programs are a way for pharmaceutical companies to give back to the community, but they are under-utilized.

Diet and Exercise

The best way to reduce the costs of medications is to not develop the disease in the first place. Lifestyle plays a role in the development and the management of many diseases. For example, a recent study showed that moderate exercise and a proper diet could reduce the development of type 2 diabetes. In addition, proper diet and exercise improves the control of hypertension and diabetes and reduces the need for medications. Lifestyle modifications require commitment, but they can reduce the need for medication and the medication costs.

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<http://www.medicinenet.com/script/main/art.asp?articlekey=19324>

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