Establishing a System of Care for Severe and Refractory Dual Disorder in the State of Hawai'i

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Abstract

Dual disorder is the diagnosis of both substance use disorder and a psychiatric disorder in the same individual. This paper focuses on the cohort of persons with severe and refractory dual disorders (SRDD). This cohort exhibits disproportionately high use of emergency services, poor response to existing care resources, high risk of homelessness, and elevated risk of violent deaths. Clarifying the unique and problematic aspects of SRDD can provide direction for intervention and policy within the system of care in Hawai'i. Data regarding the prevalence of dual disorder in Hawai'i are reviewed along with Hawai'i data on emergency room utilization, and violent death rates relevant to a cohort of individuals with SRDD. The current system of care in Hawai'i is examined. Although not an official component of the public health system or system of care, the O'ahu Community Correctional Center is presented as a potential model for longer-term stabilization for those with SRDD. Interventions from the literature for dual disorders and their implications for SRDD are discussed. Based upon this review, the following recommendations are made: (1) strengthen specific dual disorder diagnosis data collection, including stratification of dual disorder severity, (2) enhance coordination and establish uniform state data governance across public safety, public health, and private sectors, (3) develop a care environment that makes long-term and integrated treatment available, (4) enhance case management services and patient engagement, and (5) encourage policy discussions of longer-term civil commitment for residential treatment for individuals with SRDD.

Keywords

dual disorders, co-morbidity, co-occurring disorders, mental health, substance use

Abbreviations and Acronyms

ADAD = Hawai'i Department of Health Alcohol and Drug Abuse Division
CARES = Coordinated Access Resource Entry System
ER = emergency room
MH-1 = Mental Health-1 (involuntary application for mental health evaluation submitted by the police to a qualified health care facility)
NSDUH = National Survey on Drug Use and Health
NVDRS = National Violent Death Review System
OCCC = O'ahu Community Correctional Center
PEH = people experiencing homelessness
QMC = Queen's Medical Center
SoC = system of care
SRDD = severe and refractory dual disorder
SUD = substance use disorder

Background and Introduction

Purpose

Recommendations are provided for the system of care (SoC) for persons with severe and refractory dual disorder (SRDD) in Hawai'i based on knowledge of the properties of SRDD and examinations of effective interventions in the current SoC and from the literature. Dual pathology or dual disorder is the coexistence of mental disorders with substance use disorders (SUDs).¹ Individuals with dual disorders exhibit high use of emergency services, high rates of homelessness, and high risk of premature death.²⁻⁵ Among those with dual disorders, there is a subgroup of individuals who have severe mental and SUD and who do not respond well to available treatment.^{4,6} These individuals are categorized as having SRDD. Individuals with SRDD have a disproportionately high use of emergency services, poor response to existing care resources, high rates of homelessness, and high risk of violent death. Thus, there is a need to identify and implement additional services to assist persons with SRDD with more sustained recovery. This article was developed as part of the Hawai'i State Department of Health Alcohol and Drug Abuse Division (ADAD) State Plan. For more background and context around the overall State Plan project, readers are referred to the introductory article of this special supplement.

Definition and Prevalence

According to the 2020 National Survey on Drug Use and Health (NSDUH),⁷ 17 million Americans have dual diagnoses. Among individuals with a mental illness, 47% also had an SUD, and 80% of individuals with an SUD had a mental illness.8 A 1990 study demonstrated that, compared to those without mental illness, individuals with schizophrenia were more than 5 times more likely to have an SUD, and individuals with bipolar disorder were 11 times more likely to have an SUD.9 A multicenter study in Europe found people who use cannabis daily have 3.2 times greater odds of having a psychotic disorder than never users.¹⁰ In addition, a Spain-based study showed that 76.5% of patients in treatment for a cannabis use disorder have a dual disorder, predominantly mood and anxiety disorders.11 The most common dual disorder is SUD comorbidity with major depressive disorder. Compared to persons with SUD only, those with SUD and major depression reported poorer quality of life, overall health, and vitality.¹²

Properties of SRDD

Many of the properties of dual disorders in general also apply to SRDD. Protective conditions for dual disorders include strong familial, peer, and community connections.¹³ Also, early detection of dual disorder increases treatment access.¹⁴ People with dual disorders have more frequent recurrence and relapse than people with substance use or mental health disorders alone. Accordingly, the costs of managing people with dual disorders may exceed the combined costs of treating people with co-occurring conditions separately.¹⁵ The co-occurrence of SUD among people with bipolar disorder⁴ and schizophrenia⁶ is known to be associated with poor treatment adherence.

Persons with SRDD frequently encounter the concept of wrong door syndrome.^{3,16} A wrong door incident occurs when a patient with dual disorder enters the system and receives diagnosis and treatment for only one of their conditions. Integrated treatment for both SUD and psychiatric disorders is known to be effective; however, nationally only 50% of SUD treatment facilities provided customized treatment programs for dual disorders in 2018.¹⁷ When dual disorders are not adequately treated, for some individuals, there may be a progression into SRDD.

Dual disorder in general is often underdiagnosed and undertreated.17 There are service gaps between the need for SUD and mental disorders treatment, and care delivery.^{3,18} Individuals with dual disorders experience an earlier onset of their index disease, have more severe disease manifestation, experience delayed treatment caused by diagnostic complexity, and exhibit decreased response to treatment⁴ because of the misalignment of available services and their needs. Health care utilization may be increased in terms of hospital days, emergency room (ER) visits, municipal emergency services in the form of Mental Health-1s (MH-1s; involuntary application for mental health evaluation by the police), and use of SUD and mental health services.^{3,4} Persons with dual disorders also experience significantly increased rates of psychiatric hospitalization and a higher risk of premature deaths, including those resulting from suicide, than their counterparts without comorbid mental disorders.³

Dual Disorders in Hawai'i

The NSDUH⁷ provides the only available survey estimates of the percentage of people who have dual disorders in Hawai'i. In 2019-2020, 7.1% of Hawai'i residents ages 12 and older (75 000 people) reported both alcohol and illicit drug use and any mental illness in the past year (**Table 1**) and 2.9% (29 000) reported both alcohol and illicit drug use and serious mental illness in the past year. Persons who used drugs and alcohol in the past year were significantly more likely to report any mental illness (P<.001) and serious mental illness (P=.003) than those with no drug or alcohol use. Persons with marijuana dependence or abuse in the past year (P=.01) and those with nicotine dependence in the past month (P<.012) were also significantly more likely to report any mental illness than their non-dependent counterparts. However, since these findings are based on a household survey, they may underestimate the number of people with dual disorders, as the survey does not adequately capture the disease burden for people experiencing homelessness (PEH), hospitalization, or incarceration.

There are limited emergency department- and treatment-related data on dual disorder prevalence in Hawai'i. According to the State of Hawai'i Behavioral Health Dashboard, in 2021, there were 1170 treatment consumers in Adult Mental Health Division, 721 clients in ADAD services, and 224 clients in Child and Adolescent Mental Health Division and Developmental Disabilities Division treatments, who had dual disorders.19 Also, in 2021, there were 878 emergency department discharges related to co-occurring SUD (as the primary diagnosis) and mental health disorder (as the secondary diagnosis), and 899 discharges related to co-occurring mental health disorder (primary) and SUD (secondary).¹⁹ Because patients with dual disorders are in treatment services in multiple sectors of the government in Hawai'i, a challenge is the lack of a uniform data system for data collection, prevention, identification, and/or management of dual disorders in Hawai'i.

SRDD in Hawai'i

Given the high rates of homelessness among persons with dual disorders⁵ and SRDD, anecdotal and/or approximate data have been gathered from a variety of agencies within the state to obtain relevant data. The following paragraphs are descriptions of data that were used with permission.

The Queen's Medical Center (QMC) in Honolulu County is a non-profit hospital located in geographic proximity to areas with a large population of PEH. A quality improvement workgroup at QMC (Hyperutilizer Team) has examined medical records of patients who have the greatest ER utilization, including the reasons for their frequent ER visits, and proposes solutions to reduce ER utilization. According to the QMC Hyperutilizer Team in 2021 there were 15 patients who made total of 718 ER visits.²⁰ Of the 15 people, 67% had SUD, 93% had behavioral health problems, and 67% were experiencing homelessness. Sixty percent of the 15 patients had both SUD and behavioral health problems. Moreover, 53% of them fell in all three categories: having SUD, behavioral health problems, and experiencing homelessness. This cohort is characterized by the highest utilization of emergency resources, including ambulance arrivals and frequency of police use of MH-1s, the involuntary detention of individuals with psychiatric disorders that present a danger to self or others. A single hyperutilizer, on average, accounted for approximately 47.9 ER visits, 21.7 ambulance arrivals, and 2.5 MH-1s. These results are disproportionately higher than those for the average ER patient who has 1.61 ER visits, 0.43 ambulance arrivals, and 0.03 MH-1s per patient visit/year. The hyperutilizer data demonstrate that the SoC lacks a treatment component necessary for sustained recovery in this cohort.

Table 1. Past Year Mental Health Indicator by Illicit Drug and Alcohol Use from the National Survey on Drug Use and Health 2019-2020,7 Hawai'i Data

awai'i Data			
	The National Survey on Drug Use an	d Health 2019-2020 Hawai'i Data	
Illicit Drug and Alcohol Use - Past Year ^a		No Past Year Any Mental Illness	Past Year <i>Any</i> Mental Illness ^d
No drug or alcohol past year use	Weighted Count	769 000	115 000
	Total % (CI)	72.7% (67.6% - 77.2%)	10.8% (8.1% - 14.4%)
Both drug and alcohol past year use	Weighted Count	100 000	75 000
	Total % (CI)	9.4% (7.1% - 12.3%)	7.1% (5.1% - 9.7%)
	Wald Chi-Square Test of Asso	ociation: <i>P-</i> value < .0001	
Illicit Drug and Alcohol Use - Past Year ^a		No Past Year Serious Mental Illness	Past Year Serious Mental Illness ^e
No drug or alcohol past year use	Weighted Count	858 000	25 000
	Total % (CI)	81.1% (76.8% - 84.7%)	2.4% (1.3% - 4.3%)
Both drug and alcohol past year use	Weighted Count	146 000	29 000
	Total % (CI)	13.8% (11.0% - 17.2%)	2.7% (1.6% - 4.5%)
	Wald Chi-Square Test of Ass	sociation: <i>P</i> -value = .003	
Marijuana Dependence or Abuse - Past Year ⁶		No Past Year Any Mental Illness	Past Year Any Mental Illness ^d
No/Unknown	Weighted Count	856 000	176 000
	Total % (CI)	80.9% (76.7% - 84.4%)	16.6% (13.4% - 20.4%)
Yes -	Weighted Count	13 000	14 000
	Total % (CI)	1.2% (0.5% - 3.0%)	1.3% (0.70% - 2.2%)
	Wald Chi-Square Test of Ass	sociation: <i>P</i> -value = .01	
Nicotine Dependence in the Past Month Based on NDSS Score [°]		No Past Year Any Mental Illness	Past Year <i>Any</i> Mental Illness⁴
No/Unknown -	Weighted Count	837 000	170 000
	Total % (CI)	79.1% (75.0% - 82.6%)	16.1% (12.9% - 19.8%)
Yes -	Weighted Count	32 000	20 000
	Total % (CI)	3.0% (2.0% - 4.5%)	1.9% (1.1% - 3.0%)
	Wald Chi-Square Test of Ass	sociation: <i>P</i> -value = .012	
Nicotine Dependence in the Past Month Based on NDSS Score		No Past Year Serious Mental Illness	Past Year Serious Mental Illness ^e
No/Unknown	Weighted Count	960 000	47 000
	Total % (CI)	90.7% (88.3% - 92.7%)	4.4% (3.2% - 6.1%)
Yes -	Weighted Count	44 000	7000
	Total % (CI)	4.2% (2.90% - 5.90%)	0.7% (0.3% - 1.40%)
	Wald Chi-Square Test of Ass	ociation: <i>P</i> -value = .071	

^a Illicit Drug and Alcohol Use - Past Year = having used alcohol and illicit drug (used cocaine, hallucinogens, heroin, inhalants, methamphetamine, or marijuana; or misused pain relievers, sedatives, stimulants, or tranquilizers) in the past year.

 ^b Marijuana Dependence or Abuse - Past Year = defined as having either marijuana abuse or dependence.
 ^c Nicotine Dependence in the Past Month Based on NDSS Score = classified as having nicotine dependence in the past month if their Nicotine Dependence Syndrome Scale (NDSS) score was greater than or equal to 2.75.

^d Past Year Any Mental Illness = any mental illness in the past year based on the 2012 revised predicted probability of serious mental illness.
 ^e Past Year Serious Mental Illness = serious mental illness in the past year based on the 2012 revised predicted probability of serious mental illness.

Hawai'i violent death data from the National Violent Death Review System (NVDRS) reveals the prevalence of dual disorders among individuals who died violent deaths. Hawai'i NVDRS data from 2015, 2016, and 2019 (the database does not include 2017-2018) revealed that 24% of decedents who were homeless (20 of 85) had dual disorders compared to 11.6% of decedents who were not homeless (129 of 1110).²¹ Dual disorder appears to be frequent among non-homeless people whose deaths were recorded in the NVDRS, and twice as common among PEH compared to those who were not experiencing homelessness. A limitation of this data may be that this database does not separate SRDD from dual disorder in general. However, the QMC Hyperutilizer data²⁰ showed that many patients with SRDD are also experiencing homelessness; it is possible that a portion of the decedents and homeless decedents in the NVDRS data were patients with SRDD. Those with SRDD may potentially be at risk for premature, violent deaths than those without SRDD or dual disorders.

Current System of Care in Hawai'i

In order to better understand the current SoC and needs related to substance use among the individuals with SRDD, information was gathered through conversations with relevant stakeholders such as administrators at the Hawai'i State Department of Health, QMC, treatment centers on O'ahu and neighbor islands. Monthly discussions with psychiatric service providers, mental health emergency workers, and emergency treatment providers also contributed to understanding the current SoC in Hawai'i. **Figure 1** describes the treatment programs that are not tailored for people with SRDD. Individuals with SRDD may have cycled through some of these services at some point of their disease progression without achieving recovery because the services are not suitable for their needs.

In each component of care shown in **Figure 1**, the patient can leave treatment, except for the Hawai'i State Hospital (identified in the last bullet of **Figure 1**, Inpatient, for mental health disorders only), which is only available for forensic patients with psychiatric disorders. Patients who have not entered the criminal justice system do not have access to Hawai'i State Hospital. Note that no long-term residential confinement for the non-forensic SRDD population is available in the current SoC. An important element that does not function within the current SoC in Hawai'i is the O'ahu Community Correctional Center (OCCC), which operates under the Department of Public Safety but provides a critical role in the SoC—a longer-term treatment setting. OCCC has 4 mental health treatment modules: psychiatric intensive, subacute, residential, and women's services for pre-trial detainees. Each module is a self-contained detention and psychiatric treatment environment, designed to manage the level of acuity in terms of staffing.

The mental health modules at OCCC provide an example of long-term involuntary treatment for people with SRDD. When a patient with SRDD is incarcerated in this facility and has psychiatric acuity, they remain in this care system for a relatively long stay compared to the existing treatment service array for the general population. One disadvantage of the OCCC's mental health modules for SRDD treatment is the absence of SUD treatment. While in OCCC's mental health modules, patients are prevented from being on the streets or other environmental adversity, as well as provided with sanitation, nutrition, medication, clothing, structure, safety, and therapeutic support. The extended time in treatment allows the distinction of substance-induced psychosis from chronic psychotic disorders. Clinical observation reveals that the same patients with SRDD who may have cycled repeatedly through the SoC with little to no benefit, are able to attain significantly more progress and stability while in these mental health modules, although there is no SUD treatment at OCCC. There is no data sharing between the Department of Health and Department of Public Safety so the treatment outcomes of these 2 systems are not available for statistical analysis.

Entry Points into the Current SoC for Patients with SRDD

Currently, there are 2 main entry points into the SoC for persons with SRDD – clinical or forensic. **Figure 2** illustrates how patients with SRDD enter the SoC but do not receive adequate treatment. The most common path into the SoC is through an ER at a hospital in Honolulu County, where patients with SRDD often arrive involuntarily on MH-1s. On average, patients stay in the ER for 16 hours. During the brief stay, patients are stabilized for intoxication and dangerous behavior. Upon discharge, patients are placed in the current SoC, which lacks the treatment resources needed to adequately treat SRDD.

Outpatient ambulatory assessment, and treatment services—predominantly clinic-based with limited mobile services. Some of these outpatient providers treat
dual diagnosis, while others treat psychiatric disorders only. These outpatient providers are the frontline for engaging and managing those patients with the greatest severity.

· Intensive outpatient treatment for either or both dual disorders.

· Partial hospital program for either or both disorders.

Longer-term treatment for SUD only (eg, Sand Island).

Inpatient, for mental health disorders only, may be a mental health disorder resulting from SUD (eg, Hawai'i State Hospital [only forensic and compulsory]).

Figure 1. Components of Existing Treatment Services for Mental Health, SUD, or Both, but Are Not Tailored for Patients with SRDD

Short-term residential treatment for SUD only. Some short-term residential treatment providers may recognize need for mental health treatment.

Another entry point into the SoC is forensic, through arrest and detention for alleged criminal conduct. A small number of the cohort of individuals with SRDD with criminal charges are placed in Honolulu pre-trial detention facility's mental health treatment modules. The treatment modules at the pretrial detention facility provides patients with a safe, structured, substance-free environment, as well as comprehensive mental health services. The average length of stay at the facility is between 6 months to 2 years. During their stay, some patients start to recover. However, after release, many experience substance use relapse, despite placement in residential substance use facilities. By contrast, many patients who are discharged from the psychiatric ER leave the SoC in less than 72 hours and return to homelessness and substance use.

The structured, drug-free environment of OCCC can lead to a period of recovery for patients with SRDD. The current SoC and the State of Hawai'i have civil commitment laws for psychiatric and SUDs.²² However, what is lacking is a structured treatment venue that would replicate the long-term compulsory aspects of OCCC and Hawai'i State Hospital, and also include specialized dual treatment of dual disorders (the shaded circle in **Figure 2**).

Entry points into the SoC for patients with SRDD are available in Honolulu County and most other island counties, however, more specialized treatment environments are only available in Honolulu. For example, Hawai'i, Kaua'i, and Maui Counties each have a pre-trial detention center, yet they do not have mental health modules like OCCC. Patients with complex and refractory psychiatric disorders are transferred to OCCC.²³

Challenges

One of the most fundamental problems of the current care delivery system, modeled after the traditional complaint-driven presentation to a clinic or hospital, is the notion that the patient must present for treatment to prove that they are motivated for treatment. However, patients with dual disorders (and SRDD) are unlikely to seek treatment²⁴; some lack decision-making capacity for their self-care.²⁵ One of the biggest barriers to care may be that patients with SRDD tend not to seek or receive treatment.^{4,6,24} According to clinical observations, they enter the SoC for serious medical complications or compelling consequences (such as criminal arrest or MH-1).



Interventions

Improving Data Collection

It is beneficial to clearly define and differentiate types of dual disorders to capture the heterogeneity of each subtype in diagnosis and data collection endeavors. Different subpopulations of people with dual disorders may have different characteristics. For example, the combinations of methamphetamine and psychosis, of opioids and depressive disorders, and alcohol and anxiety disorders are heterogenous.²⁴ Clearly differentiating subtypes of people with dual disorders including the general severity will provide more guidance than aggregating all cases and combinations of SUD and psychiatric disorders in diagnosis and data collection efforts.

Improving Treatment and Care Delivery

Findings from studies on dual disorders in general can provide guidance about improving treatment and care delivery for patients in this cohort. First of all, there is support for integrated treatment of dual disorders in the literature.^{17,26} A recent review of best practices indicates that integrated treatment is more effective than sequential treatment.²⁶ Hawai'i has a coordinated intake system for evaluation and disposition for substance use treatment and psychiatric treatment services: Hawai'i Coordinated Access Resource Entry System (CARES). Hawai'i CARES, used in conjunction with integrated treatment facilities for dual disorder and SRDD, can be beneficial in preventing wrong door incidents. Making integrated treatments available through Hawai'i CARES can help prevent patients with dual disorders from progressing to SRDD. Also, if patients with SRDD can readily be referred to integrated treatments regardless of their entry point into the SoC, they would have better access to services and achieve better treatment outcomes.

Research suggests that drug addiction treatments in general should be a long-term process.²⁷ Based on national outcome studies from 1969 to 1995,²⁸ which assessed approximately 70 000 patients, of whom 40-50% were court-referred or otherwise mandated to residential and outpatient treatment programs, 2 important findings emerged. One is that the duration of treatment was a predictor of the patients' treatment performance. After 3 months of time in treatment the outcomes were in a positive correlation with the length of time in treatment^{27,28}; moreover, it was found that at least 1 year was needed in order for a treatment to be effective.^{27,28} The National Institute on Drug Abuse²⁷ suggests that programs should seek ways to engage and keep patients in treatment, since patients often leave treatment before positive outcomes are stable. However, helping patients with SRDD to seek treatment is especially hard since some of their abilities to make decisions are impaired.²⁵

Case management is an important element for patients with dual disorder in general, providing a lifeline for continuity of care

as well as promoter of treatment engagement and adherence.²⁴ Case management can be used to engage a patient with dual disorder who is otherwise reluctant to enter/continue treatment. Even though case management is beneficial for engagement of patients in general, it alone is not sufficient for engaging patients who have an impaired ability to make decisions for themselves, as they are unlikely to seek or remain in treatment voluntarily. Nevertheless, case management may still be useful for patients with dual disorders before they progress to SRDD, or after patients with SRDD start recovering and are able to make conscious decisions for treatment.

Extended civil commitment for integrated residential treatment of SUD and mental illness is needed to adequately treat patients with SRDD. Patients with dual disorders (and SRDD) are unlikely to seek or stay in treatment voluntarily.^{4,6} As mentioned, recovery from addiction is a long-term process^{27,28} and integrated treatment achieves better treatment outcomes than sequential treatment^{17,26}; therefore, extended and integrated treatment is beneficial. Clinical observation reveals that patients with SRDD achieve more progress at OCCC's mental health modules, even though there is no SUD treatment at OCCC. So, a residential setting can be beneficial for patients with SRDD, as it will provide basic necessities, structure, therapeutic support, and protection in protracted substance-free environment. Some patients with SRDD have impaired decision-making capacity; from such individuals, consent to treatment is often not attained.²⁵ Given that patients with SRDD may be at increased risk for mortality, civil commitment may be one of the options. Hawai'i has a law for civil commitment to a psychiatric facility for mental illness and substance use²²; however, a venue for the type of longer-term care needed for recovery is missing in the SoC. Hence, civil commitment for long-term residential integrated treatment of SUD and mental illness is necessary to help patients with SRDD survive and recover.

Recommendations

(1) Strengthen specific dual disorder data collection, including stratification of dual disorder severity. This will require state-wide standardization of health data, including all medical hospitals as well as psychiatric units, residential treatments, partial hospitalization programs, intensive outpatient programs, outpatient services, and case management services. Data collection needs to be standardized throughout the SoC, and this would include different public sectors.

(2) Enhance coordination across different public sectors, including the Department of Health, Department of Public Safety, and Department of Human Services (which is in charge of housing- and homelessness-related policies). Dual disorder-related public functions are scattered across many divisions of the government. The structure of these various divisions needs to be partly modified to better serve patients with dual disorder. The structure should be set up with a "no wrong door" policy in mind, so that referrals to appropriate services can be made in a timely and seamless manner. A "no wrong door" policy would help prevent patients with dual disorder from progressing to SRDD.

(3) Develop legislative proposals for funding long-term (at least 1 year) and integrated treatment, including treatment venue, staffing, and funding for non-forensic patient care. These proposals would start with obtaining the current cost of care for the SRDD cohort in terms of emergency services and MH-1s in comparison to estimates of longer-term residential care.

(4) Enhance case management services. Case management should be in place to help patient engagement before, during, and after SRDD treatment. As noted above, case management coordination across and within public sector systems would be essential.

(5) Encourage policy discussions of protracted court-ordered commitment for integrated residential treatment for individuals with SRDD. Data demonstrating high psychiatric ER utilization and increased danger of mortality can help substantiate legislation supporting a greater than or equal to 12 months period of residential confinement for integrated treatment (see the shaded circle in **Figure 2**).

Conflict of Interest

None of the authors identify a conflict of interest.

Notice of Duplicate Publication

This article is based on the draft version of a chapter from the Hawai'i State Department of Health Alcohol and Drug Abuse Division (ADAD) State Plan, and all or a majority of the contents within will be subsequently also reproduced in the corresponding chapter of the final version of the ADAD State Plan (https://health.hawaii.gov/substance-abuse/state-plan/). While the ADAD State Plan may later be modified as a living document following its release, the material and content found in this article represents a snapshot of the highlights of the ADAD State Plan at the time of the article's publication.

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