FAQ

Substance use disorder and other addictions

Frequently asked questions about substance use disorder and other addictions

At Neurotorium, our mission is to improve awareness and knowledge about the brain and its diseases. We provide free, unbiased educational content for clinicians, educators, and anyone interested in the brain, developed and regularly updated by leading experts in psychiatry, neurology, and neuroscience. Neurotorium also awards educational grants and organizes scientific meetings and educational events at international conferences to foster dialogue between neurology and psychiatry.

This document was reviewed by Professor Dr. Gabriele Fischer

neurotorium

Frequently asked questions about substance use disorders and other addictions

The information provided in this document is for educational purposes only and is not a substitute for medical care. If you have questions about your health, speak with a healthcare professional.

neurotorium

1. What are substance use disorders and other addictions?[1-4]

Substance use disorders (SUD) and other addictions are brain diseases, often described as 'chronically relapsing' disorders. Individuals with SUD have an intense focus on using substances to the point where their ability to function in daily life becomes impaired. Addiction is characterised in the majority of cases by a progressive disease course, involving the development of tolerance over time. Beyond substances, certain behaviours (for example, gambling and gaming) can present a similar clinical picture and involve overlapping neurobiological changes. Even hazardous use without dependence can cause significant harm to the individual and others (for example, accidents and injuries).

Many substances cause physical harm through direct toxicity to organs and cells, including alcohol, cocaine, and new psychoactive substances. Others cause harm through their route of administration, which can increase the risk of infectious diseases. In recent years, the acute toxicity of opioid overdose, with its high mortality, has been particularly prominent in North America. At the same time, there is still inadequate global access to opioids for medical treatment. High levels of stigma toward people with substance use disorders may also reduce access to healthcare and contribute to poor retention in treatment.

2. What are the causes of substance use disorder and other addictions?[5-8]

No single cause explains substance use disorders (SUD) or other addictions. Instead, they arise from a combination of biological, psychological, and environmental factors. A key biological component involves changes in brain chemistry, particularly in the neurotransmitters dopamine and glutamate.

Initially, substance use produces pleasurable or rewarding effects. Over time, however, repeated use alters brain function. The brain becomes less responsive to natural rewards, and individuals may begin to experience negative emotional states when

neurotorium

The information provided in this document is for educational purposes only and is not a substitute for medical care. If you have questions about your health, speak with a healthcare professional.

not using or engaged with the source of addiction. As a result, substance use can shift from being driven by pleasure to being driven by the desire to relieve distress or discomfort.

These ongoing brain changes can reduce self-control, increase craving, and strengthen habitual patterns of use, ultimately contributing to the development and persistence of addiction/substance use disorder.

3. How common are substance use disorders and other addictions?[9-11]

Substance use disorders and other addictions are major global health issues. According to the World Drug Report 2021, around 275 million people worldwide used drugs in the past year, and 36 million people suffer from drug use disorders, including dependence on opioids, amphetamines, and cocaine. Alcohol consumption causes 3 million deaths each year, and smoking was identified as the second leading risk factor for early death and poor health worldwide in 2021, only surpassed by high blood pressure.

4. What types of addictions are present in substance use disorders and other addictions?[12-15]

The object of addiction is often a drug or a substance, but a person can become addicted to almost anything. Individuals with SUD can have an addiction to a psychoactive substance e.g. heroin, alcohol, cannabis, tobacco etc. Additionally, behavioural addictions are also common, such as gambling or gaming disorder. Behavioural addictions share many common features with substance-use disorders in disease course and often involve multiple addictions.

5. How are substance use disorders and other addictions diagnosed?[15,16]

SUD and other addictions are diagnosed using guidelines from the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and the International Classification of Diseases (ICD-11), next to other specific instruments such as the Addiction Severity Index (ASI), South Oaks Gambling screen (SOGS), Yale Food Addiction Scale etc.

The information provided in this document is for educational purposes only and is not a substitute for medical care. If you have questions about your health, speak with a healthcare professional.

Healthcare providers look at patterns of behaviour, physical and psychological dependence, and the impact on daily life. Screenings, interviews, questionnaires and laboratory results are used to assess the severity of the addiction. These tools help identify symptoms such as difficulty controlling substance use, cravings, withdrawal symptoms, and significant disruptions to daily activities, including impact on psychosocial functioning and quality-of-life.

If addiction is suspected, it is important to consult a healthcare provider for a thorough evaluation and to discuss appropriate treatment options considering any (often underlying) psychiatric co-morbidity.

6. What treatment options are available for substance use disorders and other addictions?[17]

Treatment for substance use disorders aims to help individuals stop seeking and using addictive substances. As addiction is a long-term illness with potential relapses, treatment is an ongoing process of intervention and monitoring.

Other mental health disorders are common in people with SUD and should always be taken into consideration with treatment. Medications often play an important role, both directly for SUD and for underlying psychiatric conditions such as ADHD or mood disorders. The best outcomes are seen when these conditions are treated at the same time.

The most effective psychotherapeutic approach is Cognitive-Behavioural therapy (CBT). Individual, group, or family therapy can also be beneficial. There is growing evidence that telemedicine can support successful monitoring of SUD.

Treatment plans must be reviewed and adjusted regularly to fit changing needs. It is also important to be aware that some individuals may shift to other substances or addictive behaviours during treatment. Finally, prevention should consider the strong genetic

neurotorium

The information provided in this document is for educational purposes only and is not a substitute for medical care. If you have questions about your health, speak with a healthcare professional.

component of SUD - heritability is estimated at around 50%.

7. What can you do to prevent a relapse?[2,18]

One way to prevent a relapse is to identify personal triggers and find strategies to avoid or manage them. Triggers can be external, such as environments where substances are present, or internal, such as anxiety, hunger, or fatigue. It's important to anticipate these triggers and have a plan or coping strategy ready. Mental health professionals can assist in recognising triggers and developing coping plans. Additionally, effective medications are available for most substance use disorders to help reduce cravings. Since co-morbid mental health problems increase the risk of relapse, treating them at the same time is important. The involvement of psychotherapies such as CBT, can also play a key role in strengthening coping skills and supporting long-term recovery.

Lexicon[1,2,5,16,17,19]

Cognitive-Behavioural Therapy (CBT): Therapy that targets unhelpful thoughts and behaviours to reduce distress and improve functioning.

Cravings: Intense desires for the addictive substance or behaviour.

Dopamine: A neurotransmitter that plays a key role in reward and pleasure systems.

DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition): A manual used by healthcare professionals to diagnose mental health conditions, including substance use disorders and other addictions.

Glutamate: An excitatory neurotransmitter that is involved in most aspects of normal brain function including cognition, memory, and learning.

neurotorium

The information provided in this document is for educational purposes only and is not a substitute for medical care. If you have questions about your health, speak with a healthcare professional.

ICD-11 (International Classification of Diseases, Eleventh Revision): A global standard for diagnosing health conditions and diseases, maintained by the World Health Organization.

Opioids: A class of drugs that include both prescription pain relievers and illegal drugs, such as heroin.

Psychoactive: Psychoactive drugs are substances that, when taken or administered, affect mental processes such as perception, consciousness, cognition, and emotions.

Relapse: A return to substance use after an attempt to stop.

Screenings: Initial assessments to identify signs of substance use disorder.

Triggers: Stimuli or situations that can lead to cravings and relapse.

References

1. MacKillop, J. Is Addiction Really a Chronic Relapsing Disorder? Alcohol. Clin. Exp. Res. 44, 41–44 (2020).

2. Addiction and Substance Use Disorders. https://www.psychiatry.org:443/patients-families/addiction-substance-use-disorders.

3. Tarrafeta-Sayas, M.-B. et al. Children's access to controlled medicines: policy lessons, intervention priorities, and a framework for action. Lancet Child Adolesc. Health 0, (2026).

4. Silbernagl, M., Slamanig, R., Fischer, G. & Brandt, L. Hepatitis C infection and psychiatric burden in two imprisoned cohorts: Young offenders and opioid-maintained prisoners. Health Policy 122, 1392–1402 (2018).

5. Kaplan & Sadock's Comprehensive Textbook of Psychiatry. (Wolters Kluwer, Philadelphia, 2025).

6. Volkow, N. D., Koob, G. F. & McLellan, A. T. Neurobiologic Advances from the Brain Disease Model of Addiction. N. Engl. J. Med. 374, 363–371 (2016).

7. Ceceli, A. O., Bradberry, C. W. & Goldstein, R. Z. The neurobiology of drug addiction: cross-species insights into the dysfunction and recovery of the prefrontal cortex. Neuropsychopharmacol. Off. Publ. Am. Coll. Neuropsychopharmacol. 47, 276–291 (2022).

8. Substance Abuse and Mental Health Services Administration (US) & Office of the Surgeon General (US). Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health. (US Department of Health and Human Services, Washington (DC), 2016).

9. WHO. Harmful use of alcohol. https://www.who.int/health-topics/alcohol.

10. Institute for Health Metrics and Evaluation (IHME). Global Burden of Disease 2021: Findings from the GBD 2021 Study | Institute for Health Metrics and Evaluation. https://www.healthdata.org/research-analysis/library/global-burden-disease-2021-findings-gbd-2021-study.

11. UNODC. World Drug Report 2021. United Nations : Office on Drugs and Crime //www.unodc.org/unodc/en/data-and-analysis/wdr2021.html.

12. Heilig, M. et al. Addiction as a brain disease revised: why it still matters, and the need for consilience. Neuropsychopharmacol. Off. Publ. Am. Coll. Neuropsychopharmacol. 46, 1715–1723 (2021).

13. Addiction support. nhs.uk https://www.nhs.uk/live-well/addiction-support/ (2022).

14. Grant, J. E. & Chamberlain, S. R. Expanding the definition of addiction: DSM-5 vs. ICD-11. CNS Spectr. 21, 300–303 (2016).

15. Diagnostic and Statistical Manual of Mental Disorders (DSM) | Psychiatry Online. DSM Library https://www.psychiatryonline.org/dsm doi=10.1176%2Fdsm&publicationCode=dsm.

16. ICD-11. https://icd.who.int/en/ (2022).

17. Principles of Drug Addiction Treatment: A Research-Based Guide: Third Edition: (686332012-001). https://doi.org/10.1037/e686332012-001 (2012).

18. Ray, L. A. et al. Combined Pharmacotherapy and Cognitive Behavioral Therapy for Adults With Alcohol or Substance Use Disorders: A Systematic Review and Meta-analysis. JAMA Netw. Open 3, e208279 (2020).

19. WHO. Drugs (psychoactive). https://www.who.int/health-topics/drugs-psychoactive.