

A serene park scene with a pond, lush green trees, and a bench. The image is dominated by vibrant green foliage, including a large weeping willow tree on the left and a large, rounded tree on the right. A wooden bench is visible in the background, partially obscured by the trees. The pond in the foreground reflects the surrounding greenery. The overall atmosphere is peaceful and natural.

Sedative-Hypnotics (Barbiturates)

Dr Deny Susanti

A lush green park scene featuring a calm pond in the foreground. The water reflects the surrounding dense foliage and a large, dark tree on the right. In the middle ground, a wooden bench sits on a grassy area. The overall atmosphere is peaceful and natural.

What are sedative-hypnotics?



- Sedative and hypnotic drugs are central nervous system depressants. They depress behavior, moderate excitement, induce calmness, and may produce drowsiness or even loss of consciousness.
- The sedative-hypnotics are used clinically as antianxiety agents, muscle relaxants, antiepileptics, and as preanesthetic medications. Drugs in this category include barbiturates, benzodiazepines, and anesthetics.

A lush green park scene featuring a calm pond in the foreground. The water reflects the surrounding dense foliage and trees. In the middle ground, a wooden park bench sits on a grassy area, framed by a large, leafy tree arching over it. The background is filled with more green trees and a clear sky. The overall atmosphere is peaceful and natural.

What are barbiturates?



- Barbiturates are a group of drugs in the class of drugs known as sedative-hypnotics, which generally describes their sleep-inducing and anxiety-decreasing effects.



History of sedative-hypnotics

- In 1903, veronal, a derivative of barbituric acid, was introduced. Its sleep-inducing and anxiolytic effects made it very popular in clinical medicine.
- In 1912, phenobarbital was introduced. Phenobarbital, in addition to sedative-hypnotic properties, has anticonvulsant properties and has become one of the most important pharmacological treatments for epilepsy.



- In the late 1930's, relatively nonsedative anticonvulsants were developed (e.g., phenytoin and trimethadione). In 1957 the first benzodiazepine, chlordiazepoxide (Librium) was synthesized.
- Benzodiazepines have demonstrated the ability to relieve symptoms of anxiety with relatively little interference with cognitive function or wakefulness. Benzodiazepines have therefore replaced barbiturates for most uses, particularly for treatment of anxiety and sleep disturbances.



History use and abuse of barbiturate

- Barbiturates were first used in medicine in the early 1900s and became popular in the 1960s and 1970s as treatment for anxiety, insomnia, or seizure disorders.
- Barbiturates were abused to reduce anxiety
- Barbiturate use and abuse has declined dramatically since the 1970s, mainly because a safer group of sedative-hypnotics called benzodiazepines are being prescribed.





- Type of barbiturate

- The primary difference among them is how long their effects last. The effects of some of the long-acting drugs may last up to 2 days. Others are very short acting. Their effects last only a few minutes.
- Barbiturates can be injected into the veins or muscles, but they are usually taken in pill form. The street names of commonly abused barbiturates describe the desired effect of the drug or the color and markings on the actual pill.
- Barbiturates are classified as short, intermediate, and long-acting.

Duration of action of barbiturates

Category	Time needed to take effect (hours)	Duration of action (hours)	Examples
Short acting	0.25	Less than 3	Phentobarbital sodium, Secobarbital
Intermediate acting	0.5	3-6	Amobarbital, Butobarbital, Talbutal
Long-acting	0.5-1.0	More than 6	Mephobarbital, Phenobarbital



- Barbiturates name

Generic name	Street name
Amobarbital	Downers, blue heavens, blue velvet, blue devils
Pentobarbital	Nembies, yellow jackets, abbots, Mexican yellows
Phenobarbital	Purple hearts, goof balls
Secobarbital	Reds, red birds, red devils, lilly, F-40s, pinks, pink ladies, seggy
Tuinal	Rainbows, reds and blues, tooies, double trouble, gorilla pills, F-66s



Dosage

- Low doses (50 mg or so) are similar to alcohol. Effects involve a mild impairment of thought and coordination and the same release of inhibition that enables drinkers to sing or flirt
- Moderate doses (100-200 mg) produce effects that are more pronounced, with sleep a more-or-less predictable outcome. Doses at this level can also cause a mild intoxication, complete with slurred speech, clouded judgment, and a greater release of inhibition.



- High doses (more than 200 mg, in a non-addicted person), result in an even more intense, and more unpredictable, level of intoxication. Coordination can be reduced to the point that ordinary activities, walking down stairs or driving a car, become serious, life-on-the-line emergencies. Normal judgment is markedly reduced at best, nearly nonexistent at worst.



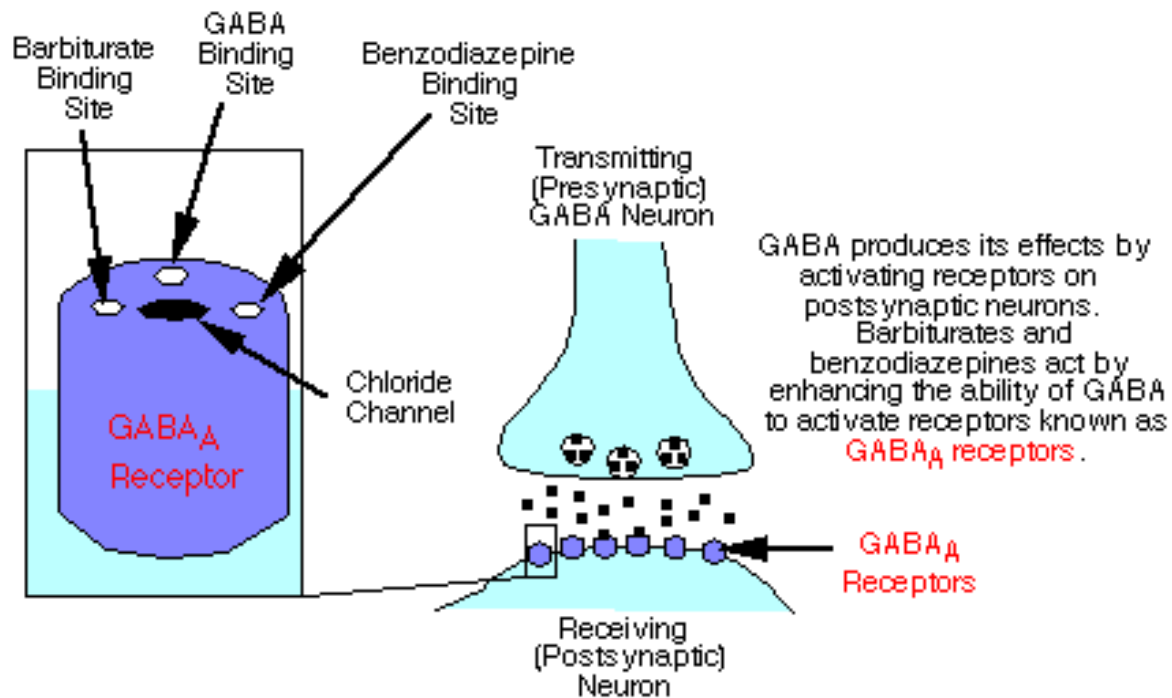
Uses

- Barbiturates are usually taken orally, but people who are used to using a needle to take heroin or other drugs, may inject them. Mixing alcohol and barbs (or other depressants) not only produces a deeper level of intoxication; it also produces a much greater depressant action on the heart and lungs.



Effects on the brain

- Barbiturates and benzodiazepines act similarly to produce depression of central nervous system function and behavior. Both classes of drugs enhance the ability of the inhibitory neurotransmitter, gamma aminobutyric acid (GABA), to activate a type of receptors known as GABA-A receptors.
- These drugs increase the effectiveness of GABA by altering the receptor so that GABA can bind more easily, an effect known as allosteric regulation. Activation of the GABA-A receptor opens an ion channel, allowing negatively charged chloride ions to enter the cell, producing an inhibition of neuronal activity.



<http://pharmacologycorner.com/animation-benzodiazepines-diazepam-lorazepam-alprazolam/>



- Barbiturates enhance, or increase, the braking effects neurotransmitter, causing sedation. The area in the brain called the reticular activating system is responsible for keeping people awake.
- The effects of barbiturates range from mild sedation (decreased responsiveness), to hypnosis (sleep), to anesthesia (loss of sensation).



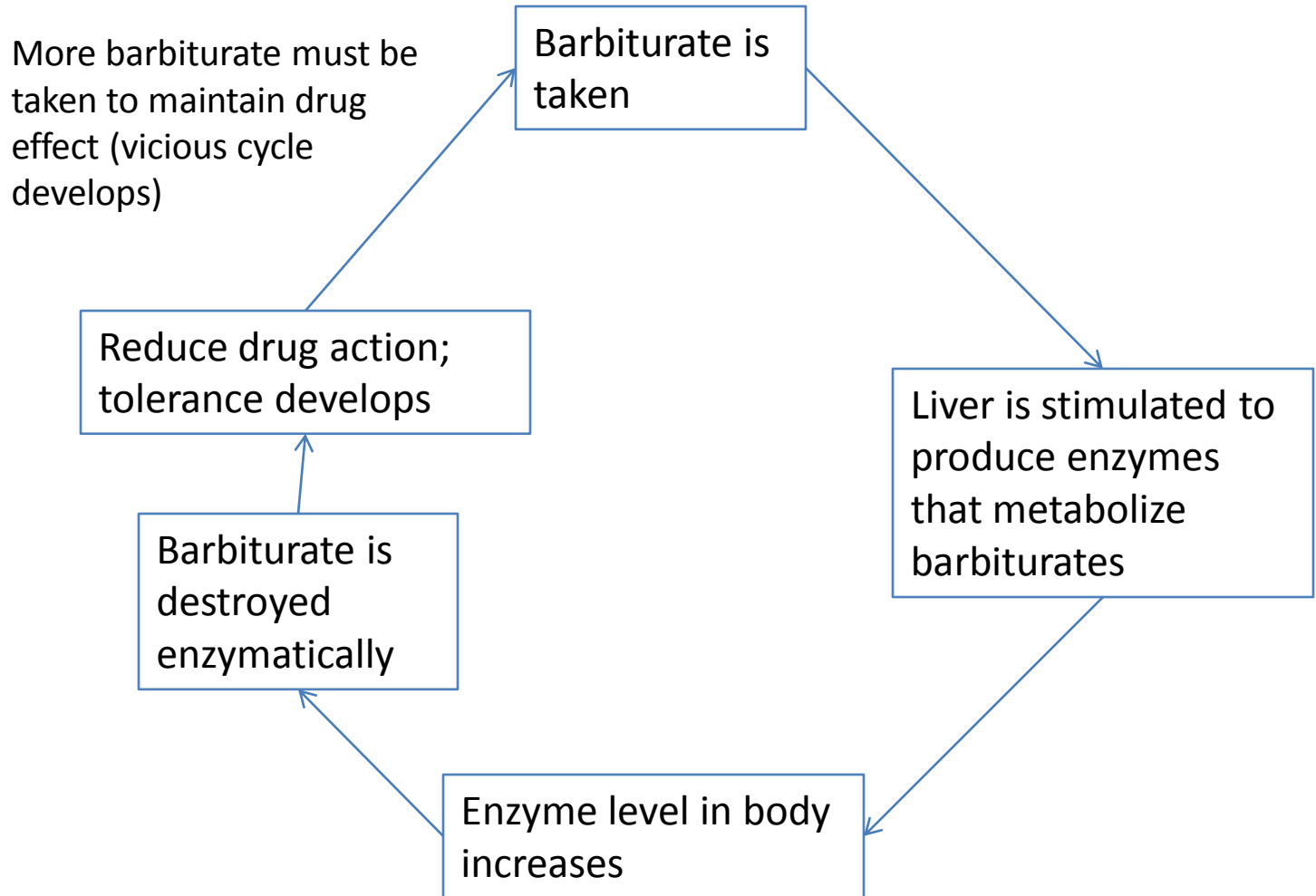
- Barbiturates reduce the amount of time spent in rapid eye movement or REM sleep
- Prolonged use of barbiturates causes restlessness during the late stages of sleep.



Tolerance and dependence

- A person who takes barbiturates repeatedly develops tolerance to the drug's effects.
- If tolerance develops and the amount of drug taken continues to increase, then physical dependence can develop. If the drug is suddenly stopped, withdrawal signs appear.
- Signs of drug dependence include relying on a drug regularly for a desired effect.

The development of tolerance to barbiturates by induction of liver enzyme





- In the case of barbiturates, mild signs of withdrawal include:
 - fear
 - insomnia
 - excitability
 - mild tremors (shaking)
 - loss of appetite
- If the dose was very high, more severe signs of withdrawal can occur, including:
 - weakness
 - vomiting
 - decrease in blood pressure regulatory mechanisms (so that a person might pass out when rising from a lying position)
 - increased pulse and respiratory rates
 - epileptic seizures or convulsions
 - delirium with fever, disorientation, and hallucinations



- Symptoms of an overdose typically include
 - severe weakness
 - confusion
 - shortness of breath
 - extreme drowsiness
 - an unusually slow heartbeat
 - darting eye movements
- The amount of a fatal dosage of barbiturate varies from one individual to another. However, the lethal dose is usually 10 to 15 times as large as a usual dose. An overdose affects the heart and the respiratory system. The user then falls into a coma and dies.



- When a person ages, the body becomes less able to rid itself of barbiturates. As a result, people over the age of sixty-five are at higher risk of experiencing the harmful effects of barbiturates, including drug dependence and accidental overdose.
- When barbiturates are taken during pregnancy, the drug passes through the mother's bloodstream to her fetus. After the baby is born, it may experience withdrawal symptoms and have trouble breathing. In addition, nursing mothers who take barbiturates may transmit the drug to their babies through breast milk



Abuse of barbiturates

- This pattern of using barbiturates for the euphoric effect is more common among people who begin by buying barbiturates from illicit sources than among those who begin by seeking help for insomnia.
- People who are dependent on a particular drug often take barbiturates to boost the first drug's effects.



- Since barbiturates are "downers," people also take them to counteract the unwanted overstimulation that stimulant drugs produce. Abusers of stimulants such as cocaine or amphetamines ("uppers") use barbiturates to come down from the continued high. Also, barbiturates are used to ward off the early signs of withdrawal from alcohol.
- Most people using barbiturates report that a barbiturate 'high' gives them a feeling of ecstasy or relaxed contentment or euphoria. Drug addicts tend to prefer short-acting and intermediate-acting barbiturates. Amobarbital (Amytal), pentobarbital (Nembutal) and secobarbital (Seconal) are the commonly abused barbiturates.



Treating Barbiturate Dependence

- The proper treatment of a barbiturate-dependent individual always includes a slow reduction in the dose to avoid the dangers of rapid **detoxification**.
- The treatment of barbiturate abuse or overdose is generally supportive. The amount of support required depends on the person's symptoms.
- If the person is drowsy but awake and can swallow and breathe without difficulty, the treatment may consist of just watching the person closely.



- If the person is not breathing, a breathing machine is used to ensure the person can breathe well until the drugs have worn off
- Most people receive a liquid form of activated charcoal to bind to any drugs in their stomach. This may be done by placing a tube into the stomach (through the nose or mouth) or by having the person drink it.



- Although rare, anyone who is addicted to barbiturates requires prolonged therapy to avoid the dangerous symptoms of withdrawal.
- Addicted individuals are treated with decreasing doses of barbiturates (called detoxification) until they are drug free.



- Doctors must carefully control treatment for barbiturate dependence because of the potential dangers, such as seizures. Withdrawal must be closely supervised. Doctors give the patient phenobarbital or the benzodiazepines—chlordiazepoxide and diazepam—in gradually decreasing doses to reduce the severity of withdrawal symptoms.

Flunitrazepam / Rohypnol



- Is not manufactured or legally marketed.
- Known as "rophies," "roofies," and "roach," = a "party" drug.
- a "date rape" drug. Placed in the alcoholic drink of victim to incapacitate them. The victim is frequently unaware of what has happened to them and often does not report the incident to authorities.



Gamma Hydroxybutyric Acid (GHB)

- users take GHB for its intoxicant or euphoriant effects = ‘party drug’
- bodybuilders who abuse GHB for its alleged utility as an anabolic agent or as a sleep aid
- individuals who use GHB as a weapon for sexual assault = ‘date rape’ drug
- The use of alcohol in combination with GHB greatly enhances its depressant effects



Drug schedule

SCHEDULE 1

- *has high potential for abuse.*
- *has no currently accepted medical use*
- *lack of accepted safety for use of the drug*
- e.g. MDMA, Peyote, Psylocybin, Heroin, GHB, Cannabis



SCHEDULE II:

- *has a high potential for abuse.*
- *has a currently accepted medical use in treatment OR with severe restrictions.*
- *abuse of may lead to severe psychological or physical dependence.*
- e.g. morphine, methadone, cocaine, amphetamine



SCHEDULE III:

- *has a potential for abuse less than the drugs in schedules I and II.*
- *has a currently accepted medical use in treatment*
- *abuse may lead to moderate or low physical dependence or high psychological dependence.*
- e.g. anabolic steroids, medium acting barbiturates, buprenorphine, ketamine



SCHEDULE IV

- has a low potential for abuse relative to the drugs in schedule III.
- has a currently accepted medical use in treatment
- abuse of the drug may lead to limited physical dependence or psychological dependence relative to the drugs in schedule III.

e.g. Benzodiazepines, long-acting barbiturates



SCHEDULE V:

has a low potential for abuse relative to the drugs in schedule IV.

*has a currently accepted medical use in treatment
abuse of the drug may lead to limited physical
dependence or psychological dependence relative
to the drugs in schedule IV.*

*e.g. cough suppressants with small amounts of
Codeine, Opium*



SCHEDULE VI (in some states of the USA)

- to cover certain substances which are not "drugs" in the conventional sense, but are nonetheless used, or abused, recreationally; these include toluene (found in many types of paint, especially spray paint) and similar inhalants such as amyl nitrite (or "poppers")