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Mothers Against Misuse and Abuse (MAMA) offers this booklet for those who wish to make informed and healthy choices regarding the use of any substance. Misinformed use is responsible for much of the harm caused by drug use. The formula offered here allows assessment of a drug before it is taken and, if a drug is administered, it outlines how to identify potentially serious problems.



These guidelines can serve as a logical evaluation method that can be beneficial when appraising any potentially harmful or dangerous activity. The concepts in this book were the framework for a series of accredited classes that were offered at the University of Oregon Health Education Department and at the Oregon Board on Police Standards and Training.

For information about MAMA's digital presentation on drug consumer safety or a listing of other presentations that MAMA offers, contact us.

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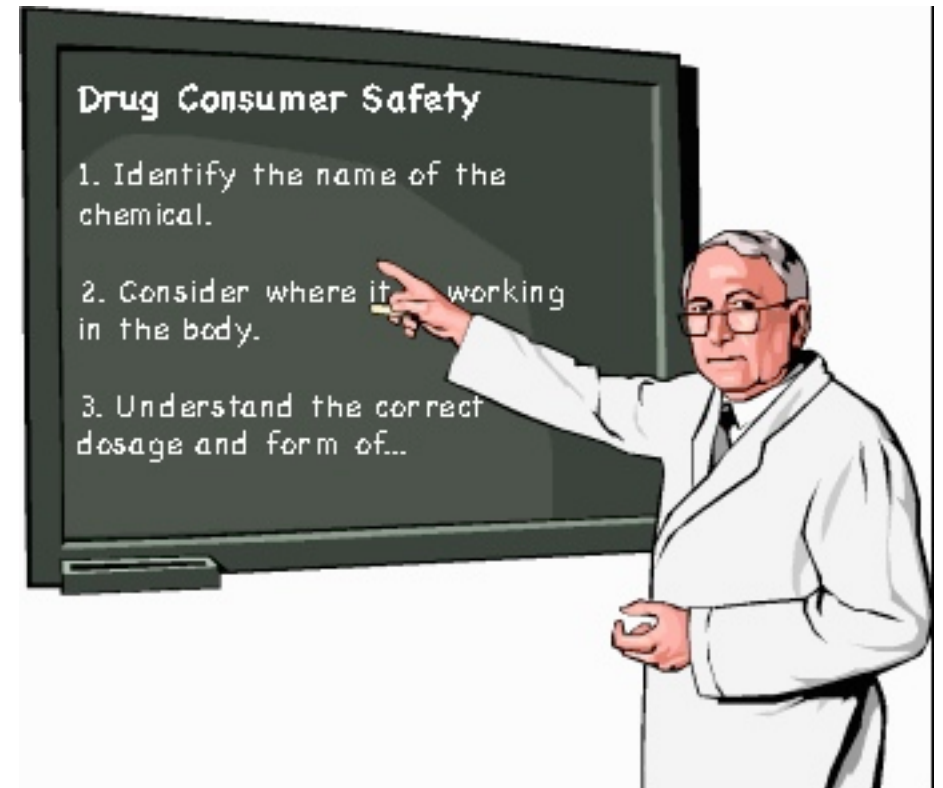


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**Mothers Against Misuse & Abuse**

# Drug Consumer Safety



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*A practical guide to making informed decisions about all drug use.*

# Drug Consumer Safety Guidelines

## Dosage and side effects

Some medications, including alcohol, nicotine, caffeine and all street drugs primarily affect the central nervous system. These and all drugs that produce effects in the nervous system are classified as psychoactive. Some substance abuse professionals feel that extensive use of psychoactive substances by adolescents can impair academic and social development. The effects of psychoactive substances can be greatly influenced by the situation in which they are used and the user's expectation of what effects the drug will produce.

### What is the Correct Dosage?



Dosage is the most complex and important factor in using a medication or drug and is the most frequent contributor to serious injury or death. Dosage is a much more complex and sophisticated issue than simply questioning how much of a certain substance should be consumed at a given time. When drugs are researched to determine primary and secondary effects they are administered in concentrations relative to the body weight of an animal or human subject. Using this process, researchers can determine the precise amount of a substance that needs to be administered for each gram of body weight in order for the maximum desired effect to be reached while producing minimal side effects.

This relationship between drug amount and body weight is called the milligram per kilogram (mg/kg) ratio and this ratio is what determines proper dosage. Each drug has its own unique dosage to body weight ratio that allows the drug to be as effective as possible while reducing the risk of side-effects. Physicians and pharmacists use this ratio when writing and filling prescriptions, but it is important for drug consumers to be familiar with this calculation as well. It is important to note that the mg/kg ratio will not prevent all side effects from occurring, but it can help reduce the incidence and severity of side effects and adverse reactions. Mg/kg ratios are available for most drugs and can be obtained from physicians, pharmacists and drug information centers.

After determining the correct dosage level for a particular drug, it is important to determine how the drug will be taken. Drugs that are injected or inhaled arrive at receptor sites throughout the body very rapidly. Orally consumed medications, by far the most commonly prescribed for consumer use, take more time to reach their full effectiveness.

When a pill or capsule is swallowed it must be broken down by the stomach, absorbed through the intestinal tract and pass through the liver before it can reach its receptor sites. This process can take up to 45 minutes after ingestion. Some of the drug may be inactivated or broken down during that time.

Food or drink can introduce an important variable to orally ingested medications. A full stomach may delay the onset of intended effects, reduce the amount of the drug reaching receptor sites or alter the intensity of a given drug's effects. Conversely, many medications should be taken with food or on a full stomach in an attempt to prevent any irritation they might induce.



The final concern regarding dosage involves time restraints. It is important to determine how long the effects of a drug may last prior to consuming the substance itself. Many drugs can interfere with an individual's ability to work or drive safely and some drugs must maintain a steady presence in the body in order to be effective. This is true of many antibiotics and cardiac medications. In this case it is advisable for consumers to take a dose at specific hourly intervals as opposed to broad time spans such as morning or evening and to be conscious of whether a medication should be taken before, during or after a meal.

# Drug Consumer Safety Guidelines

A new age in drugs and technology

The first step in making any responsible drug use decision is to perform a risk-to-benefit ratio for that specific substance. It is necessary to

understand that no drug use is safe. All drugs can produce side-effects. Some individuals may experience severe adverse or allergic reactions. Mixing drugs or medications can be dangerous. It is also possible to become physically or psychologically dependent on some drugs.



That being said, there are instances where a drug may cause numerous and severe negative effects, but the benefit of taking the drug still outweighs the risks associated with the drug itself. This can be particularly true in the case of potentially life-saving drugs such as chemotherapy treatment.

When there is doubt or confusion regarding the benefit-to-risk ratio, it is always a good idea to consult a physician, ideally one that is familiar with the patient's current condition and medical history. In the case of recreational drug use, a drug information center or pharmacy web site should be able to provide accurate information on the benefits and risks associated with a broad range of recreationally-used drugs.

In many ways, the issues of drug use and abuse boil down to the factor of personal responsibility. History and current public policy indicate that using law enforcement and scare tactics to reduce drug abuse problems are largely ineffective. In a society with everyday access to thousands of drugs, it is important and necessary to provide and teach citizens responsible decision-making techniques in order to minimize and prevent drug misuse and abuse.

Failure to provide this education only ensures that there will be a continuation of human casualties and societal disruption now and in the future. This booklet has been provided as a first step in the complex issue of educating the public on making informed, responsible choices about using drugs.

## Drug Consumer Safety

Over the last fifty years the assortment of drugs available for human consumption has increased tremendously. While the term drug culture may have been appropriate for the 1960's, a more applicable term for the new millennium may be drug technology. This technology is vast and widely available to all age and economic groups. There are currently more than 13,000 (1) brand-name prescription drugs and more than 350,000 over-the-counter medications available in pharmacies world-wide. Use of alcohol, tobacco and caffeine is extensive. Use of illicit substances and illegal narcotics is widespread.

This new technology has improved the quality of life for many Americans and extended the life expectancy of countless others; however, due to improper education or no education at all, it has the potential to cause serious harm.

Many of these products are marketed extensively to both medical professionals and to the general public. Prescription drugs were formerly marketed exclusively to doctors and pharmacists; now they are aggressively advertised and promoted to the American public. A study done by New York University researchers estimated that in 2004 pharmaceutical companies spent \$57.5 billion on product promotion, more than twice what they spent on research and development. (2) Advertisements for over-the-counter and recreational drugs such as alcohol and tobacco are widespread, and until recently government subsidies encouraged the production of tobacco for public consumption. Despite decades of enhanced prohibiting and seizure efforts, illegal drugs are so readily available in most communities that they require no advertisement. Given the pervasiveness of drugs to all segments of society, it is not surprising that many Americans have used drugs or will do so in the future. Unfortunately, the increase in assortment and quantity of drugs has not been accompanied by an increase in drug

# Drug Consumer Safety Guidelines

## Drug interactions and Allergic reactions

In addition to the primary and secondary effects, a drug can also cause rare but serious adverse reactions that can lead to hospitalization or even death. Adverse reactions indicate that a drug is not working correctly at its receptor sites or that it is working at a receptor site that it should not be attaching to. If a drug produces activity other than the known main effects or side effects, it should be presumed that an adverse reaction is occurring. The medication or drug should be immediately discontinued. A physician should be contacted immediately to determine if harm has occurred and whether use of the medication should be stopped or the dosage changed.

Physicians and pharmacists compare a drug's primary and secondary effects to create what is referred to as a benefit/risk ratio. Unless the medical professional feels that the benefits will clearly exceed the risks associated with the drug's known side effects, the medication will not be prescribed.

It is important to discuss any unfamiliar medications with a doctor or pharmacist. Many patients report that their doctors do not provide enough information regarding medications they have prescribed. It is important for patients to be responsible for asking the necessary questions, especially if they have experienced a negative or unexpected reaction to a drug. All drugs are capable of producing side effects and adverse reactions that can put the consumer at risk. The best scenario that can be obtained in any drug-use situation is a reduction of risk. In most circumstances, preventing a problem before it occurs is much easier and less invasive than trying to fix an issue that has already happened.

It can be surprising to find that, despite technological and scientific advances, hospitals and emergency rooms still have limited capabilities in certain circumstances. This can be especially true when it comes to treating adverse drug reactions and overdoses. It is important to ask



may negate the effects of one or both drugs. For example, when alcohol and caffeine are used together, the consumer may feel more alert, but the intoxicating effects of the alcohol do not decrease.

An infinite number of drug interactions can occur. These interactions can also occur between drugs and certain foods and beverages as well. Given the multitude of drugs and medications available to consumers, it is always advisable to contact a physician, pharmacist or drug information center before mixing any drugs or chemical substances. This is especially important among the elderly who statistically take multiple medications at the same time.



### What allergic reactions may occur?

This question is the wild card of drug technology. The truth is drug experts don't specifically know what causes allergic reactions or when they may be likely to occur. Every person's body chemistry is unique, therefore, it is impossible to predict when and where an allergic reaction will occur especially when a drug is being consumed for the first time. Fortunately, the incidence of severe allergic reactions is relatively small. The rate is typically between 3% and 5% of a given population using a specific drug.

Despite the relatively rare incidence of these reactions, they are unpredictable. They can occur in any individual at any time whether it's the first time a drug is being used or the hundredth time. Some allergic reactions can be life threatening; others can merely cause discomfort. Any reaction merits immediate discontinuation of the allergy-causing substance. It is important for consumers to recognize when an allergic reaction is occurring.

# Drug Consumer Safety Guidelines

## MAMA's Seven Step Guide

All drugs do not produce tolerance. Cardiac medications or drugs that do not produce effects in the central nervous system are examples of drugs that don't produce tolerance. Even so, it is wise to talk to a physician or pharmacist to determine a drug's potential to cause tolerance before using it.

### Will the drug cause dependence?

If a drug is frequently used drug dependence or physical addiction can occur producing severe withdrawal reactions if the drug is abruptly discontinued. With some drugs, such as alcohol, barbiturates and tranquilizers, withdrawal reactions to severe dependence can be life-threatening without medical supervision. Other drugs, including opiate or narcotic painkillers, have withdrawal symptoms that are not life-threatening, but are extremely unpleasant.



Physical dependence to a drug usually requires an individual to have built a large tolerance from high-dose frequent use. Dependence usually develops over a period of weeks or months of daily drug use, though it is has been known to occur in much shorter periods of time. It occurs when the body becomes dependent on the drug's presence in order to function normally.

Withdrawal reactions occur when all of the available drug in the body has been metabolized and the user has not consumed a new dose. The physical symptoms which are evident during withdrawal may include tremors, convulsions or vomiting. These can be prevented or alleviated by re-administering the drug or systematically detoxifying the individual, usually with the help of other medications.

It is possible to become psychologically dependent on a substance as well, but this form of addiction is not as easy to define or recognize. It is



1. Identify the name of the chemical.

2. Consider where it is working in the body.

3. Understand the correct dosage and form of administration.

4. Realize what drug interactions may occur.

5. Know what allergic reactions can occur.

6. Determine if it can produce tolerance.

7. Determine if it can produce dependence.

# Drug Consumer Safety Guidelines

## Tolerance & Dependence

### What is the name of the chemical?

In order to make an informed and responsible decision, you must first determine what chemical you are considering using. Because most drugs are sold under their brand name, it can be difficult to determine the exact chemical composition of a drug. Without proper identification of the chemical name it will be difficult to obtain further safety information.



Chemical or generic names can be obtained from several sources. Physicians and pharmacists can provide you with the chemical names of prescription and over-the-counter medications. Drug information centers, pharmacy school web sites, drug abuse treatment centers and crisis hotlines are

other sources available to provide the chemical name of a given substance. The internet can be an attractive and convenient source of information, but be cautious about the source or website you choose to visit. Be aware of the fact that most private medical websites rely on advertising fees to cover their operating budgets and are usually sponsored by pharmaceutical companies. Therefore, the information they present as fact has the potential to be biased for commercial purposes. The FDA website has a comprehensive list of most approved drugs available to consumers with links to safety information and instructions for the use of each drug. (3)

Combination products containing more than one chemical compound are required to provide a complete list of all chemical ingredients. The effects of combination products can be difficult to gauge because each chemical will have its own series of actions, which can differ greatly from person to person.

When a drug is consumed it is broken down by enzymes in the liver which allows the kidneys to eventually eliminate the drug from the body. When a drug or medication is used frequently on a regular basis, the liver becomes more efficient at breaking it down. In addition, the receptor sites in the body may become desensitized to the drug over time. Soon the consumer may notice that the initial dose is no longer producing the desired effect. Increasing the dosage may become necessary.

While these additional doses may be required to produce the drug's desired or primary effect, the body does not produce tolerance to the side effects of the drug; which may become more severe as the dosage increases. The possibility of rare adverse reactions also increases as does the risk of overdose. In some drugs the overdose level stays constant, even though the tolerance to the drug builds over time. Tolerance to a drug can also be expensive. This can be especially true in the case of recreational drug use.



In short, failure to exercise caution in the frequency of drug use leads to requiring larger doses to produce the desired effect. The side effects increase, the risk of overdose may increase and procuring the drug may become increasingly expensive. So how can drug tolerance be avoided? The best way to prevent developing tolerance to a specific drug is to regulate the time span between doses. If the consumer waits for the majority of the drug to be eliminated from the body before taking an additional dose, it can prevent the liver and receptor sites from becoming desensitized to the chemical compound. Many drugs can take two or three days to be eliminated from the body. While this guideline is healthy to respect in regards to recreational drug use, it may be unrealistic for patients suffering from chronic, debilitating conditions. Pain management can be a difficult and complicated process, especially once tolerance has developed.

# Drug Consumer Safety Guidelines

## Chemical Components and Effects on the body

There are early warning signs that can indicate when a consumer is allergic or hypersensitive to a particular substance. If shaking or tremors occur in the arms and legs shortly after a drug has been consumed, the drug should immediately be discontinued and the person should be rushed to the emergency room. The same actions should be taken if a drug or medication causes any difficulty in breathing. -This type of reaction can severely impair the respiratory system and is life-threatening.



Other allergic reactions are not life-threatening, but can be unpleasant. If a rash or swelling occurs after taking a drug, discontinue use and consult a physician. In some of these cases antihistamines may be helpful in mitigating the allergic response. If severe stomach irritation or distress occurs when taking a drug it's a good idea to discuss the episode with a physician. They may be able to determine if the reaction was caused by an allergic response and can prescribe anti-nausea medications if necessary.

While the overall rate of allergic reactions is typically low, this statistic is only an average. Some drugs are more likely to produce an allergic response than other drugs. Many people may be allergic to narcotic painkillers or opiate-derived drugs, which include many analgesic painkillers, such as codeine, oxycodone and morphine. As a final caution, if a consumer is already allergic to any drug, food or beverage, they may have an increased risk of being allergic to other substances as well.

## Will the drug produce tolerance?

Drug tolerance refers to a condition that occurs when certain drugs are used frequently over a period of time. Additional doses are required to produce effects comparable to those it produced when it was first taken.

## Where is it working in the body?

Receptor or action sites are protein molecules imbedded in the cells of the body that drug molecules can attach to and subsequently produce a reaction in the consumer's body. When a drug arrives at a receptor site it can produce one of three effects: the desired main effect, an unintended secondary or side effect or a rarer and serious adverse reaction. Once the chemical composition is learned, action sites can be evaluated in order to gauge the benefits of using a drug against the risks that will automatically occur associated with the chemical itself.

Drugs work at more than one receptor site in the body producing multiple effects. Therefore, a thorough evaluation of a drug's benefits and risks must be made before a drug is consumed. At one receptor site a drug may produce the desired or beneficial main or primary effect; at the same time the drug can be attaching to other receptor sites throughout the body. At these receptor sites the drug can produce undesirable or unanticipated secondary effects. These are the commonly referred to side effects that pharmaceutical companies are required to post on their drug's advertisements. Side effects occur whenever a drug is taken and can range from extremely mild reactions that go unnoticed or are unpleasant; to more severe reactions requiring your doctor to intervene may require use of the drug to be discontinued.

Consumers sometimes assume that if a drug produces side effects then it must not be working correctly. This is not the case. In actuality, side effects indicate that a drug is effectively reaching its receptor sites though some of the resulting reactions may be unexpected or unwanted. Many drugs produce more than one side-effect. Some rare individuals may have stronger side effects than the general population. The intensity of the ensuing reactions can vary from person to person.

# Drug Consumer Safety Guidelines

## Applying these Guidelines

education that could reduce drug misuse and abuse. The majority of the public has little awareness or accurate information regarding the substances they use on a daily basis. Our society has promoted and developed the world's most advanced drug technologies, but we have not done enough to educate our citizens about how to make responsible drug use decisions or how to reduce the risks associated with any legal or illegal substance use.



MAMA has published these Drug Consumer Safety Guidelines based on training formerly offered by the University of Oregon's Drug Information Center to help reduce drug misuse and abuse. These guidelines can help

individuals make informed, responsible decisions and prevent some of the risks associated with drug use of any kind.



A note of caution: these guidelines cannot and will not ever make a drug safe. There is no such thing as a safe drug. All drugs

produce side effects and have the potential to cause serious adverse reactions. All drugs can potentially be overdosed and may interact in unanticipated ways with other drugs, foods, or beverages being consumed. These guidelines are offered as a way of reducing risk, not eliminating it.

natural for individuals to repeatedly engage in behavior that they find to be physically or psychologically pleasant. Unfortunately, some people are unable to recognize that a pleasurable behavior may be self-destructive. Psychological dependence can best be defined as an individual who regularly engages in a specific form of drug use they find pleasurable or rewarding even though the use of that drug is producing negative effects in many facets of their lives. Also, their loved ones can be negatively affected in profound ways.



The desire for immediate gratification can be intensely controlling whether the desire stems from physical or psychological sources. One thing is certain: it is much easier to prevent dependence from occurring in the first place than it is to break an addictive habit that has already been established.

The best way to prevent dependence is to recognize the addictive potential of any drug being consumed, especially for recreational use and to consume all addictive substances in extreme moderation, if at all. It is also important for drug consumers to recognize their own personal dependence potential as some individuals seem to be more genetically susceptible to addiction than others.

## Applying these Guidelines

The seven Drug Consumer Safety Guidelines encourage individuals to evaluate a drug or medication prior to use in order to make an informed, responsible decision whether or not the substance should be consumed. These guidelines also provide a framework for a consumer to use when asking questions of their physicians or pharmacists about specific drugs or medications.



# Drug Consumer Safety Guidelines

## Decision Making

### Will there be any drug interactions?

A drug interaction can occur when two drugs are taken at the same time or when the effects of one drug overlap the effects of another drug. Also interactions can occur with any drug. Care is needed when mixing a drug with foods, vitamins, prescription medications, over-the-counter drugs, alcohol, tobacco, and caffeine.

There are different types of drug interactions. In some circumstances, a drug may partially negate the effects of another drug. In other situations, taking two drugs at the same time could result in increased or stronger effects of one or both drugs. Many patients routinely consume at least one prescription drug, while also taking an over-the-counter medication. Because they may also be using caffeine and alcohol – the need to be careful about drug interactions is very, very real. In some instances, a drug interaction between as few as two substances could be severe enough to cause damage to the body. This risk increases exponentially with each new drug consumed over a set period of time.

A common and potentially lethal drug interaction can occur when two or more depressants are taken within a limited time frame. Depressant interactions can result in dramatic increases, known as 'synergism', in the intoxicating, sedating and respiratory effects of this class of drug. For example, if sufficient quantities of alcohol are consumed with other depressants, such as sleeping pills, analgesic pain relievers, tranquilizers, muscle relaxants or anti-depressants, a lethal depression of the respiratory system can occur.

When two or more stimulants are taken at the same time, an additive effect can occur causing an increase of the effects of both drugs. If a stimulant and a depressant are taken together an antagonistic reaction can occur. In an antagonistic reaction the effects of two drugs together

critical questions before deciding to use a medication or drug. Be skeptical of information given by friends or associates as these sources can be inaccurate or incomplete and always read the fine print in product advertisements. The best option is always to contact a licensed physician, pharmacist or drug information center.

### Making Drug Use Decisions



Medical professionals are required by law to be able to prove that the benefits of using a drug outweigh the risks associated with using it. While drug use is a personal decision that individuals must make for themselves, the standard doctors use is an excellent means of making drug use decisions.

An excellent question to ask when making drug use decisions is: Will the benefit of using this drug clearly outweigh the risk of the side effects or adverse reactions?

Some individuals and situations require greater care in deciding whether a drug is used. For example, pregnant women should carefully evaluate the potential for fetal damage or birth defects especially if they consume a drug within the first trimester of pregnancy. Nursing mothers should consult with their physician or pharmacist to determine if a drug could be transferred to the infant through breast milk. The elderly can be more susceptible to side effects and adverse reactions due to declining health. Street drugs may be improperly produced or contain unknown hazardous ingredients.

If the decision is made to use a substance, the following three guidelines are crucial for maintaining consumer safety and reducing risks. Determining drug dosage, drug interactions and the potential for allergic reactions is essential to reduce the inherent risks.

# Drug Consumer Safety Guidelines

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## Drug Terminology

**Stimulants:** Drugs that temporarily increase alertness or awareness by increasing activity in the central or sympathetic nervous systems. Caffeine and nicotine are common stimulants.

**Depressants:** Drugs that inhibit or lessen functions or activity in the central nervous system. Alcohol, sedatives, and tranquilizers are depressants.

**Analgesics:** Pain relievers, including NSAIDs and narcotic painkillers.

**NSAIDs:** Non-steroidal anti-inflammatory drugs, including aspirin, ibuprofen and naproxen.

**Narcotics:** Opiates (drugs that are derived from opium) and synthetic opiates. Heroin, morphine and codeine are narcotics. Cannabis is NOT a narcotic.