

The Epidemiology of Co-Occurring Substance Use and Mental Disorders

OVERVIEW PAPER 8



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Substance Abuse and Mental Health Services Administration
Center for Mental Health Services
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.

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Originating Offices

Co-Occurring and Homeless Activities Branch, Division of State and Community Assistance, Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services Administration, 1 Choke Cherry Road, Rockville, MD 20857.

Homeless Programs Branch, Division of Service and Systems Improvement, Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, 1 Choke Cherry Road, Rockville, MD 20857.

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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 of 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. Rather, this paper is intended as a starting point for those who wish to better understand the need for epidemiologic data or to identify key sources for epidemiological data on COD.

PART I

Literature Highlights

Literature that addresses the issues of how many people have COD and the nature of these disorders is limited. Recent epidemiologic studies that include data on COD are introduced under Question 5 that follows, with more detailed summaries of findings included in Part 2. In general, these studies have found that around five million U.S. adult citizens have a serious mental illness and a co-occurring substance use disorder (SAMHSA, 2006); more than 9 percent of adults have past year mood disorders (Grant et al., 2004; Kessler et al., 2005a); and more than 9 percent of individuals have past year substance use disorders (SAMHSA, 2006; Grant et al., 2004).

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 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 73 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; Kessler et al., 2005a).

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

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.

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 decision-making. Epidemiology is a way to look at the relationship of the factors that can result in the expression of COD. The classic model for 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 are 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, 2006, p. 3).

Knowing that COD rates are high among specific types of individuals (e.g., homeless people; 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 this 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, homeless people, 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 homeless people means that knowledge of the numbers of homeless people 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 the more recent National Comorbidity Survey – Replication (NCS-R), funded by the National Institute of Mental Health (NIMH)
- The National Survey on 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 (NIAAA) with supplemental support from the National Institute on Drug Abuse (NIDA)

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

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).

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.whitehousedrug-policy.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. 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-R, NSDUH, and NESARC are provided in Part 2 of this 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 and measuring substance abuse and other mental disorders. Thus, there is some imprecision where the results of these studies are considered jointly.

Table 2: Major Aims of Three National Epidemiologic Studies

NCS-R (2001–2003)	NSDUH (2005)	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

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 both serious psychological distress (SPD) and a substance use disorder. Of those individuals, very few receive appropriate treatment (see Figure 1).

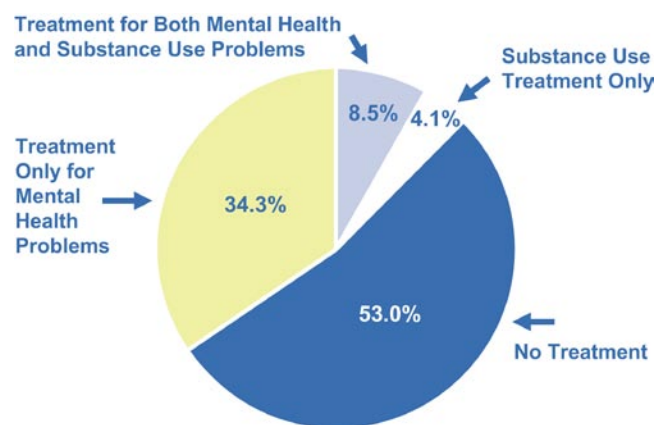
One important preliminary finding from currently available studies is that the onset of a diagnosable mental disorder often precedes the onset of a diagnosable substance use disorder. For the majority, adolescence marks the onset of primary mental health disorders, with substance use disorders occurring some 5 to 10 years later, during late adolescence and early adulthood (Kessler, 2004, p. 731).

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

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



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

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.

PART 2

As noted in Part 1, the NCS and NCS-R, 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 conducted in 1991-1992 and the first epidemiologic survey of substance use and mental disorders to use a national probability sampling frame. 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. The more recent study, the NCS-R, was conducted in 2001-2003, and is of primary focus in this overview paper.

The National Epidemiologic Study on Alcohol and Related Conditions, a longitudinal survey funded by NIAAA, with supplemental support from NIDA, 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 incidence and prevalence of substance use, serious mental illness, related problems, and treatment in the United States. The NSDUH is sponsored by SAMHSA and 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 are derived 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) were excluded from all three surveys, although the NESARC did include military personnel living off base and used the *U.S. Bureau of Census 2000 "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). People residing in homeless shelters were excluded from the NESARC and NCS surveys. 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 years and older. (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 specific disorders, but rather identifies people with *serious psychological distress* (SPD) as having a "high level of distress due to any type of mental problem" at some time in the past year (SAMHSA, 2006) and people experiencing *major depressive episodes* as experiencing for a period of at least two weeks "a depressed mood or loss of interest or pleasure in daily activities" and having symptoms that meet "the criteria for major depressive disorders as described in the DSM-IV" (SAMHSA, 2006 p. 81). The NCS-R and NESARC, on the other hand, character-

ized 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 SPD in the population studied (SAMHSA, 2006). The NESARC used the *Alcohol Use Disorders and Associated Disabilities Interview Schedule—DSM-IV Version* (Grant et al., 2004) to assess DSM-IV diagnoses, and the NCS-R used the version of the World Health Organization (WHO) *Composite International Diagnostic Interview (CIDI)* developed for the WHO World Mental Health (WMH) Survey Initiative (WMH-CIDI) (Kessler et al., 2004)—both of these instruments are widely used and have good psychometric properties. NCS-R and NESARC codebooks indicate that the surveys assessed a considerable and comparable range of disorders. For more information on mental health screening instruments, Kessler et al. (2003) examined these tools: the CIDI (short form), the K10/K6, and the WHO Disability Assessment Schedule (DAS)(2003).

Findings

Each of the surveys included data on individuals' prior year experiences. 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 the individuals sampled.
- More than 9% of adults have diagnosable mood disorders.
- More than five million adult 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 and NESARC:
 - NSDUH, 9.1 percent of individuals 12 and older (SAMHSA, 2006, p. 67)
 - NESARC, 9.4 percent of adults 18 and older (Grant et al., 2004, p. 812)
2. All three surveys, NESARC (Grant et al., 2004, p. 11), NCS-R (Kessler et al., 2005a, p. 620), and NSDUH (SAMHSA, 2006, p. 85), found prevalence rates for

major depression to be approximately 7 percent (NSDUH did not isolate rates for any individual mental disorder but reports only the general categories of serious psychological distress and major depressive episodes). NESARC and NCS-R also found similar prevalence rates for any mood disorder in their samples: 9.3% reported by NESARC (Grant et al., 2004), and 9.5% reported by NCS-R (Kessler, et al, 2005a).

- Two surveys estimated that, within the general U.S. population, over 5 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, p. 4-5). The NSDUH survey from 2005 estimated that 5.2 million adults have serious psychological distress with a co-occurring substance use disorder (SAMHSA, 2006, p. 84).

Differences

- NCS-R found that 3.8 percent of their sample reported any substance disorder (alcohol or drug abuse or dependence)(Kessler et al., 2005a) compared to the 9 percent ranges reported by NSDUH and NESARC (SAMHSA, 2006, Grant et al., 2004). These differences are likely a consequence of the difference in the scope and symptoms of disorders measured and the variations between methods used.

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COCE Senior Staff Members

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Jill G. Hensley, M.A., Project Director
Anthony J. Ernst, Ph.D.
Fred C. Osher, M.D.
Michael D. Klitzner, Ph.D.
Sheldon R. Weinberg, Ph.D.

National Development & Research Institutes, Inc.

Stanley Sacks, Ph.D.
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JoAnn Sacks, Ph.D.

National Opinion Research Center at the University of Chicago

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Deborah McLean Leow, M.S., *Northeast Center for the Application of Prevention Technologies*
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Pamela Waters, M.Ed., *Addiction Technology Transfer Center*
Mary R. Woods, RNC, LADAC, MSHS, *National Association of Alcohol and Drug Abuse Counselors*

COCE Senior Fellows

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Carlo C. DiClemente, M.A., Ph.D., *University of Maryland, Baltimore County*
Robert E. Drake, M.D., Ph.D., *New Hampshire-Dartmouth Psychiatric Research Center*
Michael Kirby, Ph.D., *Arapahoe House, Inc.*
David Mee-Lee, M.S., M.D., *DML Training and Consulting*
Kenneth Minkoff, M.D., *ZiaLogic*
Bert Pepper, M.S., M.D., *Private Practice in Psychiatry*
Stephanie Perry, M.D., *Bureau of Alcohol and Drug Services, State of Tennessee*

Richard K. Ries, M.D., *Dual Disorder Program, Harborview Medical Center*
Linda Rosenberg, M.S.W., CSW, *National Council for Community Behavioral Healthcare*
Richard N. Rosenthal M.A., M.D., *Department of Psychiatry, St. Luke's Roosevelt Hospital Center*
Douglas M. Ziedonis, M.D., Ph.D., *Division of Psychiatry, Robert Wood Johnson Medical School*
Joan E. Zweben, Ph.D., *University of California - San Francisco*

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- *Paper 3: Overarching Principles To Address the Needs of Persons With Co-Occurring Disorders*
- *Paper 4: Addressing Co-Occurring Disorders in Non-Traditional Service Settings*
- *Paper 5: Understanding Evidence-Based Practices for Co-Occurring Disorders*
- *Paper 6: Services Integration*
- *Paper 7: Systems Integration*
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For technical assistance:
visit www.coce.samhsa.gov, e-mail coce@samhsa.hhs.gov, or call (301) 951-3369



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