Evidence-based Practices in Drug and Alcohol Treatment and Recovery

July 2023

1— MHC-PBH-24642-23

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Introduction

The use of illicit drugs, such as methamphetamine, cocaine, heroin, and hallucinogens, as well as the use of marijuana, inhalants, tobacco, alcohol and nonmedical use of prescription drugs such as fentanyl, is both a significant public health problem and a challenge in the U.S. The *National Survey on Drug Use and Health* (NSDUH) 2021, reported the most recent statistical information on the use of substances by the U.S. population aged 12 years or older (SAMHSA, 2022). According to the NSDUH report, the percentage of people aged 12 and older who used an illicit drug in the past 30 days was 14.3%, representing 40 million persons. Notably, this percentage was higher than the percentages in every year from 2002 through 2019.

The NSDUH reported that, in 2021, 13.2 million individuals (4.7%) aged 12 and older, used e-cigarettes or other vaping device in the past month. Among the 133.1 million current alcohol users in 2021, 60 million or 45.1% were past month binge drinkers.

Substance use disorders (SUDs) are characterized by "a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues using the substance despite substance-related problems" (DSM-5, 2013). SUDs occur when recurrent use of the substance results in a pathological pattern of related behaviors, e.g., impaired control and social impairment. There are 11 diagnostic criteria in the DSM-5 for each substance use disorder, mild consisting of 2-3 criteria in the past 12 months, moderate 4-5, and severe over 5 criteria. Among people aged 12 or older in 2021, 57.8% (or 161.8 million people) used tobacco, alcohol, or an illicit drug in the past month (also defined as "current use"), including 47.5% (or 133.1 million people) who drank alcohol, 19.5% (or 54.7 million people) who used a tobacco product, and 14.3% (or 40.0 million people) who used an illicit drug. (SAMHSA, 2021).

According to the CDC, more than 932,000 people have died since 1999 from a drug overdose. In 2020, 91,799 drug overdose deaths occurred in the United States. The age-adjusted rate of overdose deaths increased by 31% from 2019 (21.6 per 100,000) to 2020 (28.3 per 100,000).

- Opioids—mainly synthetic opioids (other than methadone)—are currently the main driver of drug overdose deaths. 82.3% of opioid-involved overdose deaths involved synthetic opioids.
- Opioids were involved in 68,630 overdose deaths in 2020 (74.8% of all drug overdose deaths).
- Drug overdose deaths involving psychostimulants such as methamphetamine are increasing with and without synthetic opioid involvement (CDC, 2022).

A 2016 study described trends in benzodiazepine prescriptions and related overdose mortality (Bachhuber et al., 2016). Authors reported that the number of adults filling a benzodiazepine prescription increased 67% between 1996 and 2013; the percentage of adults filling a benzodiazepine prescription increased 4.1% to 5.6%; and the total quantity filled more than tripled. However, the rate of overdose mortality involving benzodiazepines rose at a faster rate than the percentage of individuals filling prescriptions as well as the quantity filled (Bachhuber et al., 2016).

To underscore the magnitude and complexity of the problem related to substance use, it is important to note that among adults aged 18 or older in 2021, those with serious mental illness or any mental illness in the past year were more likely than those with no mental illness in the past year to be users of illicit drugs overall in the past year. An estimated 50.2% of adults aged 18 or older with SMI and 39.7% of adults aged 18 or older with AMI used illicit drugs in the past year compared with 17.7% of adults aged 18 or older with no mental illness. (SAMHSA, 2021). "People with a mental disorder were more likely to experience a substance use disorder and

people with a substance use disorder are more likely to have a mental disorder when compared to the general population" (SAMHSA, 2021). The National Survey of Substance Abuse Treatment Services (N-SSATS) reported that among clients in treatment, 57% were diagnosed with co-occurring mental and substance use disorders. In facilities operated by the Department of Defense, fewer than half of clients in treatment were diagnosed with co-occurring substance use and mental disorders (46%); however, facilities operated by the Department of Veterans Affairs reported the highest proportion of clients in treatment with diagnosed co-occurring substance use and mental disorders—77%—the highest among all types of facility operation. This represents one of the most significant problems facing the public mental health system today. In addition, the abuse of multiple substances is common and can complicate the assessment/treatment of withdrawal syndromes, management of associated medical conditions, and rehabilitation efforts aimed at relapse prevention and recovery (SAMHSA, 2021).

Substance abuse treatment providers utilize comprehensive/high-quality screening tools, clinical practice guidelines, treatment protocols and placement criteria developed and published by professional associations/government agencies, e.g., American Psychiatric Association (APA), American Society of Addiction Medicine (ASAM), U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration (SAMHSA), National Institute on Drug Abuse (NIDA) and others. These represent analyses, summaries and consensus reviews of evidence-based practices for all phases of alcohol/drug treatment and recovery.

Principles and Goals of Substance Abuse Treatment

Substance abuse treatment is conceptually divided into phases and defined by SAMHSA in their *Treatment Improvement Protocol (TIP) 42 – Substance Abuse Treatment for Persons with Co-Occurring Disorders* and *TIP 45-Detoxification and Substance Abuse Treatment* as engagement, stabilization, primary treatment and continuing care (or aftercare). In these phases, the clinician should apply approaches to treatment that promote a recovery-focused orientation (SAMHSA, 2006; SAMHSA, 2005).

The APA *Practice Guideline for the Treatment of Patients with Substance Use Disorders, Second Edition* specifies that since SUDs are considered "heterogenous with regard to a number of clinically important features and domains of functioning…a multimodal approach to treatment is typically required" and tailored to specific individualized needs of the patient. (APA, 2006, p. 9) Treatment of individuals with SUDs includes conducting a complete assessment, treating intoxication and withdrawal syndromes when necessary, addressing co-occurring psychiatric and general medical conditions, and developing and implementing a plan. The APA indicates that goals of treatment include motivating the patient to change their attitudes and behaviors to be more conducive to recovery and relapse prevention. The use of engagement therapies such as motivational enhancement therapy can help patients work through their ambivalence about recovery. Additionally, the purpose of treatment should help the patient reduce use of the substance or achieve complete abstinence, reduce the frequency and severity of substance use episodes, and improve psychological and social functioning (APA, 2006; APA, 2007).

The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition DSM-5 (2013) added craving as a new criterion within substance use disorders. Magellan's guideline cites studies suggesting that cravings may be reduced and relapse prevented by the use of medications combined with behavioral therapies to treat SUD. Medication-assisted treatment (MAT) also has been associated with fewer inpatient admissions in individuals

with alcohol dependence. The guideline cites studies reflecting that few clinicians prescribe medications to treat alcohol dependence while treating mood disorders. Research suggests that clinicians consider a program integrating evidence-based psychosocial and psychopharmacological interventions for treatment of young adults with co-occurring substance use and psychiatric disorders. Other studies cited in the guideline discuss SUDs as a key driver of the overdose epidemic and note three types of MAT, often underutilized, used in the treatment of patients with opioid addiction: methadone, buprenorphine, and naltrexone. The guideline includes a quote from the American Society of Addiction Medicine's (ASAM) The ASAM Criteria, "every day, in fact every 19 minutes, an American dies from an unintentional drug overdose. This epidemic is compounded by the vast gap in access to opioid addiction treatment. This does not have to be our patients' realities" (ASAM, 2013).

Evaluation and Determination of Therapeutic Service Need

A very broad and flexible continuum of substance abuse care accommodating individualized and assessment-driven treatment is in place in many areas of the U.S. The American Society of Addiction Medicine's (ASAM) comprehensive set of guidelines describing the continuum of addiction health services, *The ASAM Criteria: Treatment Criteria for Addictive, Substance-Related, and Co-Occurring Conditions, Third Edition* (ASAM Criteria), discusses the clinical components and programmatic construct of the treatment continuum in depth. Use of this clinical guide may improve assessment and outcomes-driven treatment and recovery services for patients matched to appropriate treatment settings, interventions and levels of care. The goal of addiction treatment services is not simply stabilizing the patient's condition but altering the course of the patient's disease toward wellness and recovery and productive functioning in family, workplace, and society. The ASAM Criteria does not use the term "detoxification services" and refers instead to "withdrawal management" (Mee-Lee et al., 2013).

The guiding principles of the ASAM criteria for addictive, substance-related, and co-occurring conditions include multidimensional assessment; individualized, person-centered treatment; individualized length of stay; broad and flexible continuum of care where patients may move to a more or less intensive level based on individual needs; identification of adolescent-specific needs; comprehensive biopsychosocial assessment of patient and family; removal of previous "treatment failure" as a requirement for placement; interdisciplinary, team approach to care; team approach including not only physicians but also addiction specialists, physician assistants, nurse practitioners, peer support specialists/recovery coaches, and other healthcare professionals; focus on patient engagement and treatment outcomes; informing patient and family members of modalities of treatment, alternative treatments, and risks of treatment versus no treatment; clarification of "medical necessity" defined by problems in all multidimensional assessment areas; and incorporation of ASAM definition of addiction as a "primary, chronic disease of brain reward, motivation, memory, and related circuitry…characterized by inability to consistently abstain, impairment in behavioral control, craving, diminished recognition of significant problems with one's behaviors and interpersonal relationships, and a dysfunctional emotional response" (Mee-Lee et al., 2013, p. 10).

ASAM's six dimensions of multidimensional assessment are acute intoxication and/or withdrawal potential; biomedical conditions and complications; emotional, behavioral, or cognitive conditions and complications; readiness to change; relapse, continued use, or continued problem potential; and recovery/living environment. These dimensions include exploration of the following: individual's past and current experiences of substance use and withdrawal; health history and current physical examination; thoughts, emotions and mental health issues; readiness and interest in changing; relationship with relapse or continued use; and individual's recovery or living situation (Mee-Lee et al., 2013).

A multidimensional assessment identifying needs, strengths, skills and resources leads to dimension-specific risk ratings, followed by service planning and placement. "The ASAM Criteria describes treatment as a continuum marked by broad levels of service and an early intervention level" (Mee-Lee et al., p.106), Levels of care represent intensities of service along a continuum of recovery-oriented addiction services rather than a limited number of traditional program facilities and settings. The six dimensions of multidimensional assessment can be applied to each level of care. Levels of care are determined by an individual person's needs, and the length of stay in that level depends on the severity of illness, level of function, and progress made in treatment.

Levels of care are as follows:

1. Level 0.5 Early Intervention
2. OTP-Level 1 Opioid Treatment Program
3. Level 1 Outpatient Services
4. Level 2.1 Intensive Outpatient Services
5. Level 2.5 Partial Hospitalization Services
6. Level 3.1 Clinically Managed Low-Intensity Residential Services
7. Level 3.3 Clinically Managed Population-Specific High-Intensity Residential Services
8. Level 3.5 Clinically Managed High-Intensity Residential Services
9. Level 3.7 Medically Monitored Intensive Inpatient Services
10. Level 4 Medically Managed Intensive Inpatient Services

In the U.S., 8.9 million adults have co-occurring mental health and substance use disorder (COD) (SAMHSA, 2015). Patients with COD have at least one mental illness and one SUD, each of which must be able to be diagnosed independently (Priester et al., 2016). SAMHSA reported that only 7.4% of individuals with COD receive treatment for both disorders and 55% receive no treatment at all. In an integrative literature review, authors examined barriers to treatment access for individuals with COD (Priester et al., 2016). Structural barriers to treatment included service availability, disorder identification, provider training, service provision, racial/ethnic disparities, and insurance/policy related barriers. Service availability is a primary structural barrier involving lack of specialized services, e.g., residential or rehabilitation programs, intensive inpatient care, etc. Under-identification rates also are barriers; often either a SUD or a mental health disorder is identified, but not both. Personal characteristics, e.g., personal vulnerabilities and personal beliefs are barriers to treatment as well. Authors suggested, "flexible, community-based, wrap-around services that address substance use, mental health, and basic needs in an integrated way may increase the likelihood of individuals accessing treatment when significant barriers such as transportation, childcare, and geographic proximity to services in resource-poor, rural communities are present" (Priester et al., p. 57). Authors concluded, "Integrated services must be flexible and client-centered to maximize treatment accessibility for individuals with COD, particularly those who face structural barriers to treatment" (Priester et al., 2016). The ASAM Criteria incorporates updated terminology regarding co-occurring conditions and co-occurring capability, eliminating specific definition for addiction-only services. Co-occurring capability represents a shifting focus toward holistic, person-centered services delivered in an integrated fashion for individuals with co-occurring conditions (Mee-Lee et al., 2013).

The APA guideline stresses the importance of careful diagnostic distinction between symptoms of substance abuse and symptoms of other co-occurring psychiatric disorders, as this dictates the selection of appropriate and targeted pharmacotherapy and psychosocial interventions. The guideline recommends appropriate treatment of a specific psychiatric disorder in most cases whether or not that disorder co-exists with a SUD. However, the guideline indicates that clinicians must pay special attention to each medication's tolerability and safety profile as well as its abuse potential (APA, 2006), for example medications that are likely to create

dependence such as benzodiazepines should not be used to treat anxiety.

SAMHSA TIP 42 also offers the following guidance for working with clients with COD: (1) employ a recovery perspective (2) adopt a multi-problem viewpoint (3) address specific personal and social problems early in treatment (4) plan for the client's cognitive and functional impairments and (5) use support systems (SAMHSA, 2005).

Withdrawal Management Services – Management of Acute Intoxication and Withdrawal

Withdrawal management, formerly called detoxification services, includes interrupting the momentum of habitual compulsive use as well as attenuation of the physiological and psychological features of withdrawal (ASAM, 2013). Services include breaking the cycle of use, enabling the patient to establish abstinence, and evaluation of the need for further care. A greater intensity of services is required to establish initial treatment engagement and patient involvement. ASAM points to how current medication protocols allow management on an ambulatory basis, except for the most severe withdrawal syndromes. It is critical to continue withdrawal support at less intensive levels of withdrawal management. ASAM states, "a 'successful detox' encounter involves more than acute management of withdrawal. It involves engagement in services to address the accompanying addiction process and thus reduce the likelihood of 'readmission for detox'" (Mee-Lee et al., 2013).

According to *SAMHSA TIP 42*, "outpatient detoxification is becoming the standard to treatment of symptoms of withdrawal from substance dependence" and "more than 90 percent of alcohol treatment programs could safely manage patients with withdrawal syndromes as outpatients after careful screening for those who may need inpatient treatment" (SAMHSA, p.20) The SAMHSA protocol stresses that careful screening is essential to reserve inpatient treatment for those clients:

- With possible complicated withdrawal states
- With co-morbid medical conditions – e.g., diabetes, hypertension, pregnancy
- With suicidal/homicidal/psychotic states
- In danger of seizure or delirium tremens (DTs)
- With no capacity for informed consent.

Most admission criteria today have been considerably refined using scientifically validated assessment tools and rating scales (e.g., Clinical Institute Withdrawal Assessment for Alcohol, revised [CIWA-Ar] and Clinical Opiate Withdrawal Scale [COWS]). The instruments can accurately measure withdrawal syndromes and guide selection of pharmacological agents.

Alcohol – Quantitative measures of withdrawal in rating scales, e.g., CIWA-Ar, may guide treatment interventions. Approximately 95% of individuals experience only mild to moderate withdrawal. However, patients with a past history of withdrawal symptoms may be in the process of going into withdrawal while their symptoms are still minimal. Therefore, prior to the intensification of symptoms, initiating medications may prevent severe withdrawal. Individuals with CIWA-Ar scores below 10 may not need pharmacologic interventions and may be managed on an outpatient basis. CIWA-Ar scores between 10 and 20 usually require

pharmacologic intervention and medical/nursing supervision, which may or may not be managed on a less than 24-hour/day basis. CIWA-Ar scores of 20 or higher are candidates for consideration for a hospital level of medical withdrawal management. Benzodiazepines are the most commonly used agents to treat alcohol withdrawal (i.e., diazepam, chlordiazepoxide and lorazepam) using a fixed schedule/tapering dosage method or a symptom-targeted method. For patients with liver impairment, lorazepam or oxazepam should be used due to lower potential for hepatic toxicity. The use of phenobarbital is rarely used except in certain cases where resistant patients do not respond to large doses of benzodiazepines. For mild to moderate withdrawal symptoms (CIWA<15), anticonvulsants (i.e., carbamazepine, gabapentin and valproic acid) can be used as alternative to benzodiazepines. While alpha-adrenergic agonists, beta-blockers and calcium channel blockers may control symptoms of acute alcohol withdrawal, there is insufficient efficacy for their use in the prevention of seizures or DTs.

Benzodiazepines – Individuals who are dependent on low doses of benzodiazepines may receive a quick tapering with minimal discomfort, but the usual tapering process requires from one to four weeks. Individuals dependent on high doses of benzodiazepines may be withdrawn using one of the following methods: substituting a long-acting benzodiazepine tapered over two to six weeks as the preferred method; tapering the dosage of the original agent of dependence; or converting the dosage of benzodiazepine to be withdrawn to a phenobarbital equivalent. After stabilization, the individual receives an individualized tapering-off regimen.

Opioids – ASAM cautions that abrupt cessation of opioids may lead to strong cravings and continued use, and recommends the use of medications for opioid withdrawal management (ASAM, 2015). Medications for the management of withdrawal symptoms can include clonidine, ibuprofen, methocarbamol, dicyclomine, trazodone and/or hydroxyzine. Methadone or buprenorphine also may be used for withdrawal management.

Medication-assisted therapy (MAT) – Medication therapies used in treating patients with opioid addiction include methadone, buprenorphine, and naltrexone. If not successful in reaching goals of withdrawal management or if experiencing intolerable side effects, patients may switch from methadone to **buprenorphine, oral naltrexone**, or extended-release injectable naltrexone. Prior to a switch to **buprenorphine**, patients should be on low doses of methadone (30-40 mg per day or less). When switching from methadone to oral naltrexone or extended-release injectable naltrexone, patients generally must be completely withdrawn from methadone and other opioids (ASAM, 2015). **Studies have found that buprenorphine-naloxone compared to methadone, has a lower abuse potential, allows for more flexibility, and carries less stigma** (Mauger et al., 2014). Whereas methadone is administered under the opioid treatment program (OTP) on a daily basis, buprenorphine can be prescribed and dispensed at a pharmacy or administered by physicians with a DEA registration in private practices or other types of public sector clinics under office-based opioid treatment (OBOT). It has no depression of respiration and thus is much safer than methadone. Studies show buprenorphine maintenance treatment to be as effective as methadone maintenance treatment in reducing illicit opioid use and was associated with less risk of adverse events. Results of the study suggested that due to limited access to methadone maintenance treatment as well as its more restrictive safety profile, **buprenorphine maintenance treatment should be considered for the long-term management of opioid use disorders.** Monitoring of medication administration until the patient's clinical response and behavior demonstrate appropriate prescribing is required.

The initial dose of **buprenorphine** should be 2 mg to 4 mg and increased in increments of 2 mg to 4 mg. Initial use of this medication usually produces a mild withdrawal syndrome which can usually be managed on an outpatient, intensive outpatient or partial hospital basis. Although clinicians should observe patients in their offices or in one of the aforementioned higher clinical settings during induction, home-based induction of buprenorphine is reasonably safe for selected patients. After induction and titration, doses should be at least 8 mg per day except when patients continue to use opioids, daily dose of buprenorphine may be increased to 12 to 16 mg or higher (FDA approves a limit of 24 mg per day). No time limit for treatment has been set.

Buprenorphine tapering is a slow process and generally takes several months. If switching from buprenorphine to naltrexone, there should be a lapse of 1 to 14 days between the last dose of buprenorphine and the start of naltrexone.

Oral **naltrexone** is considered for patients based on personal preference or where adherence can be enforced or supervised, while extended-release injectable naltrexone is considered for patients having issues with adherence. Daily dosage for oral naltrexone is 50 mg or it can be given three times weekly (two 100 mg doses and one 150 mg dose). Extended-release injectable naltrexone is administered every four weeks at a dosage of 380 mg per injection (ASAM, 2015). Naltrexone can be used only when the patient is completely withdrawn from opiates.

It is important to remember, "switching from an antagonist such as naltrexone to a full agonist (methadone) or a partial agonist (buprenorphine) is generally less complicated than switching from a full or partial agonist to an antagonist because there is no physical dependence associated with antagonist treatment and thus no possibility of precipitated withdrawal" (ASAM, 2015, p. 20).

Stimulants (cocaine and amphetamine) – Stimulant withdrawal does not directly cause life-threatening withdrawal symptoms, seizures or delirium and no medications have been developed specifically for this purpose, and treatment is usually observation. Individuals who have abused large amounts of stimulants may experience a withdrawal syndrome and intense depression, which requires monitoring for suicide potential. Due to persistent cardiac complications associated with cocaine abuse, evaluation of chest pain is necessary along with evaluation of persistent headaches to rule out subdural, subarachnoid or intracerebral bleeding.

Cannabis withdrawal – Cannabis withdrawal is covered as a new disorder in DSM-5. The ingredient THC (delta-9-tetrahydro-cannabinol) component of marijuana and hashish may be associated with withdrawal (i.e., THC abstinence syndrome) after cessation of prolonged cannabis usage. Signs or symptoms of cannabis withdrawal cause distress or impairment in important areas of functioning and are not attributable to another medical condition. There are currently no evidence-based pharmacotherapy treatments for cannabis withdrawal (DSM-5, 2013).

Hallucinogens (LSD [d-lysergic acid diethylamide], mescaline, psilocybin, and related drugs) – Withdrawal syndromes have not been reported and medical detoxification is not necessary. However, there are residual effects such as delayed perceptual illusions with anxiety ("flashbacks"), psychotic symptoms and long-term cognitive impairment, which often require psychiatric attention. Synthetic hallucinogens, e.g., 25I-NBOMe, have been increasingly popular since 2011 often resulting in negative psychiatric consequences, e.g., delirium, agitation, paranoia, confusion, and self-harm.

Phencyclidine (PCP) – Withdrawal from PCP is very rare, and no withdrawal management is necessary other than controlling the symptoms of intoxication. Since patients with acute PCP intoxication often become violent and experience a drug-induced psychosis (i.e., hallucination, delusions) with manic behavior, hospitalization is necessary to monitor the patient in a safe environment and treat symptoms with psychotherapeutic agents (i.e., benzodiazepines and/or antipsychotic agents).

Volatile substances (inhalants) – Inhalants are a large and varied group of psychoactive substances found in household, industrial and medical products (i.e., adhesives, aerosols, anesthetics and cleaning agents) that are inhaled for the short-lived "high" or "head rush" and loss of inhibitions. Inhalants do not cause any serious degree of physical dependence and since withdrawal symptoms are uncommon, there is no specific withdrawal management protocol.

Club drugs – These substances are known by this moniker because they are used at dance parties, raves and nightclubs in order to intensify social experiences by giving a reported sense of physical closeness, empathy and euphoria. The most prominent "club drugs" are MDMA or "ecstasy" (3, 4-methy-lenedioxymethamphetamine), GHB (gamma-hydroxybutyrate); Rohypnol or "date rape" drug (flunitrazepam) and Ketalar (ketamine). The focus of treatment for MDMA is to manage the complications of intoxication and overdose (i.e., sympathetic overload, "serotonin syndrome," end-organ damage, respiratory distress and coagulopathy) but not withdrawal, since it is not addictive. Chronic use of GHB may produce dependence and a withdrawal syndrome that includes anxiety, insomnia, tremor, delirium, and in severe cases, treatment-resistant psychoses. Mild cases of GHB may be managed with benzodiazepines and supportive care and more severe withdrawal requires high doses of intravenous benzodiazepines or barbiturates. Since Rohypnol is a benzodiazepine with 10 times the potency of diazepam, the principles of intensive medically managed benzodiazepine withdrawal apply in these cases (as previously described). Chronic users of ketamine, a derivative of PCP, become addicted and exhibit severe withdrawal symptoms along with bizarre ideations and hallucinations that require withdrawal management with benzodiazepines.

Designer drugs – One of these substances, also known as "legal highs," includes substituted or synthetic cathinones (**bath salts**). Relatively new designer drugs, bath salts (Ivory Wave, Vanilla Sky, meow-meow, M-Cat) are especially popular among young adults. Primary substituted cathinones are part of the family of stimulants and include mephedrone, methylenedioxpyrovalerone (MDPV), and methylone (Molly). Common effects of bath salts include talkativeness, euphoria, and increased energy. With larger consumption and/or where consumed with other substances, acute agitation may occur resulting in paranoia, hallucinations, and delusions. Tolerance occurs after repeated dosing including large amounts of the substituted cathinones, with some users experiencing a diagnosable SUD. Withdrawal effects including tiredness, irritability, depression, and insomnia have been reported among chronic users. With a lack of specific antidotes, supportive treatment including a quiet environment may treat unpleasant psychological effects of acute intoxication, e.g., agitation. Once a drug use disorder is diagnosed, treatment may include behavioral components, e.g., cognitive behavioral therapy and motivational enhancement. Treatment may be difficult due to concurrent polysubstance use and the young age of most users (Weaver et al., 2015). Another designer drug is synthetic cannabinoids (Spice, K2, K9, Aroma, herbal highs), which has effects similar to cannabis. Acute psychosis may result from its use. A dependence syndrome and withdrawal symptoms are similar to those seen with cannabis. Synthetic hallucinogens are other popular designer drugs. The use of 25I-NBOMe (N-bomb, Solaris, Smiles, Cimbi-5) may result in visual and auditory hallucinogens, similar to the effects of psilocybin. Although psychosis due to synthetic cannabinoids and synthetic hallucinogens may be managed with monitored observation, benzodiazepines may be used to treat symptoms such as anxiety and agitation (Weaver et al., 2015).

Anabolic-androgenic steroids (AAS) – While the addiction to steroids ("performance enhancing drugs") has generally been described as a psychological addiction, there are withdrawal effects which occur after stopping – i.e., depression, fatigue, paranoia, suicidal thoughts/feelings and strong desire to continue using the steroids. A tapering-off protocol for high doses of steroid uses substitution testosterone enanthate in gradually decreasing doses. Clonidine may be useful in managing an opiate-like withdrawal mechanism, and a short course antipsychotic medication and benzodiazepines may control symptoms of panic or anxiety.

Interventions – Substance Abuse Treatment and Recovery

Psychosocial treatment
Psychosocial treatment is an essential component of a comprehensive treatment program as it can assist patients in coping with the emotional and social challenges that often accompany substance use disorders (ASAM, p. 100). Cognitive, behavioral and motivation treatments are well-defined and have been rigorously studied across a broad range of SUDs – i.e., alcohol, stimulant, marijuana and opioid dependent populations. Psychosocial treatment is widely available in the clinical community and in a variety of convenient formats (e.g., books, videotapes, manuals, training resources and computer-based/Internet delivered). The APA guideline indicates that while these modalities employ a variety of techniques and theories, they all focus on achieving the following critical tasks (APA, 2006):

- Enhancing motivation to stop or reduce substance use
- Teaching coping skills
- Changing reinforcement contingencies
- Fostering management of painful affects
- Enhancing social supports and interpersonal functioning

Cognitive behavioral therapies (CBTs) include specific types such as standard cognitive therapy, social skills training, and relapse prevention. These treatments all share the goal of altering dysfunctional cognitive processes that lead to maladaptive behaviors. **Motivational enhancement** therapy motivates the patient by exploring pros and cons of specific behaviors in order to create specific goals and understanding ambivalence.

Behavioral therapies employ specific techniques such as contingency management rewarding abstinence; community reinforcement providing natural alternative reinforcers to abstinence; and cue exposure and relaxation techniques facilitating extinction of conditioned craving.

Twelve-step facilitation is a structured technique (usually manual-driven) that enhances patient motivation to work through a 12-step program.

Psychodynamic and interpersonal therapies are classic modalities that focus on traumas/deficits during an individual's development or dysfunctional social relationships that contributed to the addiction disorder. They have been used successfully in facilitating abstinence, especially when combined with other treatment modalities (e.g., self-help groups and pharmacotherapy). **Group therapy** of many types (e.g., CBT, interpersonal, behavioral marital, modified psychodynamic interactive, rational emotive, Gestalt and psychodrama) may be used as a supportive, therapeutic or educational tool and provides opportunities for the group to respond to early warning signs of relapse. **Family therapy** is employed to treat dysfunctional families when a patient's abstinence upsets a previously well-established but maladaptive style of family interaction. **Peer support, self-help and 12-step-oriented programs** are broadly available whereby patients can engage and participate at any stage of their illness/recovery, even if still actively using substances. These mutual self-help programs endorse the need for abstinence and use the power of group support and identification in order to provide strength and hope to one another. They are seen as an important adjunct to any substance abuse treatment program (APA 2006; Carroll et al., 2007).

More formal peer support services are recognized as an evidence-based practice, firmly grounded in research

and practice. These peer supporters may have different titles (e.g., recovery coach, peer recovery specialists, etc.), but the philosophical foundation and practical aspects of these supports are consistent. They provide social support for recovery, build on strengths and resilience, and promote self-direction, empowerment, and choice (CSAT, 2009). Peer supporters also excel at quickly building therapeutic connections with individuals, particularly those with dual disorders, who are typically considered to be the most alienated from healthcare systems (Sells et al., 2006). In addition, peer support (formal and informal) help individuals living with drug and alcohol abuse develop or rebuild Recovery Capital. Recovery Capital is defined as the quantity and quality of internal and external resources that one can bring to bear on the initiation and maintenance of recovery from a life-changing disorder (Granfield et al., 1999). This helps provide a sense of belonging within a community of peers and supportive relationships with caring others. Peer support is an essential element of successful, recovery-oriented treatment and long-term recovery.

Somatic treatments (Psychopharmacotherapy)
The APA guideline supports medication therapies for SUDs as effective adjuncts to behavioral therapies and self-help groups, which may be employed in the entire range of treatment levels and settings. The guideline specifies the appropriateness and effectiveness of medications to treat SUDs as categorized below (APA, 2006; APA, 2007):

Medications to treat intoxication states – **naloxone** (a competitive antagonist for all three types of opiate receptors – mu, kappa and sigma) for acute opioid overdose; **flumazenil** (a potent benzodiazepine-specific antagonist that competes at central synaptic GABA receptor sites) for acute benzodiazepine overdose.

Medications to treat withdrawal symptoms – drugs that provide cross tolerance in the same pharmaceutical class, i.e., **methadone** or **buprenorphine** for opioid withdrawal; **benzodiazepines** for alcohol and sedative hypnotic withdrawal; **nicotine replacement therapies (NRT)** for nicotine dependence – gum, lozenges, nasal spray, inhalers.

Agonist maintenance therapies – drugs that are used to relieve cravings associated abstinences and unpleasant withdrawal symptoms, i.e., **methadone** (a long-acting potent agonist at mu opiate receptor site); **buprenorphine** (a potent long-acting compound acting as a partial opioid agonist at mu receptor sites) and **buprenorphine/naloxone combination** tablet. These medications also prevent euphoria if the patient relapses on opioids.

Antagonist therapies – drugs that block or counteract the physiological and/or subjective reinforcing effects of substances, i.e., **naltrexone** (blocks the subjective and physiological effects of opioid drugs without tolerance developing to this antagonist effect) **in oral and sustained-release long-acting injectable forms** for use in both alcohol dependence and opioid relapse prevention following withdrawal management.

Abstinence-promoting and relapse prevention therapies – drugs that allow brain cells to readapt to a normal drug-free state, i.e., **acamprosate** (a small molecule that resembles GABA and decreases glutamatergic neurotransmission) may relieve symptoms of protracted withdrawal and reduce neuronal hyperexcitability during early recovery; the sustained-release antidepressant, **bupropion**, has antagonism of high-affinity nicotinic acetylcholine receptors; **disulfiram (Antabuse)** is an inhibitor of the enzyme aldehyde dehydrogenase and when taken provides an aversive reaction to the consumption of alcohol by causing nausea, vomiting, headache and flushing through the accumulation of toxic levels of acetaldehyde; **naltrexone**, an opioid receptor antagonist, works through blockage of mu opioid receptors reducing the reinforcing effects of alcohol and leads to decreased feelings of intoxication and cravings; by blocking GABA receptors the anticonvulsant, **topiramate**, though not approved by the FDA for this indication, helps patients reduce drinking or avoid relapse to heavy drinking; and the antispasmodic muscle relaxant, **baclofen**, mediates alcohol intake and its motivational

properties, and reduces anxiety in patients with alcohol dependence and liver impairments as it is excreted in the kidney.

Medications to treat co-occurring psychiatric conditions – **combination naltrexone and the selective serotonin reuptake inhibitor (SSRI) antidepressant, sertraline,** while receiving weekly cognitive behavioral therapy result in higher alcohol abstinence rates and longer delay before relapse to heavy drinking in addition to reducing depression in patients with alcohol dependence and co-occurring depression.

Medication-assisted treatment (MAT)—In 2014, approximately 21.5 million Americans ages 12 and older (8.1%) had a SUD in the past year. Out of these, 2.6 million had both alcohol and drug problems, 4.5 million had drug problems only, and 14.4 million had alcohol problems only. The use of FDA-approved medications, referred to as "medication-assisted treatment" provides a "whole-patient" approach to treating SUDs that has been found effective in treating addiction to alcohol and opioids. Opioid use disorders are treated by three FDA-approved medications, i.e., methadone, buprenorphine, and naltrexone. Additionally, naloxone treatment may prevent opioid overdose deaths. The FDA approved three medications for alcohol use disorders: acamprosate, disulfiram, and naltrexone. The use of medications in the treatment of alcohol and drug problems can occur with or without behavioral therapies, i.e., individual therapy, group counseling, and family behavior therapy; cognitive-behavioral therapy, and motivational enhancement, and still improve outcomes. Studies have shown a range of patterns of use of MAT over time, and that patient functioning should determine the duration of treatment (Alcohol and Drug Abuse Institute, 2015).

While prescribing of MAT should not be contingent on simultaneous behavioral therapy, the APA guideline notes that "psychotherapy can enhance the effectiveness of pharmacotherapy," and also emphasizes, "pharmacotherapy enhances the efficacy of psychotherapy since these two treatments have different mechanism of action and targeted effects that can counteract the weaknesses of either treatment alone" (APA, p.38). In concert with the APA guideline, The SAMHSA *Treatment Improvement Protocol (TIP) 49 – Incorporating Alcohol Pharmacotherapies into Medical Practice* supports integrating behavioral interventions and counseling with an appropriate medication as this "can have a synergistic or additive effect and improve outcome" (p. 6). The *TIP 49* further notes, "Medication can reduce the cravings that disrupt recovery. When cravings are decreased, counseling is more likely to strengthen the individual's coping resources, which are necessary to promote medication adherence and behavioral change." Further, MAT for alcohol use disorder and opioid dependence are administered in physician office-based settings making treatment more available and improving continuity and accessibility of care. MAT for these disorders is "reasonable, practical and a desirable trend that should be greatly expanded" (SAMHSA, p.6).

A systematic review, summarizing 55 articles, focused on comparisons of medications and behavioral therapies to identify factors associated with higher rates of retention in MAT for opiate dependence, i.e., treatment with methadone, buprenorphine, and naltrexone (Timko, 2016). Authors noted that retention in treatment is a primary outcome in treating opiate dependence because retention is associated with patients' achieving outcomes, e.g., decreased drug use, improved social functioning and quality of life, and reduced mortality. This review found patients receiving naltrexone or buprenorphine had better retention rates (3-, 6-, or 12-months) than patients receiving no medication or a placebo. An advantage was found for methadone over buprenorphine as patients receiving methadone were more likely to be retained in MAT at 4- and 6-month follow-ups than those receiving buprenorphine/naloxone. Heroin-assisted treatment in the United Kingdom was associated with better retention than methadone among patients who were treatment refractory. Authors found that contingency management (CM) was the only behavioral therapy showing promise to increase retention in MAT for opiate dependence. They noted that although CM has relatively strong empirical support in the treatment of addictions, clinical practices do not always adopt its use due to barriers, e.g., clinicians' beliefs that it does not address the underlying causes of addiction. Authors suggested more randomized controlled

trials addressing longer-term association between medications and behavioral therapies (greater than one year) and outcomes of MAT such as retention.

A naturalistic study, using retrospective chart reviews (from admission through 24 weeks) of 56 admissions, examined the early experience of a specialty *community treatment program* for young adults (mean age – 23.1 years) with opioid addiction, the Young Adult Alternative Program (YAPP) (Vo et al., 2016). The treatment program featured the use of relapse prevention medications, i.e., buprenorphine or extended release-naltrexone (XR-NTX) with psychosocial treatment; treatment outcomes included retention and weekly opioid-negative urine tests. More than 80% of the patients entered the YAAP following withdrawal management at an affiliated program on the same campus where they began either buprenorphine or XR-NTX prior to discharge. Patients' beginning level of care was the intensive outpatient services (IOP – ASAM Level 2.1), which included three to five clinical sessions per week with gradual taper of both intensity and contact hours (depending on patient functioning). More than 75% of patients received treatment with buprenorphine and almost 25% of patients received XR-NTX treatment. Patients also received both group and individual counseling, physician visits for medication management, mental health therapy, and psychiatric treatment for co-occurring disorders.

Results of this review found retention rates of 65% at 12 weeks and 40 % at 24 weeks. Rates of opioid negative urine tests were 50% and 39% at 12 weeks and 24 weeks, respectively. Results found no differences between medication groups in rates of retention or rates of weekly opioid negative urine tests. Males had higher rates of retention across the 24 weeks and higher rates of opioid negative urine tests (possibly due to differences in baseline severity). Authors emphasized that this review "illustrates that integration of relapse prevention medications as standard of care is feasible and well-accepted among young adults in a community treatment setting" (VO, p. 9). They also highlighted the treatment pathway of induction at the inpatient level of care followed by continuation at the IOP and outpatient services (OP) level of care, while noting that most inpatient detoxification episodes do not provide relapse prevention medications. Authors concluded that the results of this study provide additional support for the effectiveness of integrating relapse prevention medication for opioid addiction in this young population. They further noted the success of delivery in a **community treatment setting** and in a model emphasizing medication initiation at the inpatient level of care (Vo et al., 2016).

A longitudinal time series analysis of data, using linear regression, included the number of 1995-2009 heroin overdose deaths from the Baltimore City Health Department as well as the number of patients receiving treatment with methadone, buprenorphine/naloxone, or buprenorphine for opioid dependence during the same period. The study examined the relationship between heroin overdose deaths and the number of patients treated with methadone and buprenorphine (Schwartz et al., 2013). After FDA approval of buprenorphine for the treatment of opioid dependence in 2002, the medication became available through formerly drug-free outpatient clinics, private physician offices and in some community health centers in Baltimore. From 1995 through 2009, the number of patients treated with opioid agonist treatment, i.e., methadone and buprenorphine, quadrupled while heroin overdose deaths declined. Authors acknowledged a "clear inverse relationship between heroin overdose deaths and expansion of buprenorphine treatment" and suggested that the expansion of evidence-based medication treatment of opiate dependence has the potential to reduce heroin overdose deaths.

While the use of MAT in medical or psychiatric practice settings represents a small percentage of those who both seek and need treatment for SUDs, the trend is increasing. Numerous barriers to utilization of these medications include reluctance on the part of patients to take medications along with their side effects and cost. Both substance abuse and MAT maintain a negative social stigma due to the belief that "one is simply transferring addiction from one drug to another" (Magellan, 2016). Treatment providers need to be educated on evidence-based MAT protocols in order to address pre-conceived notions of their ineffectiveness and reduction in patient motivation to adhere with behavioral treatments and counseling programs. In addition,

clinicians need to find value in devoting more time to patient management while employing MAT protocols in this patient population as this worthy investment is likely to reduce the possibility of relapse and/or readmission to a substance abuse inpatient/residential rehabilitation program.

Levels of Care

Over the last three decades**,** the substance abuse services system has shifted from primarily residential to non-residential settings. This has prompted the need to understand if substance abuse treatment processes and outcomes vary across service setting. A formal predictive ability analysis of the ASAM-PPC was conducted in 2003, where investigators rated patients (n=248) using both an ASAM criteria algorithm and a clinical evaluation algorithm. As hypothesized, patients receiving undertreatment (i.e., regular outpatient care when intensive outpatient was needed) predicted poorer drinking outcomes compared with appropriately matched treatment. In addition, overtreatment (i.e., outpatient treatment recommended but treated in inpatient rehabilitation) did not improve outcomes. Thus, researchers concluded that matching to the level of care is optimal, undertreatment is clinically harmful, and overtreatment is wasteful of resources. Moreover, it was found that aftercare treatment and participation in 12-step group programs along with patient attributes (i.e., motivation for change) and psychiatric symptom severity influence treatment outcome (Magura et al., 2003; Magura et al., 2005).

Other more recent studies have been conducted directly comparing the treatment effectiveness of residential versus outpatient substance abuse treatment. One large study conducted in 2007 using male and female prison parolees (n=4,165) who completed prison-based substance abuse treatment found that these subjects benefited equally from outpatient and residential aftercare, regardless of the severity of their drug/alcohol problem (Burdon et al., 2007). Another very large survival analysis (n=129,577) of drug-involved offenders on probation followed subjects for up to six years showing outcomes for outpatient substance abuse treatment were actually superior to residential services. Investigators reported that when comparing “time to fail” or recidivate, those receiving nonresidential treatment took longer – specifically, increasing the mean expected time until arrest for a felony by 22%. Conversely, those receiving residential treatment did not differ from those who received no treatment in time to failure (Krebs et al., 2009). In turning to the adolescent population, a meta-analysis conducted in 2010 of substance abusing teenagers (n=30 residential programs; 27 outpatient programs) also demonstrated statistically significant improvements in their problems for treatment in both levels of care. For outpatient programs, days abstinent (out of 90) increased from 52 to 64 days on average and for residential programs, days abstinent (out of 90) increased from 21 at intake to 45 at follow-up (Tanner-Smith et al., 2010). All of these findings contribute scientific data on the differential effectiveness of community-based residential and outpatient substance abuse treatment and underscore the need to continue empirical research examining the continuum of care construct and relevant outcomes.

The ASAM Criteria notes how withdrawal management has historically been considered an inpatient procedure, but with current medication protocols all but the most severe withdrawal syndromes can be managed effectively on an ambulatory basis. It also emphasizes that the continuation of withdrawal support at less intensive levels of withdrawal management is critical because persisting post-acute withdrawal discomforts can lead patients to a return to substance use (ASAM, 2015).

Conclusion

Assessment and treatment of substance use disorders are possible without major disruption to an individual’s life. Well-researched psychosocial treatments along with highly effective medications are accessible within the *community*. Treatment professionals, legislators, third-party payers and patient advocates bear the

responsibility to promote best clinical practices, support prevention services and eliminate potential barriers to treatment and recovery. Magellan's MAT program is based on professional standards, including those developed by the American Psychiatric Association's Physician Consortiuim for Performance Improvement® and in consideration of the American Society of Addiction Medicine's *National Practice Guideline for the Use of Medications in the Treatment of Addiction Involving Opioid Use (2015)*. Magellan endorses current research showing that the best treatment is at the *least intensive level of care* that manages the patient safely and comfortably and where the patient can be engaged in continued treatment that will lead to a sustained recovery from addiction. Magellan has been using MAT since 2011 in this way. Practitioners were educated regarding the benefits of MAT, and patients, at the time of discharge from inpatient withdrawal services, were begun on MAT. Through this educational effort, we were able to report a significant increase in the use of MAT medications over a one-year period. We believe that the use of MAT both alone and in combination with psychosocial therapies, can reduce cravings for both alcohol and opiates, and can reduce the need for admissions and readmissions. MAT can promote return to the community, employment and full contribution to society.

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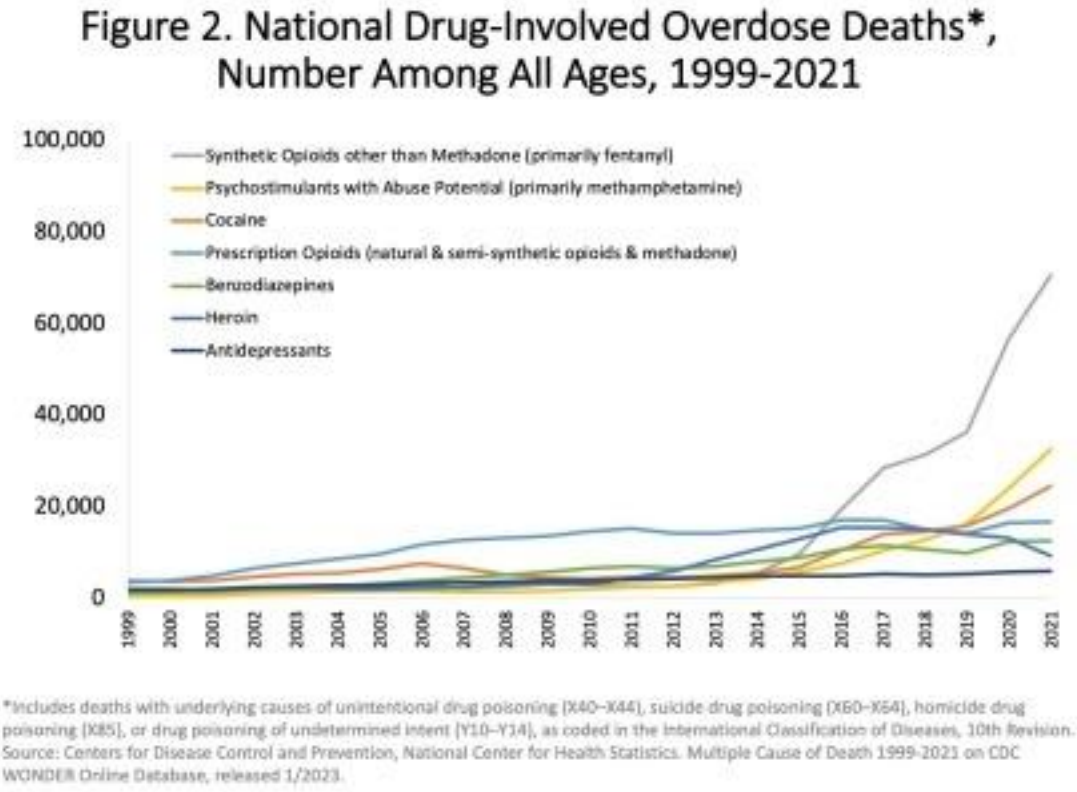

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