

Substance Use, Intoxication, and Withdrawal in the Critical Care Setting

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KEYWORDS

- Critical care • Substance-related disorders • Opioid-related disorders
- Stimulant-related disorders • Synthetic cannabinoid • Synthetic cathinone
- Cocaine • MDMA

KEY POINTS

- Effects of substance use, including intoxication and withdrawal, are commonly encountered, although often difficult to detect in critically ill patients.
- Management is directed at the specific intoxication or withdrawal syndrome.
- Comprehensive management of patients with complications related to substance use includes engagement in longitudinal management of the underlying substance use disorder.

INTRODUCTION

Substance use disorders are common, although the prevalence in the inpatient setting is not well defined. In 2012, it was estimated that 11% of adult hospitalizations involved substance use disorders alone or in combination with mental health disorders, likely an underestimation given the frequency of underdiagnosis of substance use disorders.¹ The most common diagnoses were alcohol-related disorders, drug-induced mental disorders, opioid-related disorders, cocaine-related disorders, and hallucinogen-related disorders. The most common demographic was male Medicaid or Medicare recipients between the ages of 18 and 44 (drug-induced mental health, opioids, hallucinogens) or 45 and 64 (alcohol, cocaine). From a community sample,

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approximately 19% of hospitalized patients had evidence of unhealthy substance use, of whom most were admitted to academic teaching service.² Recent trends point to increasing numbers of hospitalizations from overdose in persons with opioid use disorder (OUD), and intoxication with designer drugs such as synthetic cannabinoids (SCB), synthetic cathinones (bath salts), and 3,4-methylenedioxymethamphetamine (MDMA, ecstasy).^{3–6}

The epidemiology of substance use disorders in the critical care setting is largely unknown. Estimates from one community hospital noted 14% of intensive care unit (ICU) admissions were non-tobacco substance related.⁷ Furthermore, substance use has been identified as a risk factor for hospitalization for diabetic ketoacidosis (DKA), with longer subsequent ICU stays compared with DKA unrelated to substance use.⁸ In addition, substance use is associated with injury and trauma, including motor vehicle injuries, falls, drownings, thermal injury, homicide, and suicide.^{9–12} In the United States, up to half of trauma beds are occupied by patients involved in alcohol-related traffic accidents.^{10,13} Management of critically ill or injured patients who use illicit substances is complicated by both the intoxicating and the withdrawal effects of those substances. This review addresses the presenting features and management of non-alcohol-related intoxication and withdrawal syndromes of commonly used illicit substances likely to impact the care of a critically ill patient. Complications of alcohol intoxication and withdrawal are reviewed separately. Substances with mild intoxication and withdrawal syndromes unlikely to influence the care of critically ill patients, such as nicotine and natural cannabis, are not covered.

GENERAL CRITICAL CARE ISSUES RELATED TO SUBSTANCE USE

Overdose

Overdose may be suspected from history taken from patients or family, or the recognition of an overdose syndrome. Importantly, when caring for a person with altered mental status from suspected intoxication, HIPAA (Health Insurance Portability and Accountability Act) does not prevent providers from obtaining information from or giving information to close relations if such disclosure is thought to be important to the care of the patient.¹⁴ General management principles include providing basic life support and airway management, obtaining intravenous (IV) access, vital sign monitoring, reviewing all potential medications the patient may have access to, a focused examination, including evaluation of pupils and a search for transdermal patches and signs of injection drug use, such as “track marks,” electrocardiogram, and basic laboratory work to review renal and liver function and to exclude other causes such as infection or myocardial infarction, as well as urine and serum toxicologies.⁹

Agitation

Agitation may result from intoxication or withdrawal, and management can depend on the specific substance or substances used. Management begins with providing a low stimulation environment. In terms of pharmacotherapy to manage agitation, benzodiazepines are often used. Antipsychotic medications can be used as second-line agents. Restraints should generally be avoided if possible and may worsen agitation and risk of sudden death, particularly in the setting of stimulant drug use.^{15,16}

Withdrawal

Withdrawal syndromes are the response to abrupt discontinuation, decreased dosing, or altered metabolism of a substance to which there is physiologic dependence and are common to many substances. These syndromes commonly complicate the care of critically ill patients.^{9,17,18} It may be especially challenging to treat patients with

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