

✚ **Drug abuse:** The use of any drug in a manner that deviates from the approved medical or social patterns within a culture.

- 1- Nonmedical drug use (experimental / trying a drug of curiosity)
- 2- Recreational drug use (when moderate amounts are used to get “high”)
- 3- Situational drug use (when drugs are used in specific circumstances, for example, amphetamines to stay alert)

these patterns can lead to more frequent use and dependence.

✚ **Compulsive drug use or abuse:** Continued self administration of a drug despite the fact that the user may be suffering adverse social or medical consequences. the user feels the drug is needed for his or her well-being. There is a continuum of compulsive drug use, from *a simple desire to have more drug* to *a craving and preoccupation with procurement of the drug.*

✚ **Drug addiction:** is a behavioral pattern of drug use that is characterized by overwhelming involvement with the use of a drug and overwhelming involvement with securing a supply. Along with this, there is a high tendency to relapse after withdrawal.

There is some overlap in the definitions of compulsive use and addiction, and it is not always clear when compulsive use becomes addiction.

✚ **Drug misuse:** Inappropriate use of a drug. **taking the drug at the wrong time. forgetting to take a dose. stopping the use of a drug too soon. taking a drug for reasons other than why they were prescribed.**

- **Tolerance:** Decreased responsiveness to a drug with repeated or continued dosing. Cross-tolerance may occur between drugs or between drug classes.
- **Withdrawal:** physical and/or psychological signs and symptoms that occur upon abstinence from a drug.
- **Dependence:** Continued use of that drug is required to prevent withdrawal.

There is a difference between addiction and dependence. It is possible for a person to exhibit signs of dependence following withdrawal of a drug, yet not crave the drug.

- **Detoxification** is the same for all drugs that produce physical dependence. It involves substituting a **longer-acting, orally effective, pharmacologically equivalent drug** for the abused drug. The patient is stabilized on the substitute, and then it is gradually withdrawn. There is a high recidivism **انتكاس** rate among drug abusers. Currently, psychotherapeutic programs after detoxification have success rate of 10 -50%.

Effects of abuse/intoxication	Tolerance, dependence, and withdrawal	Drugs to manage abuse/intoxication						
<b>Opioids: Morphine, Diamorphine (Heroin), Codeine, Meperidine, and Methadone.</b>								
<p>** The effects of opioids on performance include mental clouding, faulty judgment, and a reduced ability to concentrate.</p> <p>** Physical signs of abuse include <b>miosis</b> (pupillary constriction), <b>depression</b>, and <b>apathy</b>.</p>	<p>→ are characteristic of opioid use. Pain relief may be less effective as</p> <table border="1" data-bbox="354 254 1166 499"> <tr> <td data-bbox="354 254 597 331">Early symptoms (10–12 h after withdrawal)</td> <td data-bbox="597 254 1166 331">Rhinorrhea (runny nose), perspiration, lacrimation (secretion of tears), and yawning</td> </tr> <tr> <td data-bbox="354 331 597 409">Intermediate symptoms (18–24 h after withdrawal)</td> <td data-bbox="597 331 1166 409">Mydriasis, piloerection, anorexia, and muscular tremors</td> </tr> <tr> <td data-bbox="354 409 597 499">Peak symptoms (36–72 h after withdrawal)</td> <td data-bbox="597 409 1166 499">Restlessness, hot flashes alternating with chills, an increase in both blood pressure and heart rate, an increase in the rate and depth of respiration, fever of 1°C or more, nausea, retching, vomiting, and diarrhea</td> </tr> </table> <p>tolerance develops, even after a single dose. Tolerance develops more slowly to meperidine than morphine.</p> <p>→ Withdrawal from an opioid is generally not life-threatening, although it is almost unbearable. The intensity of the withdrawal symptoms will be <b>in proportion to the amount of drug being used and the duration of the abuse</b>. Withdrawal will be <b>more intense and of a shorter duration</b> after use or abuse of <b>more potent, shorter-acting agents</b>. Likewise, it will be <b>less intense but more prolonged</b> with <b>less potent, longer-acting agents</b>.</p> <p>→ Opioid withdrawal symptoms:</p> <p><b>Heroin (diacetylmorphine):</b> highly addictive analgesic and hypnotic euphorogenic semi-synthetic derivative. It's obtained from morphine. =&gt; Morphine is addicting from the first dose. <b>Heroin is more addictive and each time the body need a higher dose than the previous one</b> (has tolerance).</p>	Early symptoms (10–12 h after withdrawal)	Rhinorrhea (runny nose), perspiration, lacrimation (secretion of tears), and yawning	Intermediate symptoms (18–24 h after withdrawal)	Mydriasis, piloerection, anorexia, and muscular tremors	Peak symptoms (36–72 h after withdrawal)	Restlessness, hot flashes alternating with chills, an increase in both blood pressure and heart rate, an increase in the rate and depth of respiration, fever of 1°C or more, nausea, retching, vomiting, and diarrhea	<p><b>Methadone:</b> is orally active, has similar activity to morphine, but is less euphorogenic and has a longer duration of action. Although it is as potentially addictive as morphine, the withdrawal symptoms are different and much less severe than with other drugs such as heroin, so that methadone and <b>Buprenorphine</b> (a semi-synthetic derivative of thebaine) are widely used for the <b>treatment and rehabilitation of heroin addicts</b>. // withdrawal symptoms with methadone don't appear before 48 hours but in morphine or heroine a second urgent dose needed within the next 24 hours.</p> <p><b>Naloxone (Narcan):</b> pure opioid antagonist, especially in overdose. It works by <b>reversing the depression of the central nervous system and respiratory system caused by opioids</b>. Administration to opioid-dependent individuals may cause symptoms of opioid withdrawal, including restlessness, agitation, nausea, vomiting, a fast heart rate and sweating. To prevent this, small doses every few minutes can be given until the desired effect is reached.</p>
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<b>Alcohol/ Ethanol</b>		
<p>Alcohol is rapidly absorbed from the (GI) tract after oral administration. Its acute effects appear within minutes of ingestion.</p> <p><b>Ethanol</b> is metabolized in the liver, by alcohol dehydrogenase to acetaldehyde, then by acetaldehyde dehydrogenase to acetate. This metabolism follows <b>zero-order kinetics</b>, which means that a <b>constant amount of ethanol is metabolized per unit of time</b>. The implication of this is that as <u>more ethanol is ingested, the degree of intoxication increases rapidly, and the time for the blood level to drop to a nonintoxicating level increases.</u></p>	<p>Withdrawal symptoms in chronic users of alcohol include tremor, sweating, anxiety, irritability, nausea, vomiting, and insomnia. These symptoms mild to moderate in 80 to 85% of patients and more severe in 15 to 20%. Severe withdrawal, known as <b>delirium tremens</b>, is seen in ~1%.</p> <p><b>Delirium tremens:</b> (onset ~72 h after the last drink). Signs include increased pulse, reduced blood pressure, tremors, fits and visual or tactile hallucinations.</p> <p><b>Benzodiazepines</b> are cross tolerant with alcohol and will alleviate withdrawal symptoms, but they do not have the same stimulating effects on (CNS) as alcohol.</p> <p>For serious complications or delirium tremens, <b>replace fluids and electrolytes and treat symptoms</b>. Treatment is with diazepam.</p> <p>Treat arrhythmias with <b>lidocaine</b> or <b>procainamide</b>, severe tremor with <b>propranolol</b>, and hallucinations and paranoia with a <b>phenothiazine</b> or <b>haloperidol</b>.</p> <p><b>Methanol:</b> is metabolized to formaldehyde by alcohol dehydrogenase. This occurs at about one fifth of the rate of ethanol. It is then further metabolized to formic acid. Methanol can cause metabolic acidosis, organ damage and blindness by damaging the optic nerve.  <b>Note:</b> Patients must be informed to avoid alcohol, or their life may be in danger. This includes avoiding sauces, cough syrups, and liquid cold medicines that contain alcohol.</p>	<p><u>Acute intoxication rarely requires treatment.</u> Management includes supporting ventilation, maintaining temperature, and correcting dehydration, acidosis, or electrolyte imbalance. Gastric lavage (stomach pumping) is rarely necessary.</p> <p><u>Chronic intoxication may be treated with the agents listed below:</u></p> <p><b>Naltrexone:</b> is an opioid antagonist similar to naloxone but with greater bioavailability and longer duration of action. It apparently blocks the ability of alcohol to activate dopaminergic reward pathways. Orally active, but also available in once-monthly injectable, extended-release form. Side effects: Nausea and liver damage (in high dosages) → Contraindications: Liver failure or acute hepatitis.</p> <p><b>Disulfiram (Antabuse):</b> is an inhibitor of aldehyde dehydrogenase. If alcohol is taken in the presence of disulfiram, blood acetaldehyde levels increase, producing flushing, dyspnea (shortness of breath), nausea, thirst, chest pain, and palpitations. The effects are intended to be unpleasant so as to discourage alcohol ingestion; however, they can be serious and even life-threatening.</p>

System/Tissue	Effects
<b>Acute Intoxication</b>	
CNS	Progressive CNS depression is correlated in time with blood concentrations of ethanol and may include vision and judgment impairments, decreased inhibitions, and muscular incoordination, progressing to staggering gait, slurred speech, and possible coma and death at higher doses.
GI system	Increased salivary and gastric secretions, direct irritation to gastric and buccal mucosa, emesis due to a central effect on the chemoreceptor trigger zone, and irritation of the gastric mucosa. Prolonged use also leads to decreased absorption of folates.
Other	Suppression of antidiuretic hormone (ADH, vasopressin) secretion Increased adrenocorticotropic hormone (ACTH), cortisol, and catecholamine secretion Diuresis due to decreased antidiuretic hormone release Increased consumption of fluids Hypothermia

<b>Chronic Intoxication</b>	
CNS	Wernicke syndrome, Korsakoff psychosis, cerebral atrophy, cerebellar atrophy, and alcoholic polyneuropathy
GI system	Peptic ulcers, esophagitis, gastritis, pancreatitis, and malnutrition
Liver	Steatosis, hepatitis, and cirrhosis (Figs. 15.1 and 15.2)
Muscle	Cardiomyopathy and skeletal muscle myopathy
Fetus	Fetal alcohol syndrome
Other	Face puffy, cheeks and nose flushed, eyes bloodshot, palmar erythema, rhinophyma, acne rosacea, and spider nevi

**Liver cirrhosis:** occurs when hepatocytes die and are replaced by connective tissue. Hepatic blood flow is impaired, causing portal hypertension, which in turn causes ascites and the formation of varices. The normal functioning of the liver is reduced, toxins build up and affect the functioning of the brain.

**Fetal alcohol syndrome:** a spectrum of disorders that can occur in a fetus if a woman drinks alcohol when pregnant. It includes abnormal facial features, growth deficiencies, vision or hearing deficits, and mental disabilities, such as difficulty in learning, memory problems, poor attention span, and poor communication skills.

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<b>Benzodiazepines:</b> Diazepam, Midazolam, Temazepam, Triazolam, Flurazepam, Clonazepam, Oxazepam, Lorazepam, and Alprazolam		
produces progressive CNS depression with increasing dose. They may be fatal at high doses due to respiratory depression and cerebral hypoxia.	Tolerance develops to the effects of benzodiazepines. Physical dependence can occur. Withdrawal symptoms are generally opposite the effects of the drugs: anxiety, insomnia, and convulsions (in severe withdrawal). They can be minimized by slowly decreasing the dose to wean the patient from the drug.	
<b>Barbiturates:</b> Thiopental, Phenobarbital, Thiamylal, Methohexital, Amobarbital, Pentobarbital, and Secobarbital		
Same as for benzodiazepines.	Tolerance develops to their sedative and hypnotic effects. <b>No tolerance develops to the anticonvulsant actions of barbiturates.</b> True physical dependence occurs. Moderate withdrawal consists of rebound increases in rapid eye movement (REM) sleep, insomnia, and anxiety. Seizures and delirium can occur in patients taking high doses for long periods. These patients should be withdrawn slowly to avoid these serious complications.	
<p align="center"><b>Stimulants (Amphetamines and Cocaine)</b>  Cocaine is sometimes used as a local anesthetic agent.  Amphetamines are used for attention deficit/hyperactivity disorder (ADHD) and narcolepsy.</p>		
<p>→ <b>CNS actions</b> include euphoria, decreased fatigue, alleviation of sleepiness, and decreased appetite. Increase libido and talkativeness. Restlessness may occur, and the heart rate may increase.</p> <p>→ <b>After prolonged self-administration</b> with amphetamines, prolonged sleep, apathy, and depression are common. Sympathetic effects may be absent in chronic users. <b>Chronic toxicity</b> produces anxiety and confusion, leading to paranoia and psychosis, which is indistinguishable from schizophrenia.</p>	<p>Marked tolerance develops to amphetamines but not to cocaine. Dependence is common and produces an extremely intense drug craving. Physical dependence is minor. Withdrawal may include prolonged sleep, laziness, fatigue, overeating, and, occasionally, depression. Craving may persist for years.</p>	<p><b>Acute intoxication</b> causes hyperpyrexia, convulsions, and shock. It may result in death by convulsions or cardiac arrhythmias. → Treatment involves <b>chlorpromazine</b> which will block many of the acute effects of amphetamines, and <b>diazepam</b> to control convulsions.</p> <p><b>Chronic intoxication</b> may cause toxic syndrome. Signs and symptoms of toxic syndrome include visual, auditory, and tactile hallucinations, paranoia, and changes in affect. → Treatment for paranoid delusions involves <b>dopamine antagonists (haloperidol)</b>. <b>Acidification of the urine</b> will facilitate excretion in acute and chronic intoxication.</p>

Effects of abuse/ intoxication	Tolerance, dependence, and withdrawal	Drugs to manage abuse/intoxication
<b>Hallucinogens: Psychedelic Hallucinogens:</b> d-Lysergic Acid Diethylamide (LSD), Psilocybin, and Mescaline. These agents differ primarily in potency. LSD is extremely potent.		
<p>Their mechanism is unclear, but they are <b>serotonin agonists</b>.</p> <p>→ Psychedelic hallucinogens may produce vivid visual hallucinations and profound changes in thought processes, with confusion alternating with seemingly vivid perceptions and foresight, but these depend greatly on the situation and the individual.</p> <p>→ Paranoia, panic reaction, and overt psychosis. Synesthesias and “flashbacks” are unique features (seen in up to 15% of users).</p> <p>Note: No deaths due to direct drug effects have been reported.</p>	<p>Tolerance and cross-tolerance will occur. No dependence or withdrawal.</p>	<p>Involves emotional support and antianxiety agents, phenothiazines, or barbiturates in doses to produce sleep.</p>
<b>Cannabis</b> <b>Marijuana and Hashish</b> Antiemetic in cancer chemotherapy patients		
<p>The main psychoactive ingredient is <b>tetrahydrocannabinol (THC)</b>. Endogenous cannabinoid receptors have been discovered along with an endogenous ligand, anandamide.</p> <p>CNS effects: relaxation, sense of well-being, euphoria, and spontaneous laughter. Short-term memory and capacity to carry out goal-directed behavior are impaired, and there is also motor impairment. THC has variable effects on mood, emotion, and social feelings. Heart: tachycardia (paroxysmal atrial tachycardia) may occur. Respiratory system: the lungs are adversely affected by smoke. Reproductive system: changes in the menstrual cycle, decreased sperm count and motility, and increased number of abnormal sperm.</p>	<p>Tolerance develops to the effects of THC. Physical dependence does not occur. A withdrawal syndrome has not been defined that’s many individuals stop using marijuana with no craving.</p> <p>Withdrawal Symptoms: Marijuana addiction is also linked to a withdrawal syndrome that can make it hard to quit. Symptoms include irritability, sleeping difficulties, craving, anxiety, and increased aggression</p>	

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