

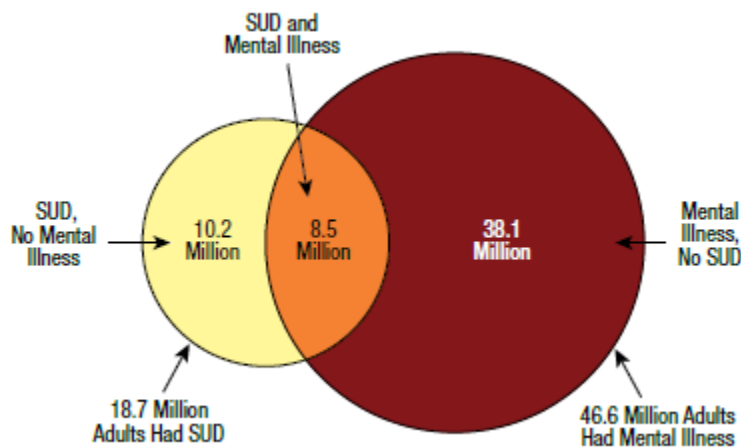
## Clinical Update: April 2019

Can you describe why there seem to be connections between substance use and mental disorders?

While one diagnosis may not necessarily lead to the other, there is a high degree of comorbidity between substance use disorder and mental illness. Even though awareness is increasing, it is very difficult to establish causality because some individuals with mental illnesses may have symptoms that are difficult to detect. It is believed that comorbidity may be due to the fact that the risk factors for both are similar or one may contribute or lead to the other.

According to multiple studies, about half of those with a substance use disorder (SUD) will experience some form of mental illness during their life.<sup>1-2</sup> Approximately 18% of individuals with mental illness also have a SUD (see Figure 1).<sup>3</sup> The National Institute on Drug Abuse (NIDA) states that those with a substance use disorder have high rates of anxiety disorders, depression, bipolar disorder, attention-deficit hyperactivity disorder (ADHD), psychoses and various personality disorders; and those with schizophrenia have higher rates of drug, alcohol or tobacco use than the general population.<sup>4</sup>

Figure 1: SUD and Mental Illness Comorbidity<sup>3</sup>



There are numerous common risk factors for both mental illness and SUD. Common brain region involvement, genetic vulnerability, epigenetic and environmental influences, stress and trauma have been shown to be present in the pathophysiology of SUD and certain mental illnesses. Many regions of the brain are affected by both SUD and mental illness. Circuits that control reward, decision making, impulse and emotions can be affected by drugs and depression, schizophrenia and other mental disorders through neurotransmitters such as dopamine, serotonin, glutamate, GABA and norepinephrine.<sup>4</sup>



One study estimated that 40-60% of an individual's susceptibility to SUD may be attributable to genetic factors.<sup>5</sup> There are many genes that may factor into mental disorders and addiction by altering neurotransmitters that are affected by drug use and dysregulation in mental illness, including dopamine and serotonin.<sup>6-7</sup> Epigenetics refers to the study of how genetic activity, expression and regulation can be affected by things other than gene sequence.<sup>4</sup> Environmental events such as chronic stress, trauma or drug exposure can cause changes in gene expression at certain stages of development, which alters function and can impact behavior.<sup>8</sup> These modifications can be passed down to the next generation, but may also be reversed with interventions or environmental changes.<sup>9-10</sup>

Stressors are a major risk factor for relapse in those in recovery and are a known risk factor for a wide range of mental disorders. High levels of stress can reduce prefrontal cortex activity and increase response rate in the striatum, which leads to increased impulsivity and decreased control of behaviors.<sup>11</sup> Early life and chronic stress can cause long-term changes in the hypothalamic-pituitary-adrenal (HPA) axis, which affects brain circuits that are involved in motivation, learning and adaptation, and are affected in those with SUD and mental illness.<sup>1-2, 12-13</sup> Physically or emotionally traumatized individuals are at a higher risk for drug use and SUD, with an associated increased rate of sub-optimal outcomes. One common example are individuals with post-traumatic stress disorder who may use substances to reduce anxiety and avoid dealing with trauma.<sup>14-15</sup>

Treatments that target stress have been shown to benefit those with depression, anxiety and SUD.<sup>16</sup> In addition, integrated treatment for both SUD and mental illness has been shown to be better than separate treatment for each diagnosis.<sup>2, 17-19</sup> Additional treatment guidance can be found in the NIDA document: Common Comorbidities with Substance Use Disorders.<sup>4</sup>

**Please call our clinical team at 1-877-552-3232 if you require additional information.**

NOTICE: The information above is intended as a resource for health care providers. Providers should use their independent medical judgment based on the clinical needs of the patient when making determinations of who to test, what medications to test, testing frequency, and the type of testing to conduct.

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