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● Opioid Use Disorder Deep Dive

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What Is Opioid Use Disorder



Definition

Opioid Use Disorder (OUD) is a chronic, relapsing condition characterized by compulsive opioid use despite significant harm. It affects over 16 million people globally, causing severe impairments in daily functioning.

DSM-5 Criteria

Diagnosis requires meeting at least two of 11 criteria within a 12-month period, including tolerance, withdrawal, unsuccessful quit attempts, and continued use despite problems.

Severity Levels

Severity is categorized as mild (2–3 criteria), moderate (4–5 criteria), and severe (≥ 6 criteria). This stratification guides treatment intensity and predicts withdrawal risk and medical complications.



Global Burden Snapshot

○ Prevalence

OUD affects over 16 million people worldwide and 2.1 million in the United States. It is a leading cause of preventable death, with over 120,000 fatalities annually.

○ Impact

The disorder has significant socio-economic costs, contributing to the ongoing opioid epidemic and necessitating urgent public health interventions.





DSM-5-TR Criteria List

Tolerance

Increased tolerance to opioids, requiring higher doses to achieve the same effect.

Failed Quit Attempts

Repeated unsuccessful efforts to cut down or control opioid use.

Withdrawal

Experiencing withdrawal symptoms when reducing or stopping opioid use.

Social Impairment

Failure to fulfill major role obligations at work, school, or home due to opioid use.





Symptom Spectrum

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Physical Warning Signs

Physical Appearance

Signs include constricted pupils, drowsiness, shallow breathing, and weight loss. These symptoms indicate active opioid use and potential overdose risk.



Withdrawal Symptoms

Withdrawal can cause anxiety, muscle aches, insomnia, yawning, and sweating. These symptoms drive continued use to avoid discomfort.



Behavioral Changes

Behavioral signs include isolation, secretive behavior, and changes in social circles. These changes often accompany escalating opioid use.



Withdrawal Manifestations



Symptoms

Symptoms include dysphoria, lacrimation, rhinorrhea, muscle aches, insomnia, yawning, piloerection, diarrhea, and autonomic hyperactivity.



Onset and Duration

Withdrawal symptoms typically begin within 6–12 hours of the last dose, peak at 36–72 hours, and resolve within 5–14 days, depending on the opioid used.





Behavioral Red Flags



Isolation

Individuals may withdraw from family and friends, showing increased isolation and secretive behavior.

Mood Swings

Mood changes, irritability, and nervousness are common, often leading to conflicts in relationships.

Stealing

The need for opioids can drive individuals to steal money or medications to support their habit.

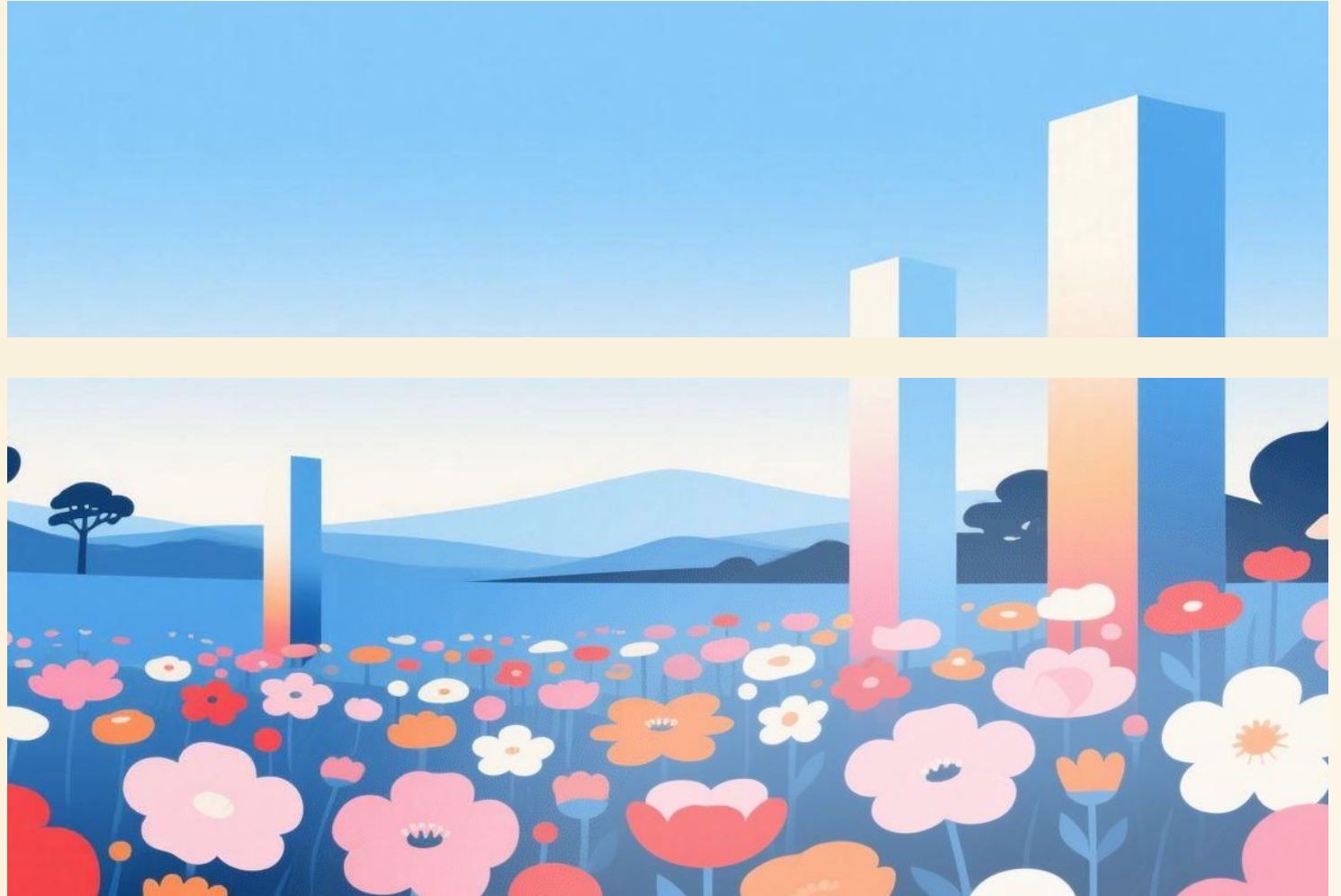
Paraphernalia

Presence of syringes, burnt spoons, and small bags with residue indicates potential opioid use.

Severity Stratification

Severity Levels

Severity levels guide treatment planning. Mild OUD involves 2–3 criteria, moderate 4–5, and severe ≥ 6 criteria. Higher severity predicts more intense withdrawal and greater risk of complications.





Root Causes



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Genetic Vulnerability



Heritability

Twin studies show that OUD has a heritability of 40–60%, indicating a significant genetic component. Genetic polymorphisms in opioid receptors and metabolic enzymes influence susceptibility.



Gene Variants

Variations in genes such as OPRM1 and COMT affect opioid sensitivity and metabolism, contributing to individual differences in risk.



Neurobiological Pathways



Brain Changes

Chronic opioid use alters brain circuits, down-regulating endogenous endorphins and up-regulating cyclic AMP, leading to tolerance and dependence.

Reward System

Opioids hyperactivate the mesolimbic dopamine system, reinforcing drug-seeking behavior and making abstinence challenging.

Inhibitory Control

Weakened prefrontal inhibitory control impairs decision-making, increasing the likelihood of relapse and compulsive use.

Psychosocial Triggers

Trauma

Childhood trauma and adverse experiences increase the risk of developing OUD by affecting coping mechanisms and mental health.



Mental Health Disorders

Comorbid conditions like depression, anxiety, and PTSD often co-occur with OUD, exacerbating symptoms and complicating treatment.



Peer Pressure

Social networks and peer influence play a significant role in initiating and perpetuating opioid use, especially among adolescents.



Economic Hardship

Socioeconomic factors such as poverty and unemployment contribute to the risk of OUD by increasing stress and limiting access to resources.



Epigenetic Mechanisms

○ Epigenetic Changes

Stress and drug exposure induce DNA methylation and histone modifications, altering gene expression in reward and stress pathways. These changes can persist and influence relapse risk.



Health Consequences

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Overdose Symptoms

Opioid overdose causes respiratory depression, pinpoint pupils, cyanosis, and unconsciousness. Immediate administration of naloxone can reverse these effects and save lives.



Overdose & Respiratory Arrest

Risk Factors

Risk factors for overdose include high tolerance, mixing opioids with other depressants, and a history of previous overdose. Access to naloxone is crucial for harm reduction.

Prevention

Education on overdose prevention, naloxone distribution, and safe use practices are essential public health strategies to reduce mortality.

Infectious Complications

Infections

Injection drug use spreads HIV, hepatitis C, and endocarditis. Sharing needles and unsafe practices increase the risk of infectious complications.

Public Health Impact

Harm reduction strategies like syringe exchange programs and safe injection sites help reduce the spread of infections and improve public health outcomes.





Endocrine & GI Effects

○ Endocrine Disruption

Chronic opioid use suppresses gonadal hormones, leading to amenorrhea, infertility, and osteoporosis in both men and women.

○ Gastrointestinal Issues


Opioids cause severe constipation and opioid-induced bowel dysfunction, affecting quality of life and necessitating medical intervention.

○ Weight Changes

Weight loss or gain is common due to changes in appetite and metabolism. Monitoring and managing these changes is important for overall health.

○ Management

Addressing endocrine and gastrointestinal effects requires a multidisciplinary approach, including medication adjustments and lifestyle modifications.





Psychiatric Comorbidity

Comorbid Conditions



Over 50% of individuals with OUD have comorbid mental health disorders such as depression, PTSD, and anxiety. These conditions exacerbate substance use and complicate treatment, requiring integrated care.



Screening Tools

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Clinical Interview Focus



Structured Interviews

Structured tools like SCID-5 and ASI assess opioid use patterns, dependence severity, withdrawal intensity, and psychosocial impairment, guiding personalized treatment plans.

Comprehensive Assessment

A thorough clinical interview helps identify underlying causes, comorbid conditions, and social determinants of health, ensuring comprehensive care.



Urine Drug Testing

Testing Methods

Point-of-care immunoassay and confirmatory GC-MS detect opioids, metabolites, and adulterants. Routine testing monitors adherence and detects relapse.

Importance

Urine drug testing is a crucial tool in managing OUD, ensuring safety in medication-assisted treatment and informing clinical decisions.

Ethical Considerations

Testing should be conducted with patient consent and in a supportive manner, avoiding punitive actions and promoting trust in the therapeutic relationship.

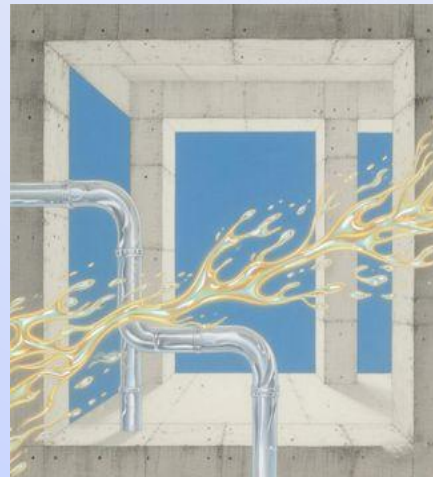
Laboratory Workup

Baseline Health

Initial lab tests include CBC, LFTs, renal panel, hepatitis and HIV serology, and pregnancy test to establish baseline health and detect comorbidities.

Infectious Diseases

Testing for infectious diseases like HIV and hepatitis C is essential, especially in individuals with a history of injection drug use.



Medication Safety

Lab results inform medication choice and dosing, ensuring safety in medication-assisted treatment and minimizing adverse effects.

Ongoing Monitoring

Regular follow-up labs monitor treatment response, detect complications early, and adjust care plans as needed.



Evidence-Based Treatment



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Medication-Assisted Treatment

Overview

MAT combines FDA-approved medications with counseling, reducing mortality by 50% and improving retention in treatment. It addresses both acute withdrawal and long-term management.

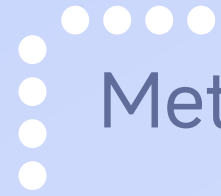
Benefits

MAT stabilizes opioid receptors, reduces cravings, and blocks euphoria from illicit opioids, enabling functional recovery and social reintegration.

Options

Common medications include methadone, buprenorphine, and naltrexone, each with unique mechanisms and suitability for different patient profiles.





Methadone Mechanism

○ Full Agonist

Methadone is a long-acting full μ -opioid agonist, stabilizing receptors and preventing withdrawal symptoms while reducing cravings.

○ Administration

It is typically administered daily at OTPs, with careful dose titration to achieve stabilization and minimize side effects.



Buprenorphine Advantages

Partial Agonist

Buprenorphine is a partial μ -opioid agonist with a ceiling effect, reducing overdose risk and providing effective symptom control.

Formulations

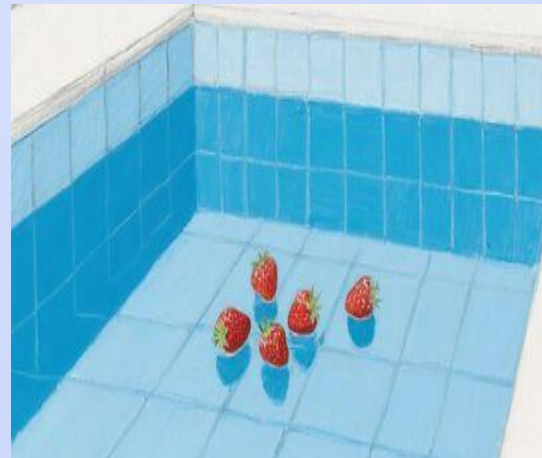
Available as sublingual tablets, films, and implants, often combined with naloxone to deter misuse.

Flexibility

It can be prescribed in office-based settings, offering more flexibility and accessibility compared to methadone.

Induction

Initiation requires careful timing to avoid precipitated withdrawal, ensuring patients are in mild withdrawal before starting.





Naltrexone Strategy

○ Antagonist

Naltrexone is an opioid antagonist that blocks euphoric effects, helping maintain abstinence. It requires 7–10 days of opioid-free status before initiation to avoid precipitated withdrawal.





Behavioral Therapies

○ Cognitive Behavioral Therapy

CBT identifies and challenges maladaptive thoughts and behaviors, building coping skills to prevent relapse and improve functioning.



○ Motivational Interviewing

MI enhances intrinsic motivation to change, addressing ambivalence and fostering engagement in treatment.

○ Group Therapy

Group therapy provides peer support, accountability, and cost-effective care, helping patients maintain self-control and restraint.

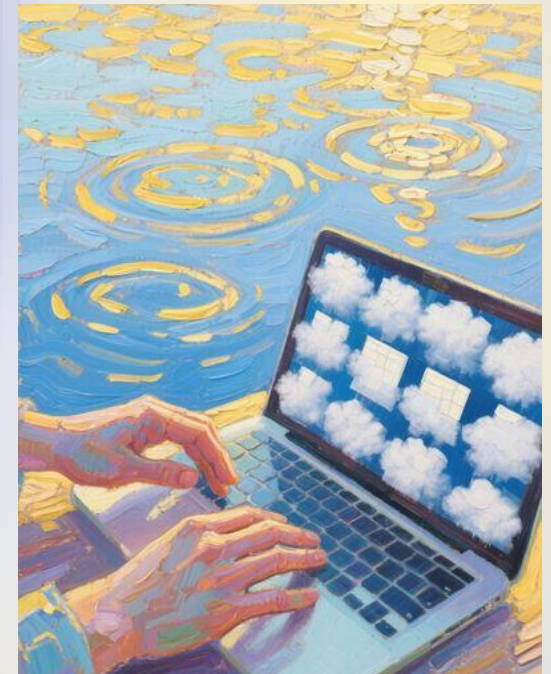


○ Naloxone Distribution

Widespread distribution of naloxone to individuals at risk and their communities reduces overdose deaths by enabling rapid response.

○ Syringe Exchange

Syringe exchange programs reduce the spread of infectious diseases and provide a gateway to other health services, improving overall outcomes.



● ● ● ● ● Harm Reduction Tactics



Withdrawal & Detox

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Withdrawal Timeline

Onset

Symptoms of opioid withdrawal typically begin within 6–12 hours of the last dose, varying based on the type of opioid used.



Peak

Withdrawal symptoms peak at 36–72 hours, causing significant discomfort and distress, often driving relapse.



Resolution

Most acute withdrawal symptoms resolve within 5–14 days, though some residual effects may persist longer.



Medical Detox Protocol



Medication-Assisted Taper

Symptom-triggered taper using methadone or buprenorphine helps manage withdrawal symptoms and cravings.



Adjunct Medications

Clonidine, tizanidine, antiemetics, and sleep aids can be used to alleviate specific symptoms during detox.



Monitoring

Continuous medical monitoring ensures safety, prevents complications, and facilitates smooth transition to long-term treatment.



Induction

For patients on methadone or buprenorphine, careful induction and stabilization are crucial to avoid precipitated withdrawal.

Outpatient vs Inpatient

Outpatient Detox

Mild withdrawal can be managed in office-based settings with close follow-up and support from healthcare providers.

Inpatient Detox

Severe dependence, polysubstance use, or medical/psychiatric instability warrant inpatient or residential detox for comprehensive care.





Recovery & Relapse

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Relapse Prevention Plan

○ Identify Triggers

Recognizing high-risk situations and triggers is essential for developing effective coping strategies and preventing relapse.

○ Coping Skills

Building a toolkit of coping skills, including mindfulness, stress management, and alternative activities, helps manage cravings and urges.

○ Emergency Contacts

Creating a list of emergency contacts, including healthcare providers, sponsors, and supportive friends, ensures immediate support when needed.

○ Ongoing Therapy

Regular participation in therapy, support groups, or counseling reinforces recovery and provides ongoing accountability and motivation.





Long-Term Monitoring



Regular Follow-Up

Scheduled follow-up visits and urine screens help detect early signs of relapse and adjust treatment plans as needed.

Medication Adherence

Monitoring medication adherence ensures effectiveness and safety, especially for patients on long-term MAT.

Psychiatric Care

Addressing comorbid mental health conditions through ongoing psychiatric care improves overall outcomes and reduces relapse risk.

Family & Community Role

Family Support

Family psychoeducation and involvement in treatment can provide a supportive environment, reducing stigma and enhancing recovery.

Community Integration

Reintegration into community activities, employment, and social networks helps build a fulfilling life in recovery and reduces relapse risk.





Thank You