Mental Health, Substance Misuse, and Suicide: Shared Risk and Protective Factors

Introduction

Mental health, substance misuse, and suicide are major public health issues [1–3]. Separately, and together, they contribute to high direct and indirect costs to individuals, families, and society as a whole [4–6]. Further, evidence suggests that these issues often co-occur and can have a synergistic and/or additive relationship [7]. For example, over 50% of individuals with a substance use disorder have a co-occurring mental illness and 90% of children who died by suicide also had a mental health condition [8,9]. In light of this fact, it is important to understand the shared risk and protective factors of these issues and explore interventions that can effectively address risk factors and promote protective factors.

Mental Health / Illness

Almost 45 million U.S. adults suffer from a mental illness [10]. The term mental illness encompasses many different conditions, which fall under two overarching categories: any mental illness (AMI) and serious mental illness (SMI). AMI includes all recognized mental health diagnoses, where SMI is a subset of conditions characterized by more severe symptoms and outcomes [10].

The onset of mental illness typically occurs in adolescence through early adulthood, with 50% of lifetime mental illness cases beginning by age 14 and 75% occurring by the age of 24 [11]. Young adults (18-25) had the highest rates of AMI (22.1%)

Summary

- Substance misuse, mental illness, and suicide are major public health issues that often co-occur in additive or synergistic relationships.
- Certain populations, including adolescents, LGBT populations, and some racial and ethnic minorities are at an increased risk to experience substance misuse, mental illness, and suicide.
- Shared risk factors for substance use/misuse, mental illness, and suicide include: adverse childhood events; lack of parental supervision; and a family history of mental illness, substance use, suicidal behavior, and bullying.
- Shared protective factors include: strong familial, peer, and community connections; early detection and treatment of mental illness and/or substance use; and access to evidence-based mental health and substance use prevention and treatment services.
- Potential strategies to address the shared risk factors and promote protective factors associated with mental illness, substance misuse, and suicide include: investing in public education campaigns to reduce stigma, developing strategies to increase early and regular mental health/substance use screenings, and improving access to effective and affordable treatment.

and SMI (5.9%), followed by adults ages 26-49 (21.1% and 5.3%), and those 50 and older (14.5%) [10].

Rates of mental illness are higher among women and individuals reporting more than one race [10]. Additionally, certain groups of people are disproportionately affected by mental illness, including homeless populations; those that identify as lesbian, gay, bisexual, or transgender (LGBT); and those that are incarcerated [12–14].

Substance Use

Substance use refers to the use of alcohol, tobacco, and illicit drugs or the non-medical use of prescription pharmaceuticals. This can occur in a manner or amount that causes harm to the user or to those around them.

- Alcohol is the most commonly used and misused substance in the nation. More than half of all U.S. residents ages 12 and older used alcohol in the past month and nearly one-fourth engaged in binge drinking (National Survey on Drug Use and Health [NSDUH], 2016).
- Tobacco is the next most commonly used substance, with 17% of adults reporting current cigarette smoking (Behavioral Risk Factor Surveillance System [BRFSS], 2016). Tobacco use remains the leading cause of preventable death and disease in the U.S., resulting in approximately 480,000 deaths each year [15].
- Approximately 27.8 million Americans or 10.4% of the U.S. population ages 12 and older used an illicit substance in the past month; this includes the misuse of prescription pain relievers (NSDUH, 2016).
- Overall, nearly 20.5 million U.S. residents experienced a substance use disorder (SUD) in the past year and 19 million needed but did not receive treatment for their SUD (NSDUH, 2016).

There are differences in drug use prevalence across demographic groups in the U.S. For example, men are more likely to report heavy alcohol use, tobacco use, and illicit drug dependence than women [15,17]. American Indians and Alaskan Natives had the highest rates of tobacco and illicit drug use compared to other racial and ethnic groups [15,17].

Co-occurring Disorder (Dual Diagnosis)

Substance use disorders and mental illness often occur at the same time; this is referred to as a co-occurring disorder or dual diagnosis. Almost 40%, or 7.9 million, of U.S. adults with a past-year SUD also had AMI in the past year and 2.3 million individuals with a past-year SUD experienced an SMI [9]. Approximately 30% of adolescents with a past-year SUD experienced a co-occurring major depressive episode in the past year [9]. Rates of co-occurring disorders are highest among individuals between 18 and 25 years of age (29.3%) [9].

It is often difficult to accurately assess whether the SUD or mental illness presented first, and it is important to note that there is not necessarily a causal relationship between SUD and mental illness [18]. However, evidence suggest that there are some common pathways to the development of a co-occurring disorder: 1) abuse and misuse of drugs can lead to individuals experiencing symptoms of mental illness; 2) those experiencing a mental illness may begin self-medicating with legal and/or illegal substances; and 3) there may be overlapping risk factors that predispose individuals to developing co-occurring disorders [18,19].
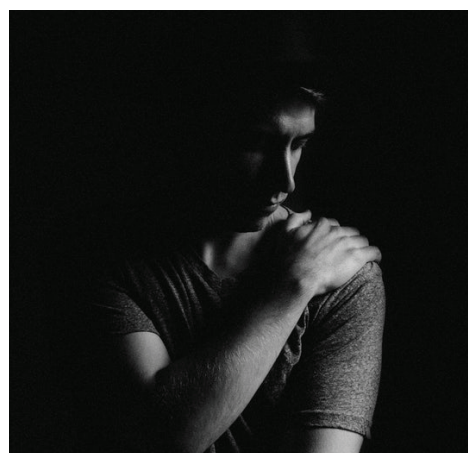
Suicide

Rates of suicide (death that results from a self-inflicted, intentional act) and suicidal behavior (acts or thoughts of self-harm with the intent of causing death) have been increasing in recent years [20–22]. Suicide is the 10th leading cause of death overall and the second leading cause of death in adolescents ages 15 to 19 in the U.S. [23,24]. Additionally, it is estimated that 1.4 million individuals in the U.S. made a suicide attempt and 10 million had thought about committing suicide in 2015 [2]. Death from

Shared Risk and Protective Factors

Evidence suggests that there are many shared risk and protective factors associated with the development of mental health conditions, substance use and misuse, and suicide and suicidal behavior [28–31]. This section provides a description of the shared risk and protective factors for mental illness, substance misuse, and suicide (see Figure 1).

Evidence has shown that mental illness, substance use, and suicide and suicidal behavior often co-

Figure 1. Shared Risk and Protective Factors Diagram

Source: SAMHSA [28]

suicide is more common in males, particularly white males; however, women are more likely to attempt suicide. Rates of suicide are highest in individuals between 45 and 64 years of age (19.6%), followed by those 85 and older [23]. Additionally, LGBT populations and current and former members of the military also have a higher likelihood of attempting and completing suicide [25,26]. Firearms, used in a little over half of all deaths by suicide, are the most common method, followed by suffocation (25.9%), and poisoning (14.9%) [27].

occur [7,30]. Substance abuse and mental illness have both been found to be associated with higher rates of suicide and suicidal attempts [32–35]. Mental health issues have also been found to be an underlying risk factor for the development of a substance use disorder, and conversely, substance use is sometimes cited as an associated risk factor for mental health issues [36–39]. Further, evidence suggests that these issues often have a synergistic or additive influence on each other [38].

Adverse childhood events have also been cited as risk factors for mental illness, substance use, and suicide. These adverse events can range from mental, physical, and sexual abuse, to other traumas, such as a sudden loss [36,40].

Other studies have looked at social environments, including family and peer relationships, as common risk factors for these conditions [39,41]. Lack of parental supervision is a cited risk factor for both substance use and mental illness [41]. Additionally, family history or mental illness, substance use, and/or suicidal behavior have also been linked to an increased likelihood of developing an SUD, mental illness, or suicidal behavior [36].

Another risk factor that has emerged is bullying, including direct person-to-person and cyberbullying [42]. Additionally, studies assessing shared risk factors often focus on specific populations, such as adolescents [43], since adolescence is a crucial period in the development of mental illness and substance use and subsequent suicide behavior. LGBT populations have also received significant attention as these populations have disproportionately high rates of mental illness, substance use and misuse, and suicidal behavior [31,44,45].

In addition, to identifying the common risk factors associated with these conditions, studies have also attempted to identify common protective factors that can assist in reducing resultant morbidity and mortality. Studies suggest that strong familial, peer, and community connections form an important protective factor for the prevention of mental illness, SUD, or suicidal behavior [36,43]. Access to evidence-based mental health and substance use prevention and treatment services [43] is also an important protective factor. Early detection and treatment of mental illness and/or substance use, particularly during adolescence, is an important factor in reducing lifetime incidence of these issues [43].

Indiana Epidemiology

Data about rates of substance misuse, mental illness, and suicide in Indiana were obtained from the National Survey on Drug Use and Health (NSDUH), Youth Risk Behavior Survey (YRBS), and CDC WONDER data on suicide.
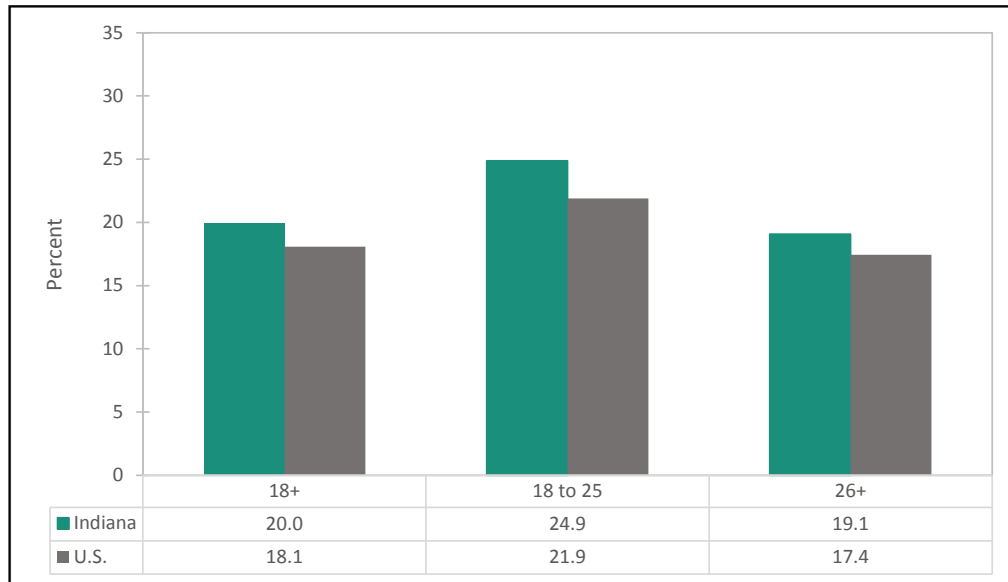
Prevalence of Mental Illness

Figures 2 and 3 present data on the percentage of individuals in Indiana with any mental illness (AMI) and those with a serious mental illness (SMI). Indiana's rates are compared to national rates. Indiana fares slightly worse than the rest of the country for these key mental health indicators. Twenty percent of persons 18 and over in Indiana had AMI, compared to 18.1% for the entire U.S. population. Rates of AMI were highest among young adults ages 18-25 years. The percentage of adults with an SMI in the past year in Indiana was almost 5% compared to 4% for the rest of the U.S. Rates of AMI and SMI in Indiana were highest among young adults ages 18-25 years.
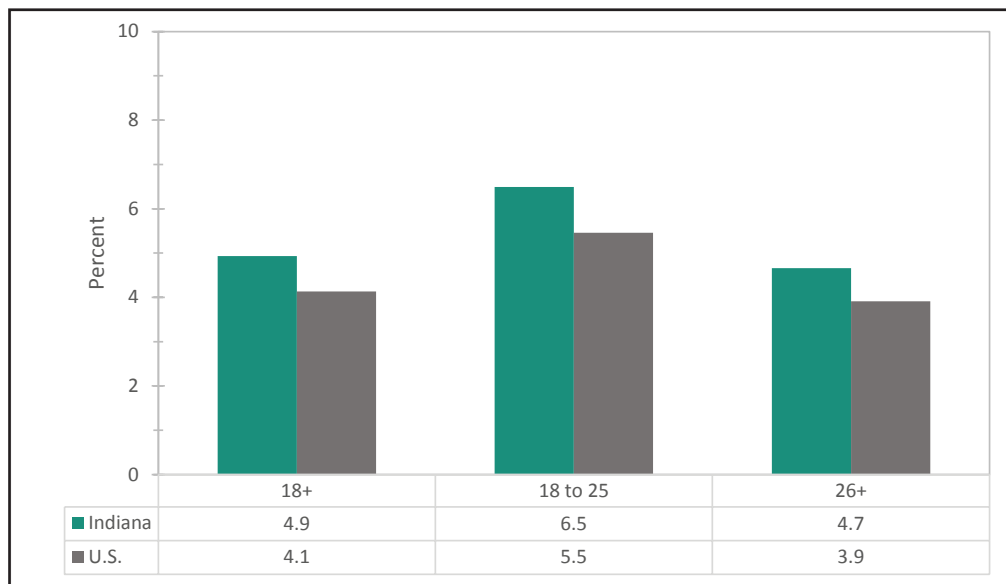
Figure 2. Percentage of Adults with Any Mental Illness in the Past Year (Annual Averages Based on 2015 and 2016 NSDUH)

	18+	18 to 25	26+
Indiana	20.0	24.9	19.1
U.S.	18.1	21.9	17.4

Source: SAMHSA [46]

Figure 3. Percentage of Adults with Serious Mental Illness in the Past Year (Annual Averages Based on 2015 and 2016 NSDUH)

|	18+	18 to 25	26+
Indiana	4.9	6.5	4.7
U.S.	4.1	5.5	3.9

Source: SAMHSA [46]

Prevalence of Substance Use

Figures 4 through 7 present data on the current status of binge alcohol use, illicit drug use, tobacco use, and SUD. With the exception of tobacco, the average percentage of binge alcohol use, illicit drug use, and substance use disorder were slightly lower than the national average. Approximately one in four adults, ages 18 and over, reported past-month binge alcohol use. Past-month binge alcohol use was highest among individuals between 18 and 25. A little over 8% of adults (18 and over) reported past-month illicit drug use, with the highest percentage of illicit drug use also occurring among individuals 18-25 years of age. Indiana has tobacco use rates higher than the national average across all age groups, with almost two-thirds of adults (18 and older) reporting past-month use of any tobacco product. Similar to alcohol and illicit drug use, those 18-25 had the highest percentage of past-month use. Lastly, 6.1% of Indiana residents (18 and older) had a substance use disorder in the last year, slightly lower than the U.S. rate of 6.7%. Again, those 18-25 had the highest percentage of a SUD in the past year.

Prevalence of Suicide

Figures 8-10 provide data on suicide and suicidal behavior in Indiana as compared to the U.S. averages. Figure 8 presents the percentage of individuals that had a serious thought of suicide in the past year, by age. Among adults 18 and older in

Figure 4. Percentage of Population Ages 12 and Older Who Engaged in Binge Drinking in the Past Month (Annual Averages Based on 2015 and 2016 NSDUH)

	12+	12 to 17	18 to 25	26+	18+
Indiana	23.4	5.6	38.0	23.1	25.4
U.S.	24.6	5.3	38.7	24.5	26.5
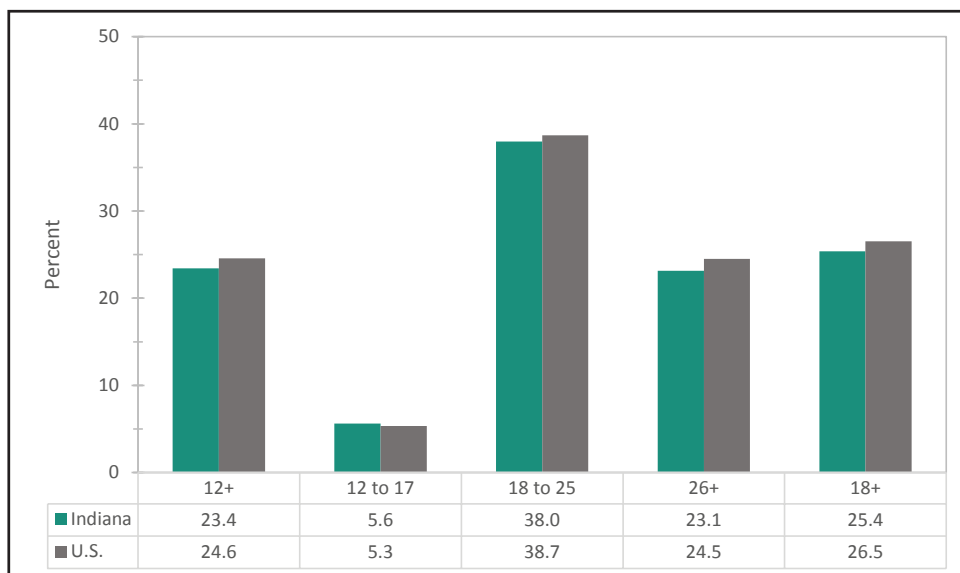
Source: SAMHSA [46]

Figure 5. Percentage of Population Ages 12 and Older Who Used Illicit Drugs in the Past Month (Annual Averages Based on 2015 and 2016 NSDUH)

	12+	12 to 17	18 to 25	18+	26+
Indiana	10.0	8.6	21.9	10.2	8.1
U.S.	10.4	8.3	22.8	10.6	8.5
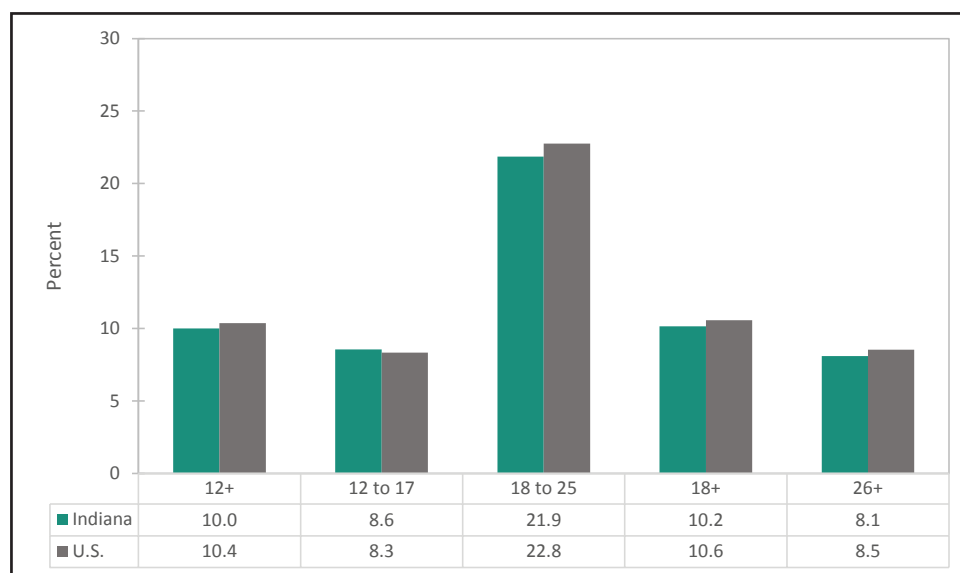
Source: SAMHSA [46]

Indiana, 4.6% had a serious thought of suicide in the past year, compared to 4% of the U.S. population. Similar to the mental illness and substance use indicators, those between 18 and 25 had the highest percentage of individuals with serious thoughts of suicide.

As is seen in Figure 9, the percentage of high school students (grades 9-12) that have attempted suicide has been increasing over time, with 6.6% of Indiana students in 2003 reporting an attempted suicide in the past year, compared to almost 10% in 2015.

Lastly, Figure 10 shows the rate of suicide over time in Indiana and the U.S. The rate of suicide has been increasing, with rates in Indiana being slightly higher than the national average. Indiana's suicide rate has increased from 12.3 per 100,000 in 2007 to 15.4 in 2016.

Opportunities for Prevention
**Reduce stigma associated with mental illness, substance use disorders, and suicide**
Mental illness, substance use disorders, and suicide have historically been associated with high levels of stigma. Stigma can manifest as public stigma, structural stigma, and/or self-stigma. Public stigma includes the attitudes and perceptions of these conditions among the general public [49,50]. Interventions focused on this level

Figure 6. Percentage of Population Ages 12 and Older Who Used a Tobacco Product in the Past Month (Annual Averages Based on 2015 and 2016 NSDUH)

	12+	12 to 17	18 to 25	26+	18+
Indiana	28.7	7.7	37.4	29.9	31.0
U.S.	23.7	5.7	31.5	24.6	25.6
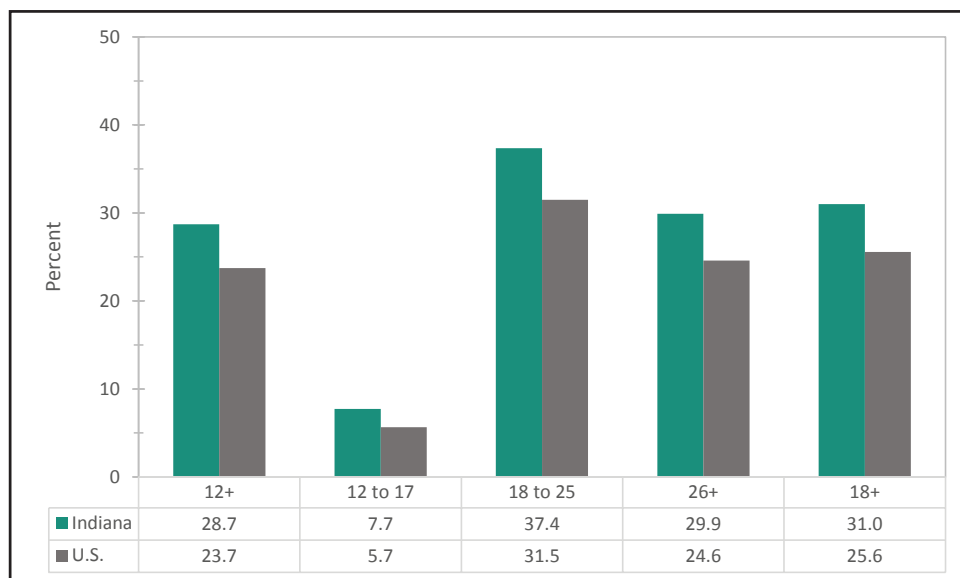
Source: SAMHSA [46]

Figure 7. Percentage of Population Ages 12 and Older with a Substance Use Disorder in the Past Year (Annual Averages Based on 2015 and 2016 NSDUH)

|	12+	12 to 17	18 to 25	26+	18+
Indiana	7.1	4.2	14.8	7.4	6.1
U.S.	7.6	4.6	15.2	7.9	6.7
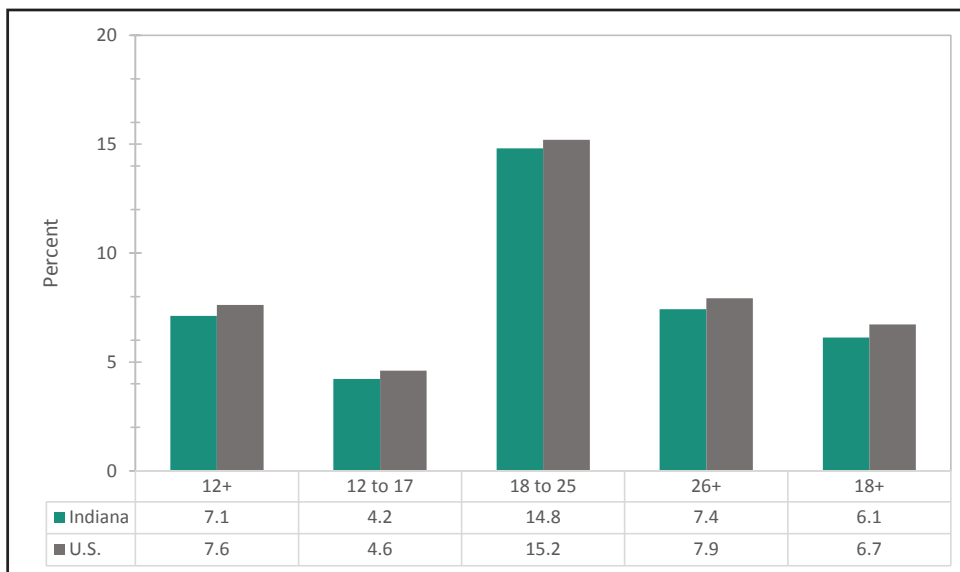
Source: SAMHSA [46]

of stigma should include public education campaigns designed to provide the general public with evidence-based facts about the underlying causes of mental illness, SUD, and suicide and dispel any misinformation or inaccurate stereotypes about individuals suffering from these conditions [49,50]. There is evidence to suggest that these public education campaigns can be effective in decreasing stigma. For example, a study assessing the effectiveness of a public media campaign in Scotland to address inaccurate portrayal of mental illness, found that the campaign was associated with a 17% decrease in the belief that individuals with mental illness are dangerous [51].

Structural stigma occurs in the public and private institutions that individuals with mental illness and SUD encounter. Common examples of institutions in which these individuals may experience this structural stigma include healthcare facilities and criminal justice or correctional systems [49,50]. Interventions to address this level of stigma should be designed to provide workforce with training and skills development that allows them to better address these conditions in the context of their interactions with individuals experiencing mental illness or SUD [50]. For example, programs aimed at providing medical students with training specifically designed to reduce stigma and improve understanding

Figure 8. Percentage of Adults Who Had Serious Thoughts of Suicide in the Past Year (Annual Averages Based on 2015 and 2016 NSDUH)

	18+	18 to 25	26+
Indiana	4.6	9.1	3.8
U.S.	4.0	8.6	3.3
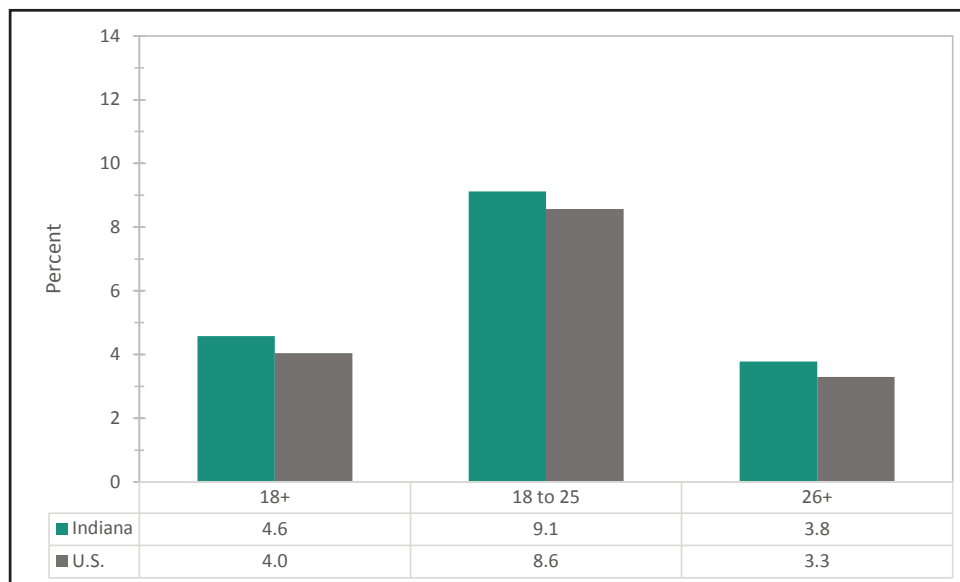
Source: SAMHSA [46]

Figure 9. Percentage of High School Students Who Attempted Suicide in the Past Year (YRBSS, 2003-2015)

	2003	2005	2007	2009	2011	2013	2015
Indiana	6.6	9.6	7.2	9.3	11.0		9.9
U.S.	8.5	8.4	6.9	6.3	7.8	8.0	8.6
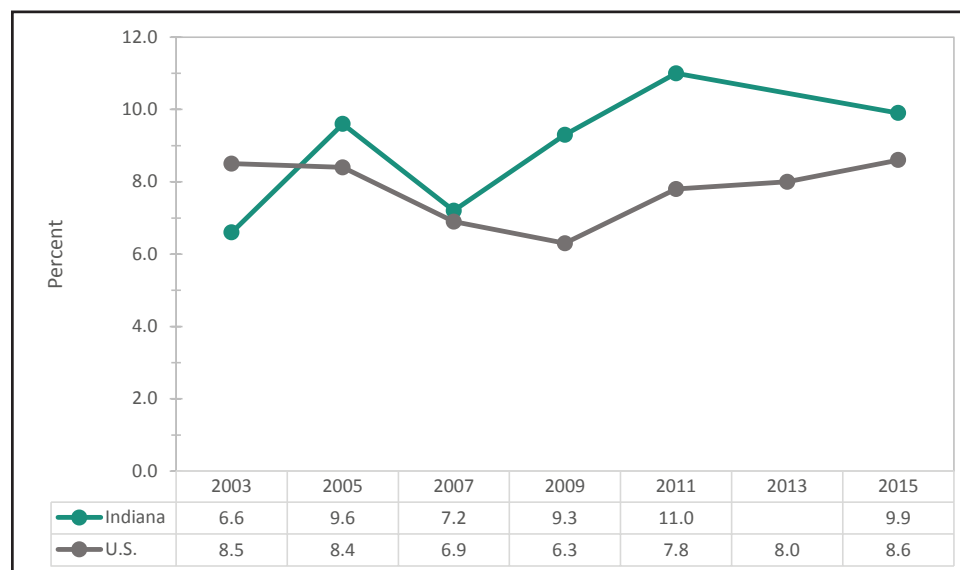
Note: 2013 YRBSS data are not available for Indiana due to a low response rate.
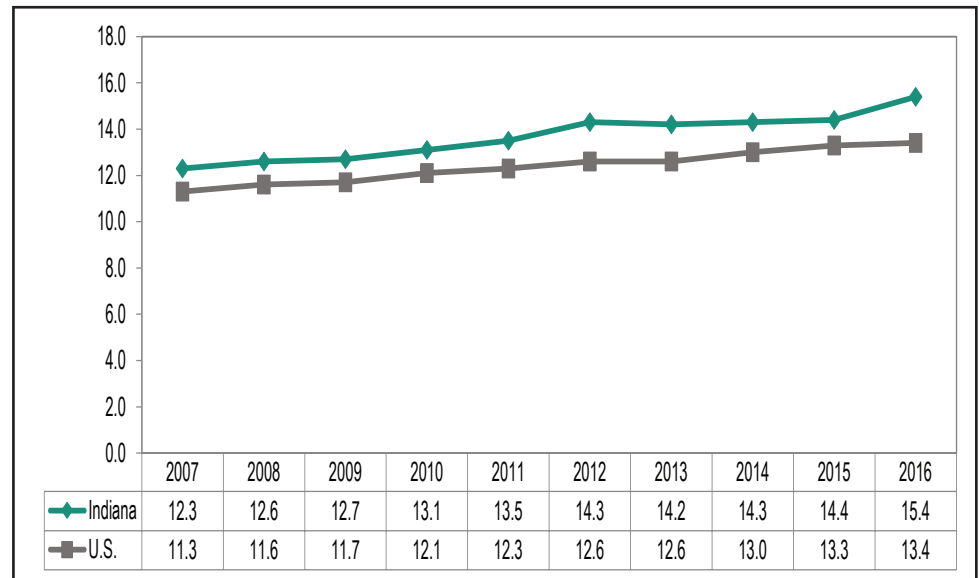Source: CDC [47]

of individuals with mental illness have been associated with improved confidence in the clinical skills needed to work with individuals with these conditions [49].

Lastly, self-stigma, which results when individuals internalize public and structural stigma that they encounter, can also have negative consequences for individuals with mental illness and SUD. Evidence suggests that interventions to address self-stigma, such as Acceptance and Commitment Therapy (ACT) groups (cognitive and behavioral therapy designed to increase psychological flexibility) or skills training and vocational counseling programs, can reduce feelings of shame and levels of internalized stigma, while decreasing feelings of social isolation [49,52].

Figure 10. Annual Suicide Mortality Rate per 100,000 Population (CDC WONDER, 2007-2016)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Indiana	12.3	12.6	12.7	13.1	13.5	14.3	14.2	14.3	14.4	15.4
U.S.	11.3	11.6	11.7	12.1	12.3	12.6	12.6	13.0	13.3	13.4

Source: CDC [48]

Early and regular mental health and substance use screenings

There is strong evidence to suggest that adolescence and young adulthood are particularly vulnerable times in the development of mental illness and/or substance use and misuse [53]. In light of this, it is important to identify strategies to increase access to early and regular mental health and substance use screenings [53]. These strategies should focus on increasing capacity for screening in specific settings, such as schools and primary care, and among specific high-risk populations, i.e. children in foster care [53]. There are many effective screening tools available. It is important to educate and train individuals working in these settings with high-risk populations on best practices on how to screen for these complex conditions [53].

Increasing screening capacity can be accomplished in two ways, either by hiring additional individuals with appropriate training or training existing personnel on how to screen effectively for these conditions [53]. This could be accomplished by raising state or local funding for schools to increase the number of mental health professionals in educational settings [54,55]. Evidence has shown that expanding mental health services in schools can improve access to mental health and substance use services by removing logistical barriers and decreasing stigma around care [54].

A strategy that has been promoted as an effective tool in increasing access to substance use screening and subsequent treatment is training primary care providers on conducting Screening, Brief Intervention, and Referral to Treatment (SBIRT) [56]. The use of SBIRT in clinical settings has been shown to produce short-term health benefits for individuals [56]. Additionally, many national organizations,

such as the American Academy of Pediatricians, the National Association of Pediatric Nurse Practitioners, and emergency physicians' groups, support and promote the use of SBIRT and other screening tools for mental health and substance misuse [53].

The Zero Suicide Initiative also focuses on increasing capacity of providers with a specific focus on screening for suicide risk among patients [57]. This program takes a systems approach to close the gaps in screening for and connecting individuals at risk for suicide to treatment in healthcare systems. Additionally, it recognizes the importance of engaging the broader community in supporting efforts to reduce suicide rates [57]. The Zero Suicide Initiative is based on the Henry Ford Health System's (Michigan) Perfect Depression Care model, which incorporated best practices in quality improvement and evidence-based care to address depression and suicide risk among its clients. This initiative saw an 80% reduction in the suicide rate among its clients [57]. Promoting and implementing the Zero Suicide Initiative in healthcare systems in Indiana could have a significant impact on the rates of suicide in our state.

Among adults 18 and older in Indiana, 4.6% had a serious thought of suicide in the past year, compared to 4% of the U.S. population.

Improve access to effective and affordable treatment
Mental illness and substance misuse are both complex conditions that require specialized, and often, ongoing care. Unfortunately, individuals with these conditions do not always have adequate access to appropriate services [58,59]. One in five adults with AMI in the U.S. do not receive needed treatment [59]. Additionally, only 18.5% of individuals 12 and older who needed treatment for a SUD received it [58]. Effective mental health and substance treatment services include a mixture of treatment options and services including medication, behavioral therapy and counseling, connections to social support services, continuing care, and integrated care to address potential co-occurring conditions [60]. Unfortunately, this comprehensive treatment approach is further hindered by a fragmented and undersized mental health workforce [61].

Strategies to improve access to behavioral healthcare should look at how we pay for these services. The Affordable Care Act included provisions that extended the Mental Health Parity and Addiction Equity Act, requiring that these services be covered as part of essential benefits with an equal level of benefits to those for the treatment of physical health problems [60]. It is important to examine how these services are being covered by state insurance programs, such as Medicaid and the Healthy Indiana Plan, and ensure that coverage for these services includes comprehensive treatment and removes barriers to access. In addition, providers as well as consumers need to be educated on what services are covered as part of these programs.

Conclusion
Mental illness, substance misuse, and suicide are complex conditions that have serious public health implications. Evidence suggest that these conditions often co-occur and share many of the same risk and protective factors. Additionally, certain populations are at increased risk of developing these conditions, including adolescents, LGBT populations, and some racial and ethnic groups. Nationally and in Indiana, several factors, including stigma, an undersized mental health workforce, and limited treatment options, inhibit the effective identification and treatment of these conditions. It is important to develop and invest in strategies to reduce stigma

and misconceptions, increase early and ongoing screenings, and improve access to effective treatments in order to better address mental illness, substance misuse, and suicide in Indiana.

References

1. . Centers for Disease Control and Prevention. (2018). Data and Publications - Mental Health. Retrieved from https://www.cdc.gov/mentalhealth/data_publications/index.htm
2. Centers for Disease Control and Prevention. (2017). Suicide: Consequences. Retrieved from https://www.cdc.gov/violenceprevention/suicide/consequences.html
3. U.S. Department of Health and Human Services. (2016.) Facing addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health. Retrieved from https://addiction.surgeongeneral.gov/surgeon-generals-report.pdf
4. Insel, T. R. (2008). Assessing the economic costs of serious mental illness. American Journal ofPsychiatry, 165, 663–665.
5. National Institute on Drug Abuse. (2017). Trends & Statistics. Retrieved from https://www.drugabuse.gov/related-topics/trends-statistics
6. Shepard,D. S., Gurewich, D., Lwin, A. K., Reed, Jr., G. A., & Silverman, M. M. (2016). Suicide and suicidal attempts in the United States: Costs and policy implications. Suicide and Life-Threatening Behavior, 46, 352–362.
7. National Institute on Drug Abuse. (2018, February). Common physical and mental health comorbidities with substance use disorders. Retrieved from https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/1155-common-physical-and-mental-health-comorbidities-with-substance-use-disorders.pdf
8. Department of Health and Human Services. (1999). The Surgeon General's call to action to prevent suicide. Retrieved from https://profiles.nlm.nih.gov/ps/access/NNBBBH.pdf
9. Substance Abuse and Mental Health Services Administration. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health. Retrieved from https://www.samhsa.gov/data/sites/default/files/NSDUH-FRR1-2014/NSDUH-FRR1-2014.pdf
10. National Institute of Mental Health. (2017). Mental illness. Retrieved from https://www.nimh.nih.gov/health/statistics/mental-illness.shtml
11. National Alliance on Mental Illness. (2018). Mental health by the numbers. Retrieved from https://www.nami.org/learn-more/mental-health-by-the-numbers
12. National Alliance on Mental Illness. (2018). LGBTQ. Retrieved from https://www.nami.org/find-support/LGBTQ
13. U.S. Department of Housing and Urban Development. (2010). 2010 annual homeless assessment report to Congress. Retrieved from https://www.hudexchange.info/resources/documents/2010HomelessAssessmentReport.pdf
14. James, D. J., Glaze, L. E., et al. (2006). Mental health problems of prison and jail inmates. US Department of Justice, Office of Justice Programs, Bureau of Justice Statistics Washington, DC.
15. Centers for Disease Control and Prevention. (2018). Smoking and tobacco use: Fast facts. Retrieved from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/
16. Lipari, R. N., Park-Lee, E., & Van Horn, S. (2016, September). America's need for and receipt of substance use treatment in 2015. Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data/sites/default/files/report_2716/ShortReport-2716.html
17. Substance Abuse and Mental Health Services Administration. (2017). Alcohol, tobacco, and other drugs. Retrieved from https://www.samhsa.gov/atod
18. National Institute on Drug Abuse. (2010). Comorbidity: Addiction and other mental illness. Retrieved from https://www.drugabuse.gov/sites/default/files/rrcomorbidity.pdf

19. Brook, J. S., Cohen, P., & Brook, D. W. (1998). Longitudinal study of co-occurring psychiatric disorders and substance use. Journal of the American Academy of Child and Adolescent Psychiatry, 37, 322–330.

20. McLean, J., Maxwell, M., Platt, S., Harris, F., & Jepson, F. (2008). Risk and protective factors for suicide and suicidal behaviour: A literature review. Scottish Government Social Research. Retrieved from https://dspace.stir.ac.uk/bitstream/1893/2206/1/Suicide%20review%5B1%5D.pdf

21. Substance Abuse and Mental Health Services Administration. (2015, September). Suicide prevention. Retrieved from https://www.samhsa.gov/suicide-prevention

22. Curtin, S. C., Warner, M., & Hedegaard, H. (2016). Increase in suicide in the United States, 1999–2014. Retrieved from https://www.cdc.gov/nchs/data/databriefs/db241.pdf

23. Drapeau, C. W., & McIntosh, J. L. (2016, December). U.S.A. suicide 2015: Official final data. American Association of Suicidology.

24. Centers for Disease Control and Prevention. (2018, January 31). FastStats: Adolescent health.Retrieved from https://www.cdc.gov/nchs/fastats/adolescent-health.htm

25. Haas, A. P., Eliason, M., Mays, V. M., Mathy, R. M., Cochran, S. D., D'Augelli, A. R., et al. (2011). Suicide and suicide risk in lesbian, gay, bisexual, and transgender populations: Review and recommendations. Journal of Homosexuality, 58, 10–51.

26. Kemp, J., & Bossarte, R. (2012). Suicide data report, 2012. U.S. Department of Veteran Affairs. Retrieved from https://www.va.gov/opa/docs/suicide-data-report-2012-final.pdf

27. American Foundation for Suicide Prevention. (2016). Suicide statistics. Retrieved from https://afsp.org/about-suicide/suicide-statistics/

28. Substance Abuse and Mental Health Services Administration. (2015). Risk and protective factors. Retrieved from https://www.samhsa.gov/capt/practicing-effective-prevention/prevention-behavioral-health/risk-protective-factors

29. Kelly, T. M., Cornelius, J. R., & Lynch, K. G. (2002). Psychiatric and substance use disorders as risk factors for attempted suicide among adolescents: A case control study. Suicide and Life-Threatening Behavior, 32, 301–312.

30. Thompson, E. A., Connelly, C. D., Thomas-Jones, D., & Eggert, L. L. (2013). School difficulties and co-occurring health risk factors: Substance use, aggression, depression, and suicidal behaviors. Journal of Child and Adolescent Psychiatric Nursing, 26, 74–84.

31. Lea, T., de Wit, J., & Reynolds, R. (2014). Minority stress in lesbian, gay, and bisexual young adults in Australia: Associations with psychological distress, suicidality, and substance use. Archives of Sexual Behavior, 43, 1571–1578.

32. Dragisic, T., Dickov, A., Dickov, V., & Mijatovic, V. (2018). Drug addiction as risk for suicide attempts. Materia Socio-Medica, 27, 188–191.

33. Shlosberg, D., Zalsman, G., & Shoval, G. (2014). Emerging issues in the relationship between adolescent substance use and suicidal behavior. Israel Journal of Psychiatry and Related Sciences, 51, 262–267.

34. Foley, D. L., Goldston, D. B., Costello, E. J., & Angold, A. (2006). Proximal psychiatric risk factors for suicidality in youth: The Great Smoky Mountains Study. Archives of General Psychiatry, 63, 1017–1024.

35. Goldston, D. B., Daniel, S. S., Erkanli, A., Reboussin, B. A., Mayfield, A., Frazier, P. H., et al. (2009). Psychiatric diagnoses as contemporaneous risk factors for suicide attempts among adolescents and young adults: Developmental changes. Journal of Consulting and Clinical Psychology, 77, 281–290.

36. Jones, T. M., Hill, K. G., Epstein, M., Lee, J. O., Hawkins, J. D., & Catalano, R. F. (2016). Understanding the interplay of individual and social-developmental factors in the progression of substance use and mental health from childhood to adulthood. Development and Psychopathology, 28, 721–741.

37. Groenman AP, Janssen TWP, Oosterlaan J. Childhood Psychiatric Disorders as Risk Factor for Subsequent Substance Abuse: A Meta-Analysis. J Am Acad Child Adolesc Psychiatry. 2017;56: 556–569.

38. Effinger JM, Stewart DG. Classification of co-occurring depression and substance abuse symptoms predicts suicide attempts in adolescents. Suicide Life Threat Behav. 2012;42: 353–358.

39. Monahan KC, Rhew IC, Hawkins JD, Brown EC. Adolescent Pathways to Co-Occurring Problem Behavior: The Effects of Peer Delinquency and Peer Substance Use. J Res Adolesc. 2014;24: 630–645.

40. Rytilä-Manninen M, Lindberg N, Haravuori H, Kettunen K, Marttunen M, Joukamaa M, et al. Adverse childhood experiences as risk factors for serious mental disorders and inpatient hospitalization among adolescents. Child Abuse Negl. 2014;38: 2021–2032.

41. Donovan JE. Adolescent alcohol initiation: a review of psychosocial risk factors. J Adolesc Health. 2004;35: 529.e7–18.

42. Van Geel M, Vedder P, Tanilon J. Relationship between peer victimization, cyberbullying, and suicide in children and adolescents: a meta-analysis. JAMA Pediatr. 2014;168: 435–442.

43. Elizabeth Kim BK, Oesterle S, Catalano RF, Hawkins JD. Change in Protective Factors Across Adolescent Development. J Appl Dev Psychol. 2015;40: 26–37.

44. Mustanski B, Andrews R, Puckett JA. The Effects of Cumulative Victimization on Mental Health Among Lesbian, Gay, Bisexual, and Transgender Adolescents and Young Adults. Am J Public Health. 2016;106: 527–533.

45. Miranda-Mendizábal A, Castellví P, Parés-Badell O, Almenara J, Alonso I, Blasco MJ, et al. Sexual orientation and suicidal behaviour in adolescents and young adults: systematic review and meta-analysis. Br J Psychiatry. 2017;211: 77–87.

46. Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (2016). National Survey on Drug Use and Health (NSDUH). Retrieved from https://www.samhsa.gov/data/population-data-nsduh

47. Centers for Disease Control and Prevention. (1991-2015). Youth Risk Behavior Surveillance System (YRBSS). Retrieved from http://nccd.cdc.gov/youthonline

48. Centers for Disease Control and Prevention. (1999-2016). CDC WONDER underlying causes of death (compressed mortality). Retrieved from http://wonder.cdc.gov/

49. Livingston JD, Milne T, Fang ML, Amari E. The effectiveness of interventions for reducing stigma related to substance use disorders: a systematic review. Addiction. 2012;107: 39–50.

50. Committee on the Science of Changing Behavioral Health Social Norms, Board on Behavioral, Cognitive, and Sensory Sciences, Division of Behavioral and Social Sciences and Education, National Academies of Sciences, Engineering, and Medicine. Ending Discrimination Against People with Mental and Substance Use Disorders: The Evidence for Stigma Change. Washington (DC): National Academies Press (US); 2016.

51. Dunion L, Gordon L. Tackling the attitude problem. The achievements to date of Scotland's "see me" anti-stigma campaign. Ment Health Today. 2005; 22–25.

52. Luoma JB, Kohlenberg BS, Hayes SC, Bunting K, Rye AK. Reducing self-stigma in substance abuse through acceptance and commitment therapy: Model, manual development, and pilot outcomes. Addict Res Theory. 2008;16: 149–165.

53. O'Connell ME, Boat T, Warner KE. Preventing mental, emotional, and behavioral disorders among young people: Progress and possibilities [Internet]. National Research Council and Institute of Medicine; 1994. Available: https://www.ncbi.nlm.nih.gov/books/NBK32775/pdf/Bookshelf_NBK32775.pdf

54. Weist MD, Paternite CE, Wheatley-Rowe D, Gall G. From Thought to Action in School Mental Health Promotion. Int J Ment Health Promot. Taylor & Francis; 2009;11: 32–41.

55. Evans SW, Glass-Siegel M, Frank A, Van Treuren R, Lever NA, Weist MD. Overcoming the Challenges of Funding School Mental Health Programs. In: Weist MD, Evans SW, Lever NA, editors. Handbook of School Mental Health Advancing Practice and Research. Boston, MA: Springer US; 2002. pp. 73–86.

56. Babor TF, McRee BG, Kassebaum PA, Grimaldi PL, Ahmed K, Bray J. Screening, Brief Intervention, and Referral to Treatment (SBIRT): Toward a Public Health Approach to the Management of Substance Abuse. FOC.

American Psychiatric Publishing; 2011;9: 130–148.

57.   Suicide Prevention Resource Center. Zero Suicide - In Health and Behavioral Healthcare [Internet]. [cited 30 Mar 2018]. Available: https://zerosuicide.sprc.org/about

58.   National Institute on Drug Abuse. Treatment Approaches for Drug Addiction [Internet]. [cited 29 Mar 2018]. Available: https://www.drugabuse.gov/publications/drugfacts/treatment-approaches-drug-addiction

59.   2017 State of Mental Health in America - Access to Care Data. In: Mental Health America [Internet]. 17 Oct 2016 [cited 29 Mar 2018]. Available: http://www.mentalhealthamerica.net/issues/2017-state-mental-health-america-access-care-data

60.   Substance Abuse and Mental Health Services Administration. Behavioral Health Treatments and Services. In: SAMHSA - Substance Abuse and Mental Health Services Administration [Internet]. 20 Sep 2017 [cited 23 Mar 2018]. Available: https://www.samhsa.gov/treatment

61.   Knickman J, Krishnan KRR, Pincus HA, Blanco C, Blazer DG, Coye MJ, et al. Improving access to effective care for people who have mental health and substance use disorders. Vital Directions for Health and Health Care. 2016; Available: https://nam.edu/wp-content/uploads/2016/09/Improving-Access-to-Effective-Care-for-People-Who-Have-Mental-Health-and-Sustance-Use-Disorders.pdf

62.   Lacktman NM. Key Takeaways From Indiana's New Telemedicine Law | Health Care Law Today. In: Health Care Law Today [Internet]. 28 Mar 2016 [cited 30 Mar 2018]. Available: https://www.healthcarelawtoday.com/2016/03/28/key-takeaways-from-indianas-new-telemedicine-law/

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