

The Epidemiology of Co-Occurring Substance Use and Mental Disorders

OVERVIEW PAPER 8



COCE

SAMHSA's Co-Occurring Center for Excellence



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Substance Abuse and Mental Health Services Administration

Center for Substance Abuse Treatment

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The Co-Occurring Center for Excellence (COCE), funded through the Substance Abuse and Mental Health Services Administration (SAMHSA), is a leading national resource for the field of co-occurring mental health and substance use disorders (COD). COCE's mission is threefold: (1) to receive and transmit advances in treatment for all levels of COD severity, (2) to guide enhancements in the infrastructure and clinical capacities of service systems, and (3) to foster the infusion and adoption of evidence- and consensus-based COD treatment and program innovations into clinical practice. COCE consists of national and regional experts including COCE Senior Staff, Senior Fellows, Steering Council, affiliated organizations (see inside back cover), and a network of more than 200 senior consultants, all of whom join service recipients in shaping COCE's mission, guiding principles, and approaches. COCE accomplishes its mission through technical assistance and training delivered through curriculums and materials online, by telephone, and through in-person consultation.

COCE Overview Papers are concise and easy-to-read introductions to state-of-the-art knowledge in COD. They are anchored in current science, research, and practices. The intended audiences for these overview papers are mental health and substance abuse administrators and policymakers at State and local levels, their counterparts in American Indian tribes, clinical providers, other providers, and agencies and systems through which clients might enter the COD treatment system. For a complete list of available overview papers, see the back cover.

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EXECUTIVE SUMMARY

The paper is presented in two parts. Part 1 is intended for non-scientists and explains what epidemiology is and how it can be used by practitioners, administrators, and policymakers. Part 1 also presents some highlights from past epidemiologic studies of co-occurring disorders (COD) (see Literature Highlights) and introduces three major national studies that are regularly used as sources for information on the nature and extent of COD problems in the United States. Part 2 presents some detailed technical information on these three studies and is intended for audiences who have some familiarity with epidemiologic methods.

INTRODUCTION

This overview paper provides an introduction to epidemiology (see Table 1, Definitions) as it relates to co-occurring substance use and other mental disorders (i.e., COD). High quality epidemiologic data are a cornerstone of planning services and building service systems for persons with COD. The purpose of this paper is not to serve as a compendium for epidemiologic data and information, nor could such a compendium be contained in this limited number of pages. Rather, this paper is intended as a starting point for those who wish to use epidemiologic data.

PART I

Literature Highlights

Literature that addresses the issues of how many people have COD and the nature of these disorders is limited. Most of what is known about the number of cases of COD to be found among clients in substance abuse treatment or mental health settings has been drawn from convenience samples obtained in studies conducted in the 1980s to the mid-1990s for reasons other than generating prevalence data. Of these studies (summarized by Sacks et al., 1997), those conducted in mental health settings found 20 to 50 percent of their clients had a lifetime co-occurring substance use disorder, while those conducted in substance abuse treatment agencies found 50 to 75 percent of their clients had a lifetime co-occurring mental disorder (however, usually not at a level that impairs a person's ability to function normally and safely). These latter findings are supported by another study that reports that 72 percent of persons with a drug dependence disorder in substance abuse treatment had a co-occurring mental disorder at some point during their lifetime (Compton et al., 2000).

Of the COD cases reported in substance abuse settings, a substantial proportion either had a mental disorder of low severity or an antisocial personality disorder. In the former instance, substance abuse treatment has been found to be effective (Joe et al., 1995; Woody et al., 1991); in the latter instance, substance abuse treatment is widely acknowledged as the treatment of choice. The literature also suggests elevated rates of other forms of mental disorders among clients in substance abuse settings, including major depressive disorder and other mood or affective disorders, or posttraumatic stress disorder (Compton et al., 2000; Flynn et al., 1996; Jainchill, 1994; Regier et al., 1990), and indicates the diagnosis of more than one mental disorder is not unusual (Jainchill, 1994).

Key Questions

1. What is epidemiology and why is it needed?

As noted in Table 1, epidemiology is the study of the incidence, prevalence, and distribution of a disease in a population. In simple terms, this means that epidemiology answers the questions who, what, where, when, and “how much” for a particular disease. For example, an epidemiologic study might explore the number of people with COD, their demographic characteristics, their geographic distribution, where and if they are receiving services, and so on. Similarly, epidemiologic studies might look at risk factors for COD, the age of onset of COD, or the typical progression of COD.

At its core, epidemiology is *descriptive*—it tells us about the nature and extent of COD in the Nation, a State, or a community. This information is one critical component of policy, programmatic, and clinical planning and decisionmaking. Epidemiology is a way to look at the relationship of the factors that can result in the expression of COD. The classic model for

Table 1: Key Definitions

Prevalence	Denotes the percentage of persons who have a particular disorder at a given time within a specific population.
Incidence	Refers to the rate of occurrence or percentage of new cases (e.g., in a 6-month period) within a population.
Epidemiology	The study of the incidence, prevalence, and distribution of a disease in a population.

studying health problems is the epidemiologic triangle with sides that consist of *the agent* (the “what” of the triangle), *the host* (the “who” of the triangle), and *the environment* (the “where” of the triangle). The epidemiologist’s lens focuses on the relationship of these factors over *time* (the “when” that covers the entire triangle) to inform the public about the parameters of health conditions. Epidemiology cannot determine the causes of COD, but it can describe the incidence, prevalence, and distribution.

Epidemiologic studies have been conducted at the national, State, and local levels. In general, the more closely matched the population of a given study is to the population you are interested in, the more useful the information will be to you. Thus, State-level information is most useful for State-level decisionmaking, local-level data is most useful for local decisionmaking, and so on.

2. Why should substance abuse and mental health treatment providers concern themselves with epidemiologic data?

Epidemiologic data can be used to take some of the “guess work” out of day-to-day practice. Knowing the prevalence of COD in the population with which you work helps you keep vigilant for individuals who may need COD services. Because of the high prevalence of COD in all populations, an overarching principle articulated by COCE is that “Co-occurring disorders must be expected and clinical services should incorporate this assumption into all screening, assessment, and treatment planning” (CSAT, 2005).

Knowing that COD rates are high among specific types of individuals (e.g., the homeless, people who have experienced trauma) can assist in fine tuning your sensitivity to the possibility that a given client should be screened or assessed for COD. However, large national epidemiologic studies, such as those discussed later in the paper, may not accurately reflect what is going on in the specific population a provider serves. This is because trends at the local level may vary significantly from those at the national level. The closer the area surveyed reflects the catchment area of the program, the more valuable the data will be to that program.

3. Why should substance abuse and mental health treatment program administrators concern themselves with epidemiologic data?

Epidemiologic data are key to planning services that are responsive to your target population's needs. As already noted, the high prevalence of COD means that all substance abuse and mental health treatment programs must be prepared to address the needs of persons with COD. Epidemiologic data can assist in focusing program priorities, planning for workforce development, allocating resources,

and related activities. These data can also assist in identifying areas where specialized services and/or targeted outreach might be developed for specific populations such as pregnant/postpartum women, the homeless, incarcerated individuals, children, and adolescents.

4. Why should policymakers concern themselves with epidemiologic data?

Good epidemiologic information about COD is a major source of information for effective policymaking. Policymakers must identify unmet treatment and prevention needs, set priorities, anticipate workforce demands, determine appropriate resource allocations, and so on. It is difficult to imagine fulfilling these responsibilities at the Federal, State, or local level without a clear understanding of the nature and extent of COD. Policymakers must also often set priorities among the many health, mental health, and social problems States and communities face. Epidemiologic data provide a rational basis for allocating resources and help ensure that public resources are targeted to those most in need.

Although narrowly focused epidemiologic data (i.e., local or State) will be most useful for policymakers, much can be learned from national data if these data are interpreted in light of local circumstances. For example, rough estimates of the need for adolescent COD services could be developed by considering national data in light of the age distribution of a given State or community. Similarly, the very high prevalence of COD among the homeless means that knowledge of the numbers of homeless in a given area provides a rough index of the need for COD services for that population.

5. What are the major national epidemiologic studies related to COD?

Current national COD epidemiologic data are derived from three major studies:

- The National Comorbidity Survey (NCS) and its replication (NCS-R), funded by the National Institute of Mental Health
- The National Survey of Drug Use and Health (NSDUH), funded by SAMHSA
- The National Epidemiologic Study on Alcohol and Related Conditions (NESARC), funded by the National Institute on Alcohol Abuse and Alcoholism

The primary aims of these studies are given in Table 2 (see p.3).

As can be seen in the table, none of these studies is solely devoted to the issue of COD. They do, however, provide an overall picture of the current nature and extent of COD in the U.S. Results from these three studies are presented in Part 2 of this paper (see p.4).

Table 2: Major Aims of Three National Epidemiologic Studies

NCS-R (2001–2002)	NSDUH (2006)	NESARC Wave 1 (2001–2002)
<ul style="list-style-type: none"> • Determine the prevalence of, and trends related to, mental disorders, including substance use disorders • Study patterns and predictors of the course of substance use and other mental disorders, and evaluate effects of primary mental disorders in predicting the onset and course of secondary substance disorders • Estimate treatment service needs and provide information on factors associated with access to treatment services 	<ul style="list-style-type: none"> • Determine the extent of, and trends related to, licit and illicit drug use in the general population • Identify groups with a high risk for drug abuse • Estimate treatment service needs and provide information on factors associated with access to treatment services 	<ul style="list-style-type: none"> • Determine the extent of, and trends related to, substance use and other mental disorders in the general population • Determine the extent to which alcohol-related mental disorders are substance-induced disorders, and differentiate these substance-induced disorders from those reflecting true, independent mental conditions • Estimate treatment service needs and provide information on factors associated with access to treatment services

6. Are the national studies discussed in Question 5 the only source of epidemiologic information related to COD?

A wide variety of Federal data sources related specifically to substance abuse epidemiology are provided by the Office of National Drug Control Policy at <http://www.whitehousedrugpolicy.gov/drugfact/sources.html>.

Some researchers have done epidemiologic studies related to COD at the regional, State, or local levels (e.g., Anderson & Gittler, 2005; Davis et al., 2003; Kilbourne et al., 2006; Watkins et al., 2004). There may also be unpublished data available in your area (e.g., New York State Office of Mental Health, 2005), although the scientific quality of unpublished studies may be a concern. As noted earlier, these localized studies may be especially useful to practitioners, administrators, and policymakers in the geographic areas they cover.

7. Are epidemiologic reports written so non-scientists can understand them?

Unfortunately, as with much science in mental health and substance abuse, epidemiology is often not reported in ways that non-scientists can easily understand. Key findings are often summarized in abstracts of published articles and the executive summaries of reports. However, important issues related to definitions, measurement, and methods may not be readily apparent to lay persons. These issues affect the level of confidence that can be placed in the results, the conclusions that can be drawn, and the comparability of studies to one another. Here, the assistance of a person versed in epidemiology may be needed to make appropriate use of epidemiologic studies.

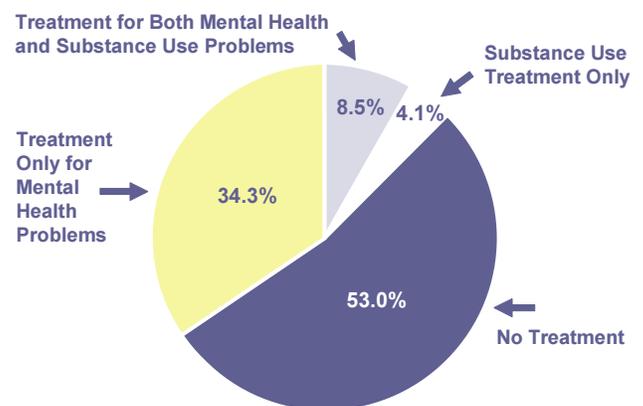
8. What is currently known about the epidemiology of COD?

Some detailed descriptions of data from the NCS, NSDUH, and NESARC are provided in Part 2 of this overview paper.

It is important to note that not all three of these surveys include important segments of the population such as those in the military, those who are incarcerated, and those in long-term care facilities. The surveys also do not include children and have limited data on early adolescents. Also, all three surveys use somewhat different criteria for defining substance abuse and other mental disorders and different ways of assessing these. Thus, there is some imprecision where the results of these studies are considered jointly.

Briefly, the NSDUH data estimate that within the general U.S. population, approximately 5.2 million people had COD in 2005 (SAMHSA, 2006). This estimate is very conservative since it includes only those individuals with a serious mental illness (SMI). Of those individuals with co-occurring disorders, very few receive appropriate treatment (see Figure 1).

Figure 1: Past Year Treatment Among Adults Aged 18 or Older With Both Serious Psychological Distress and a Substance Use Disorder, 2005.



5.2 Million Adults with Co-Occurring SPD and Substance Use Disorder
Source: (SAMHSA, 2006)

One important preliminary finding from currently available studies is that the onset of a diagnosable mental disorder often precedes the onset of a diagnosable substance use disorder (Grant et al., 2004; Kessler, 2004; Kessler et al., 2004). For the majority, adolescence marks the onset of primary mental health disorders, with substance use disorders occurring some 5 to 10 years later, during late adolescence and early adulthood (Kessler, 2004).

Future Directions

Clearly, more epidemiologic data related to COD are needed. In particular, practitioners, administrators, and policymakers need access to data that are relevant to the States and localities where they work. More emphasis on narrowly focused studies in addition to large national efforts would be welcome in COD as in most areas of health, mental health, and substance abuse treatment.

Practitioners, administrators, and policymakers also need access to reports that are presented in a clear and not overly technical manner. Meeting this challenge requires sensitivity to end users on the part of those who conduct and report epidemiologic studies and a commitment on the part of practitioners, administrators, and policymakers to become more familiar with the nature and limitations of epidemiology. Working alliances among epidemiologic researchers, treatment researchers, practitioners (from both the substance abuse treatment and mental health fields), administrators, and policymakers are an undeniable and immediate need. Such collaborations will help translate findings into improved services planning for clients with COD.

Future epidemiologic research should apply greater standardization of methods and reporting to permit more precise comparisons of results. COCE recommends that a standardized and minimal set of reporting categories be used in all studies. These should include reporting primary information on rates of any substance use disorder, any mental disorder, any serious or clinically significant mental disorder, any combination of mental and substance use disorders, any COD with a serious or clinically significant mental disorder, and either a substance use or a mental disorder.

PART 2

As noted in Part 1, the NSC, NESARC, and NSDUH are the main national sources of epidemiologic data related to COD. The discussion below highlights the main similarities and differences in the methods and the findings of these studies.

Study/Survey Summaries

The National Comorbidity Survey, funded by NIMH to build on the work of the Epidemiologic Catchment Area

study, was a longitudinal study and the first epidemiologic survey of substance use and mental disorders to use a national probability-sampling frame. At the time of this writing, reports are beginning to emerge from a series of NCS-related surveys, one of which, the NCS-R, conducted in 2001–2002, replicates the original 1991–1992 survey. Another, the NCS-2, conducts a longitudinal survey of a subset of participants from the original study, while a third, the NCS-A, focuses on adolescents. This paper reports data derived from a re-analysis that adjusted the original NCS prevalence rates and provided estimates using 1999 U.S. Census data (Narrow et al., 2002), along with data from some of the first publications associated with the NCS-R.

The National Epidemiologic Study on Alcohol and Related Conditions, a longitudinal survey funded by NIAAA, conducted its first wave of interviews in 2001–2002. A second wave of interviews was conducted in 2004–2005, but data from that wave were not available at the time this paper was written. NESARC used diagnostic guidelines from the *Diagnostic and Statistical Manual of Mental Disorders, 4th ed.* (DSM-IV) (American Psychiatric Association, 2000) to distinguish between independent and substance-induced mood and anxiety disorders. The NESARC also collected data on personality disorders and their co-occurrence with substance-related disorders.

The National Survey on Drug Use and Health provides annual data on prevalence of substance use, serious mental illness, related problems, and treatment in the United States. The NSDUH is sponsored by SAMHSA. Prior to 2002, this survey was called the National Household Survey on Drug Abuse (NHSDA). The NHSDA has been conducted periodically since 1972 and annually since 1991. The survey provides yearly national and State level estimates of alcohol, tobacco, illicit drug, and non-medical prescription drug use. Other health-related questions also appear from year to year, including questions about mental health and treatment. The estimates described in this paper derive from the 2005 NSDUH.

Methods

Similarities

Data from all three surveys were

- Drawn from large representative samples of the U.S. population
- Derived from multistage sampling designs
- The result of good response rates
- The product of state-of-the-art data collection and analytic techniques

Differences

1. The *sampling frames* (i.e., the target population sampled) differed among the three surveys. In general, persons residing in institutions (e.g., prisons) and homeless shelters were excluded from all three surveys, although the NESARC used the *U.S. Bureau of Census 2000 Supplementary Survey "group quarters inventory"* to obtain information from those residing in jails, prisons, mental and medical hospitals, nursing homes, colleges, and military installations (Grant et al., 2003). The NESARC and NSDUH included Spanish speakers; the NCS was limited to English speakers. Both the NESARC and the NCS-R surveyed adults aged 18 years and older; the NSDUH sampled adults and youths 12–17 years of age. (The NCS-A surveys a sample of adolescents, but these data are not yet published and were not used in prevalence estimates for the general population.)
2. The NSDUH is a *cross-sectional* survey (i.e., surveyors contacted respondents only once; no followup was conducted); the NESARC and NCS included both *cross-sectional* and *longitudinal* components (i.e., surveyors contacted the same survey respondents at multiple points over time, allowing correlation of predictors at one point in time with the later onset of a given disorder). Estimates based on longitudinal data were not available at this writing but are forthcoming.
3. The surveys defined mental disorders differently. The NSDUH does not distinguish among various disorders, but rather identifies people with *serious psychological distress* as having a "high level of distress due to any type of mental problem" at some time in the past year (SAMHSA, 2006). The NCS and NESARC, on the other hand, characterized specific disorders using criteria from the DSM-IV (American Psychiatric Association, 2000).
4. The three surveys measured mental disorders differently. The NSDUH uses the results from the K-6, a scale of nonspecific psychological distress, to estimate the 12-month prevalence of SMI in the population studied. The K-6 asks respondents how frequently during the worst month of the last year they experienced symptoms of psychological distress in six areas of functioning; the K-6 has been found to be a valid indicator of SMI, compared to traditional clinical assessments of survey respondents (Kessler et al., 2003). However, because of concerns about the validity of the K-6 as a measure of SMI, beginning in 2004 the NSDUH used it as a measure of "serious psychological distress." The NESARC used the *Alcohol Use Disorders and Associated Disabilities Interview Schedule—DSM-IV Version* (Grant et al.,

2003) to assess DSM-IV diagnoses, and the NCS used the *Composite International Diagnostic Interview* (Kessler et al., 2004)—both of these instruments are widely used and have good psychometric properties. NCS and NESARC codebooks indicate that the surveys assessed a considerable and comparable range of disorders. Only the NCS collected retrospective data on behavioral disorders with typical onset prior to age 18 (e.g., conduct and oppositional disorders).

Findings

Each of the surveys was concerned with individuals' prior year experiences. The information provided is adjusted to compensate for the incomplete data from the most recent NCS and NESARC surveys and for the differences among the three surveys in reporting categories. With the exception of the rates for major depressive disorder (determined using data from NCS-R), the NCS data discussed were drawn from the original data as re-analyzed (Narrow et al., 2002) using criteria to reflect clinical significance (e.g., asking respondents, "Did you take medicine more than once?" "Did your symptoms interfere with your life or activities a lot?"). Table 3 lists the key findings regarding COD that can be derived from these three surveys.

Table 3: Key COD Findings

- Substance use disorders are present in more than 9% of adults between the ages of 18 and 54.
- More than 9% of adults have diagnosable mood disorders.
- More than four million U.S. citizens have a serious mental illness and a co-occurring substance use disorder.

Similarities

1. Similar prevalence rates for past year substance use disorders in the general population were obtained by NSDUH, NESARC, and the recalculation of the original NCS data:
 - NSDUH, 9.3 percent of individuals 18 and older (SAMHSA, 2006)
 - NESARC, 9.4 percent of adults 18 and older (Grant et al., 2004)
 - NCS, 6 percent for adults age 18 and older (with clinical significance criteria described above)—for adults 18 to 54, rates were 11.5 percent (without clinical significance criteria) and 7.6 (with clinical significance criteria) (Narrow et al., 2002).¹

¹ A lower rate was reported for 12-month prevalence in a recent publication of the NCS-R data (see Kessler et al., 2004) that is less consistent with the other two surveys.

Two of the three surveys, NESARC (Grant et al., 2004) and NCS-R (Kessler, 2004), found prevalence rates for major depressive disorder to be approximately 7 percent; the NSDUH did not isolate rates for any individual mental disorder but reports only the general category of any SMI.

- Two surveys estimated that, within the general U.S. population, over 4 million people have COD. The NCS estimated that approximately 6.6 million people have a clinically significant mental disorder with a co-occurring substance use disorder. While a specific number is not available, the NCS-R is expected to find a number closer to the lower end of the 7 to 10 million range for adults with COD (SAMHSA, 2002). Similarly, the NSDUH survey from 2005 estimated that 5.2 million people have a serious psychological distress with a co-occurring substance use disorder (SAMHSA, 2006). (NESARC will provide its estimates in future publications.) It is important to remember that the operational definitions of SMI applied in the NSDUH and the assessment of "clinically significant disorder" used in the NCS data re-analysis have substantive differences.

Differences

- The NCS and NSDUH differ in their estimates of the number of U.S. adults (18 or older) who have a substance use or other mental disorder[s]. The NCS (Narrow et al., 2002) reported that 30.2 million Americans, age 18 and older, have a mental disorder and 12.1 million have a substance use disorder. In contrast, the NSDUH (conducted in 2005) estimated the two groups to be similar in size, reporting that approximately 24.6 million adults (18 or older) have serious psychological distress and about 20.2 million have substance use disorders (SAMHSA, 2006). These differences might reflect, in part, the fact that the NCS screened some individuals out from consideration who would have been diagnosed with a substance use disorder if thoroughly evaluated.
- The prevalence of mood disorders was assessed by two of the three surveys. The NCS estimated 11.1 percent (Narrow et al., 2002) and the NESARC estimated 9.3 percent (Grant et al., 2004).
- As noted under Similarities above, two of the surveys have published conflicting estimated rates for "any mental disorder." The disparity between the NCS-R finding of 30.5 percent (the NCS finding was 29.4 percent) (Kessler et al., 2005) and the NSDUH rate of 11.3 percent (SAMHSA, 2005) is likely a consequence of the difference in the definition of mental disorders that each survey used.

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