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THE CO-OCCURRENCE OF MENTAL DISORDERS AND ADDICTIONS:
EVIDENCE ON EPIDEMIOLOGY, UTILIZATION AND TREATMENT OUTCOMES

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Abstract

Objective: to review epidemiological findings on the co-occurrence of addiction and mental disorders and consider methodological and conceptual issues in interpreting them; to summarize findings on differential service utilization for co-occurring disorders; to consider the results of studies of effects of treatment of co-occurring disorders; and to draw conclusions about the implications of the empirical literature for future work and for the organization of services. Method: an analytical review of the literature, focusing primarily on recent crucial studies. Results: Co-occurrence of mental and addiction disorders is common in clinical populations and fairly common in the general population, but the implications of these findings for needs for service are unclear. Treatment outcome studies find that co-occurring disorders sometimes remit with treatment of an index disorder, sometimes are unaffected by the treatment, and sometimes interfere with the treatment; findings on when each of these occur are mixed. Despite programmatic arguments for integrated treatment models for concurrent disorders, the research base for such models is scanty and mixed in its results. Conclusions: Opportunities for epidemiological, service utilization, treatment outcome and treatment system research are outlined. Changes in the organization of mental health and addictions services should be studied as natural experiments for their effects on service delivery and outcome. Though the knowledge is presently lacking on which to base any large-scale change in service organization or provision, there are opportunities for small practical initiatives in improving screening, referral and coordination of services.

key words: co-occurring disorders; comorbidity; mental disorders; substance use disorders; service utilization; treatment system

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It has always been recognized that alcohol or drug problems and mental problems can coexist. As Glaser (1993) has noted, specific reports on the co-occurrence of addiction and psychiatric conditions can be found in the older literature. About 15 years ago, there began to be increased attention to the co-occurrence in the same client or case of mental problems and alcohol or drug problems, a condition variously known as "comorbidity", "dual disorders", and "concurrent disorders". In earlier years, this literature mostly reported rates of mental problems in those in addiction treatment, and rates of addiction problems in those in mental health treatment. More recently, substantial data has become available about the co-occurrence of diagnostic categories in the population at large.

Alongside the new epidemiological data, a literature has emerged about the implications of comorbidity for service provision. Some of this literature has argued expansively for particular solutions (e.g., Osher, 1996). Other contributions have taken a more jaundiced view, that we have "rediscovered the obvious and adorned it with an intriguing name" (Van Praag, 1996; see also Glaser, 1993). A very few studies, so far, have offered empirical data on the results of different service modalities or structures. The gap in the empirical literature has been filled by consensus conferences and discussion papers (e.g., Baker, 1991; Ries, 1994; Hood et al., 1996a, 1996b).

We shall briefly review the epidemiological findings on co-occurrence of mental disorders and alcohol and drug disorders for clinical populations and for the general population, and consider methodological and conceptual issues in interpreting them. Taking account of the outcome literature on treatment modalities for co-occurring disorders, we shall consider implications of the empirical literature for the organization of services for concurrent disorders.

FINDINGS ON RATES OF CO-OCCURRENCE

The literature on rates of co-occurrence has mostly been psychiatrically oriented and has thus mostly been oriented to establishing rates for diagnostic categories rather than for symptomatic behaviours. The diagnostic categories have varied considerably between different DSM editions (editions of the Diagnostic and Statistical Manual of the American Psychiatric Association). While the main emphasis in the literature, in accordance with psychiatric traditions, has often been on lifetime diagnoses, recent studies have also given results for current diagnoses, typically on a time-base of the last year. Since the current time frame is most relevant to a consideration of service provision, we will focus on it here. Measurements of the co-occurrence of disorders in a defined time-period will show a lower amount of overlap than measurements on a lifetime basis.

While the exact findings vary considerably with the clinical streams examined and with the indicators used, rates of alcohol or drug problems in mental health treatment samples are always

higher than rates of alcohol or drug problems in a comparable sample of the general population. Similarly, rates of mental problems in alcohol or drug treatment samples are invariably higher than rates of mental problems in the general population. In many North American clinical samples, comorbidity is quite common. Thus a sample of clients of mental health services in a California county (Weisner and Schmidt, 1993) found that 38% of clients reported one or more alcohol dependence symptoms in the previous year, and 20% reported one or more social consequences of drinking. These figures fell between the rates found in the general adult population of the county (27% for a dependence symptom, 3% for a social consequence) and the rates found in a sample of new arrests in the criminal justice system (65% for a dependence symptom, 53% for a social consequence). In the same study, 21% of mental health clients reported illicit use of three or more classes of drugs, compared with 1% of the general population and 12% of new arrests.

Comorbidity is also common in youth samples treated in a mental health service. In a study of adolescents and preadolescents referred to a behavioural problems treatment centre in British Columbia, most cases (89%) qualified for a conduct disorder diagnosis; of those with such a diagnosis, 52% met criteria for at least one type of substance use disorder (Reebye et al., 1995).

Concurrent mental problems, as measured by screening or diagnostic instruments, are also quite common in alcohol or drug treatment samples. Rounsaville et al. (1982) found that 44% of a sample of Connecticut opiate addicts entering treatment qualified for a current diagnosis of a depressive disorder. Carroll et al. (1993) found that 53% of a Connecticut sample of treatment-seeking cocaine users qualified as having a current psychiatric disorder, with affective disorders predominating. Ross et al. (1988), in a sample of Toronto outpatients in treatment for alcohol and drug problems, found that 68% qualified for a concurrent psychiatric diagnosis, with antisocial personality disorder, phobia, anxiety and depression the most common diagnoses.

When we turn to the general population, rates of co-occurrence are considerably lower, as already indicated by the California data reported above. Along with Wayne Hall (1996) in his recent review of this literature in an Australian context, we must rely on U.S. data for the best available data. From the report by Kessler et al. (1996) on the 1990-1992 National Comorbidity Study, a total of 28.8% of the population aged 15-54 qualifies for a current (i.e., in the last year) alcohol, drug or mental disorder diagnosis. This total is comprised of 20.5% with a mental disorder but no alcohol or drug disorder, 4.7% with an alcohol or drug disorder but no mental disorder, and 3.5% with a disorder of both sorts (recalculated from p. 20 footnote and Table 2). Stating the same results another way, 42.7% of those with any current alcohol or drug disorder show a concurrent mental disorder, while 14.7% of those with a current mental disorder show a concurrent alcohol or drug disorder. While these rates of co-occurrence are substantial, they are lower than the co-occurrence rates between various mental disorders. Thus Kessler (1995) notes that, "despite a substantial clinical literature pointing to the importance of comorbidity between affective disorders and substance use disorders ... and between anxiety disorders and substance use disorders,... these are among the weakest comorbidities" in a comparison of pairwise co-occurrences in 12 diagnostic categories.

No equivalent Canadian general-population data is available on a nationwide basis. A study of adult residents of Edmonton (Bland et al., 1988), using a 6-month time-period for "current" disorders, found rates of 12.8% with a mental disorder but no alcohol or drug disorder, 4.3% with an alcohol or drug disorder but no mental disorder, and 2.0% with a disorder of both sorts (recalculated from Table 2). This means that about 32% of those with a current alcohol or drug

disorder showed a concurrent mental disorder, while about 14% of those with a mental disorder showed a concurrent alcohol or drug disorder.

In the Edmonton data, as in other samples, men were considerably more likely to qualify for alcohol or drug diagnoses, while women were somewhat more likely to qualify for mental disorder diagnoses. Thus, 11.2% of men and 14.4% of women qualified for mental disorder diagnoses only, 7.7% of men and 0.9% of women for alcohol/drug diagnoses only, and 2.8% of men and 1.2% of women for both diagnostic classes.

There is not yet a fully comparable analysis available from the 1990 Ontario Mental Health Supplement (MHS) data. Using parallel methods and definitions to the US National Comorbidity Study, but a 10-year wider age range (15 to 64), 18.6% of Ontario MHS respondents qualify for one or more current alcohol, drug or mental disorder diagnoses -- a rate considerably below the U.S. findings (Offord et al., 1996). The rate for alcohol or drug disorders in the Ontario MHS -- 5.2% -- is also considerably below the U.S. rate of 8.2%. A report on comorbidity of alcohol and mental disorders in the Ontario sample (Ross, 1995) reported that 55% of those with a lifetime alcohol diagnosis also qualified for a lifetime mental health diagnosis.

ISSUES IN MEASURING CO-OCCURRENCE

The studies we have cited give an indication of the patterns of overlap between problems with drinking or drug use and mental problems, but their results should be interpreted with some caution.

The studies have been carried out in an era of ongoing revolution in psychiatric nosology and epidemiology. In the last two decades, three revisions of the Diagnostic and Statistical Manual of the American Psychiatric Association have been issued. The program these manuals have embodied -- to re-establish psychiatric diagnosis on a basis of operationalizable concepts and reproducible measurement tools -- has made possible the kind of advances in research on which we have drawn. But it is important to understand the limits of the conceptualizations and measurement tools in drawing policy conclusions from these studies.

In the first place, the fundamental criterion for justification of the new diagnostic structure and instruments has been their reliability rather than their validity (Kirk and Kutichins, 1992). That is, the concepts and operationalizations have been judged by the answer to the question, "can results with them one time be reliably reproduced at another time?", rather than the question, "how do the results relate to what we want to measure?"

In the second place, the epidemiological instruments which have been developed and used, particularly in general population samples, are designed to be used by trained lay interviewers asking questions of a respondent, and to be completed as expeditiously as possible. The time constraints have meant that corners have sometimes been cut in operationalizations of diagnoses, often in the direction of increasing "positive" cases. The methodology means that the concepts and their operationalizations do not necessarily map well onto the judgements which would be made by a trained clinician (Anthony et al., 1985; Helzer et al., 1985; Steiner et al., 1995). In the absence of clinical judgement, Negrete (1993) has remarked, assessments by epidemiological instruments "may be unspecific, produce too many symptoms and yield too many diagnoses of questionable validity". El-Guebaly has agreed that "there is a growing concern about the potential over-inclusiveness of the survey instruments" (El-Guebaly, 1993). Nor do the diagnoses yielded by the methods have any clear or specified relation to a need or a demand for service -- that is, they are not necessarily provide a

good indication of how much treatment services will be utilized if provided. In themselves, the figures of 28.8% for total current mental or alcohol/drug diagnoses in the U.S. NCS and 18.6% in the Ontario MHS indicate that the measures as a whole tend to be overinclusive in comparison to any likely provision of or demand for specific treatment services for mental or substance problems. As Offord has noted, the thresholds for diagnoses in nosologies are often "arbitrary and, as a result, the meaningfulness of disorders identified in community surveys in terms of indication for treatment, for example, is questionable" (Offord, 1995).

The alcohol and drug diagnoses, and the criteria for them, have been particularly subject to change in the course of the revisions of the DSM in the last 20 years. These changes, reflecting shifts in the ideological currents in the alcohol and drug field, have often reflected ad-hoc committee decisions rather than detailed empirical evidence. For example, the first substantial test of the applicability of a "dependence syndrome" concept and criteria modeled on alcohol to other psychoactive drugs did not appear until after the nosological change had been decided (Kosten et al., 1987). Its support for a single syndrome concept was at best equivocal.

A particular issue in measuring the co-occurrence of substance use and mental disorders is the conceptual relation of the signs and symptoms asked about to different diagnoses. If someone feels down and depressed after the effects of a drug have worn off, is that an indicator of depression or drug dependence or both? Bad behaviour after drinking or drug use may contribute to a diagnosis of drug abuse and also a diagnosis of antisocial personality disorder. Such matters can be regarded as substantive connections between the two diagnoses -- a point to which we will return. But, from a measurement point of view, they also mean that there is some artefactuality built into the measurement of co-occurrence of disorders (see also El-Guebaly, 1995).

THE MEANINGS OF CO-OCCURRENCE

As we have noted, the literature on co-occurrence of disorders has operated mainly at the level of diagnosis. In comparison with the underlying case and questionnaire material from which the diagnoses derive, this involves two powerful simplifications. One simplification is that a diagnosis usually reflects a partly aggregative and partly disjunctive scoring of the underlying symptoms or signs: for instance, that there are positive responses on three or more of a longer list of criteria or symptoms. The diagnosis thus may adequately characterize a clinical construct, but it is no longer revealing of the symptomatology. For instance, withdrawal symptoms are one of the criteria for alcohol dependence, but a diagnosis of alcohol dependence does not indicate whether or not withdrawal symptoms are present.

The other simplification is that a diagnosis is inherently dichotomous. This means that the choice of a threshold for making a diagnosis is fateful: rates of a disorder in a population can be varied dramatically with an apparently minor variation in the threshold. If an alcohol dependence diagnosis were to require meeting 2 or more DSM-III-R criteria, 10.2% of the U.S. adult population would qualify; if 3 or more, 5.2%; if 5 or more, 2.5% (Caetano and Room, 1994). Actually, three or more criteria are required for an alcohol dependence diagnosis in DSM-IV, but five or more criteria are required from a similar list for a pathological gambling diagnosis -- a threshold stringent enough to reduce the rate of current pathological gamblers in Ontario to below one-half of one percent (a "3 or more" threshold would yield about 2%; Ferris et al., 1996, Table 14).

Finding that a case qualifies for two different diagnoses thus tells us something, but not

enough to understand what is going on. The imagery summoned up by such phrases as "dual diagnosis" or "co-occurring disorders" is of two independent and equally severe conditions. But the severity may be in fact be quite different, making it sensible to give first priority clinically to the severe condition. Even in an epidemiological context, it has often seemed to makes sense to talk, as Kessler and his colleagues (1996) do in discussing their results, of a "focal disorder". And the presumption of independence needs to be examined; as Kessler et al. also note, in some circumstances qualifying with a second disorder may be "merely indicative of a more serious condition" on the focal disorder.

The issue of the relation between diagnoses takes on a special relevance in considering co-occurrence of mental and addiction disorders, since it is quite clear that there are a number of possible modes of relation (Meyer, 1986; Nunes et al., 1993; Mueser et al., 1995), including the potential for the course of one kind of disorder to produce the symptoms of the other kind. For instance, it is well established that heavy use of alcohol or other drugs can result in depression and other symptoms of mental distress (not to mention organic brain syndromes). On the other hand, it is also clear that psychoactive drugs can be used for "self-medication" of mental distress (just as prescribing such drugs for such purposes is a major element in the work of physicians), though quantitative evidence of this pattern has been somewhat elusive (Hamera et al., 1995).

Where the symptomatology in one domain is secondary to a primary disorder in the other, it can be argued that treatment should focus on the primary disorder; in this view, treatment directed at the secondary symptomatology may be wasted effort. Thus Schuckit (1985) argues that "it is important to attempt to distinguish primary and secondary disorders to indicate those psychiatric syndromes that might require more vigorous long-term treatment (e.g., primary schizophrenia or primary affective disorder). This is distinct from those syndromes occurring during active substance abuse (e.g., secondary affective disorder or secondary psychosis) because the secondary disorders are likely to clear on their own within days to weeks of abstinence". An alternative view would insist that the secondary symptomatology may have taken on a life of its own, and should also be treated in its own right. Lehman et al. (1994) go beyond this in recommending, "until another approach is proved better", that those with current mental disorders but with substance use disorders only in the past should nevertheless "be treated as if they have current dual diagnoses".

Though there is frequent mention in the literature of the various possible logical relations between mental and addiction diagnoses, evidence on their relative empirical importance is limited. One traditional approach to determining which disorder is "primary" and which "secondary" is by age of onset. Using this criterion in the NCS data, mental disorders would be primary in 80-90% of the cases with co-occurring alcohol or drug conditions (Kessler et al., 1996, Table 4). Kessler et al. note that this result may be partly artefactual, since age of a disorder was set by the first symptom rather than by first meeting full diagnostic criteria. Elsewhere, Kessler (1995) adds that "this approach confuses temporal priority with causal priority,... and can lead to serious errors of inference". Beyond this, it should be kept in mind that the ages of onset in epidemiological studies are typically in teenage or early adult years. What happened at such ages is not necessarily particularly helpful in determining how to treat a 40-year-old case.

CO-OCCURRENCE OF DISORDERS AND THE USE OF SERVICES

The programmatic literature on the need for enhanced services for comorbidity has usually

focused on the specific mental health or substance abuse treatment service systems. Recent data from a variety of sources, however, has emphasized the extent to which alcohol, drug and mental problems are managed by a much wider array of community services. The U.S. National Comorbidity Study (NCS), for instance, asked about treatment within the last 12 months in five agency categories: specialty addiction, specialty mental health, general medical, human services and self-help group. For those with alcohol dependence (with or without a mental disorder), neither the specialty addiction nor the specialty mental health categories ranked highest in service provision; rather, the most widely used by this group were the self-help group and human services categories (Kessler et al., 1996, Table 8).

Kessler et al. give detailed results on service utilization for a series of mental health and substance use diagnostic categories. Respondents who qualified for a current mental disorder diagnosis were moderately likely to have received some kind of treatment in the last year, whether or not they had a concurrent substance use disorder (36.3% for affective disorders, 26.5% for anxiety disorders). Those with an alcohol or drug abuse diagnosis were much less likely to have received any treatment (11.6% for alcohol abuse, 12.7% for drug abuse), while those with an alcohol or drug dependence diagnosis were about as likely to have been treated as those with affective or anxiety disorders (28.9% for alcohol dependence, 46.8% for drug dependence). A co-occurring disorder raised the probability of some treatment, though by varying amounts for different disorders. Thus the addition of a substance use disorder to an affective disorder raised the proportion treated only from 36% to 40%, while the addition of a mental disorder to alcohol dependence raised the proportion treated from 19% to 41%.

The presence of a co-occurring disorder also raised the likelihood of being treated within both the specialty addiction and the specialty mental health systems. Of those qualifying for a diagnosis of alcohol dependence without a mental disorder, 4% had been treated in addiction services and 5% in mental health services; among those with both alcohol dependence and a mental disorder, 7% had been treated in the addictions system and 17% in the mental health system. Analogously, 1% of those with an affective disorder and no substance use disorder had been treated in the addiction system, and 20% in the mental health system; for those with both an affective and a substance use disorder, the corresponding figures were 5% and 23%.

If we were to regard a diagnosis in the NCS as indicating *ipso facto* a need for treatment, then one-third or less of those needing treatment are receiving any from any source. If we zero in on services provided by the substance-specific and mental health-specific systems, the picture becomes even more dramatic. Though more than half of those receiving treatment for affective disorders are receiving them from the mental health system, even in this category the non-specialized services cumulatively provide services to more than twice as many cases (a case can receive services from more than one system). For substance use disorders, the contribution from the specialty addictive system is still smaller, although specialized self-help groups such as Alcoholics Anonymous pick up a considerable share of the load for dependence cases. While the co-occurrence of mental disorder means that an alcohol or drug dependent person is somewhat more likely to receive treatment both in the specialty addiction system and in the specialty mental health system, it is still a fairly small minority of those who meet diagnostic criteria who receive such services.

In their broad sweep, these NCS results are quite comparable to the results from the earlier U.S. Epidemiological Catchment Area study (Regier et al., 1993). Canadian epidemiological data

on service utilization have not thus far been analyzed at a level of co-occurring conditions. Of those with any current alcohol, drug or mental disorder diagnosis in the Ontario Mental Health Supplement, only 7.8% reported receiving services of any sort for mental, alcohol or drug problems in the last year, compared with 13.3% in the U.S. NCS. On the other hand, of those Ontarians who did receive such services in the last year, only 57.8% qualified for a alcohol, drug or mental disorder diagnosis. As the authors of this analysis comment, "if `need' is defined as having a diagnosis and `care' defined using the Supplement utilization questions, then the fit between `need' and `care' in Ontario warrants further scrutiny" (Lin et al., 1996).

As we think about the relation between epidemiological studies and service provision, two further dimensions need to be taken into account. One is the issue of the non-household population, which is typically omitted from epidemiological surveys (the NCS did include a college dormitory subsample). The part of the population which is institutionalized, living in group quarters, or homeless is relatively small, but it tends to make disproportionate demands on health and social services. In their study of a California county, Weisner et al. (1995) found that about 17% of the cases in five agency system samples -- alcohol treatment, drug treatment, mental health treatment, jail and welfare -- would not have been included in a household sample. This rate among agency clients is about three times the proportion in the total county population who are not in households. Rates of problem drinking and regular drug use in non-household clients were somewhat higher than for clients living in households.

The second is the issue of community service and management systems which lie outside the bounds of health services. Associated with mental disorders and alcohol and drug use are a wide variety of disabilities in different life-areas, such as employment, family life and daily functioning. Mental and substance use problems, and their co-occurrence, may be expected to bulk large in the caseloads of the various community support and disability systems. And much of the burden of managing the problems may fall on non-health service systems. Looking at where "problem drinkers" appeared in the case-loads of six community systems in a California county, Weisner (1995) found that the greatest numbers were being handled in the primary health system (42%), the criminal justice system (41%) and the welfare system (8%). The specific alcohol, drug and mental disorder systems accounted for the remaining 9% of the cases (alcohol treatment 4%, mental health treatment 3%, and drug treatment 2%). The distributions of cases using illicit drugs at least weekly varied from this only by a couple of percentage points (Weisner and Schmidt, 1995).

In the Ontario MHS, difficulties with role performance, difficulties in daily activities and trouble with relationships were measured as indicators of "psychiatric disability". These indicators might also be taken as markers for the potential demand of respondents on disability and social support systems. Those meeting diagnoses of lifetime affective or anxiety disorders or substance abuse problems showed considerably higher rates of dysfunction in daily activities and troubled relationships than those with no diagnosis now or in the past (Goering et al., 1996). But the highest rates of dysfunction and trouble were reported by those with "mixed disorders", almost half composed of those with a substance use and a mental disorder.

Again using lifetime measures, this time in the Edmonton population survey, Thompson and Bland (1995) showed that those meeting the diagnosis in a majority of the eight categories of mental disorders studied had elevated odds not only of alcohol and drug abuse, but also of divorce, of unemployment, of a felony conviction, and of spouse and child abuse. In this connection, it is notable

that both in the alcohol literature and in the mental health literature, there has been a renewed recognition of the link of the condition with violence. Evidence has accumulated from a variety of sources of a causal role of alcohol in violence (Room, 1983; Graham et al., 1996). Link et al. (1992) showed that those who had been treated for mental illness were more likely to report committing violent acts, with the relation mediated by a measure of psychotic symptomatology. Marzuk (1996) has recently argued that the link between violence and mental illness "is a real one.... The link appears strongest for the severe mental illnesses, particularly those involving psychosis, and ... it is increased by the use of alcohol and other psychoactive substances". Using data from two Epidemiology Catchment Area sites, Swanson (1994) accordingly found elevated rates of violent behaviour for most types of mental disorder (not for anxiety) and for alcohol and drug disorders. However, the addition of a mental disorder to an addiction disorder did not appreciably increase the rate associated with addiction disorders alone.

The cumulating evidence, then, is that both substance use and mental disorders are associated with substantially increased rates of disability and social dysfunction. It is a lively possibility that, even within the specialty services and the health system more generally, the match between "need" and "care" will be much closer when these issues of disability and dysfunction are taken into account. The pressures from family members at their wits' end, from concerned friends, and from court probation officers which are often behind entry into alcohol treatment (Room, 1989; Weisner, 1990) probably play just as important a role in entry into mental health treatment. The scattered evidence we have of increased disability and dysfunction suggests that these processes may operate even more strongly for those with concurrent disorders.

As we turn to issues of treatment modalities and service provision for concurrent disorders, this implies that there is a need for a much wider perspective than a focus just on the specific treatment systems for mental illness and addictions. As we have seen, other health providers are major players in the social handling of addiction and mental illness problems. But so are the various systems of social assistance, and the criminal justice system. To focus only on specific addiction and mental health services would be to miss most of the action.

EFFECTS OF TREATMENT FOR ONE DISORDER ON A CO-OCCURRING DISORDER

The most abundant empirical literature on treatment outcomes for co-occurring disorders is in the form of studies of the treatment of one disorder which also track current status and outcome on co-occurring disorders. These studies contribute evidence on the question of whether the existence of co-occurring disorders always requires treatment of both disorders. They also provide some evidence on the natural history and substantive relationships of co-occurring disorders, shedding some light on the patterns of interrelation over time.

A number of studies have found evidence suggesting that some, at least, of the co-occurring disorder is incidental to the disorder for which treatment is provided, implying no need for specific treatment. In a one-year followup of a sample of 239 treated alcoholic men with no previous record of severe depression independent of their drinking, Schuckit et al. (1994) found that few had newly qualified for major depression or other psychiatric syndromes either independent of their drinking (3%) or during heavy drinking (5%). The authors argue that "alcoholic men might not be at greatly elevated risk for other major psychiatric disorders independent of periods of heavy drinking.... At the same time the study demonstrates that during periods of heavy alcoholic intake severe, but often

temporary, depressions are likely to develop". A five-year follow-up of men treated for bipolar disorder found that co-occurrent alcoholism had usually remitted, and suggested that "the alcoholism in the bipolar group is secondary and depends on the existence of the manic phase" (Winokur et al., 1995). Similarly, a six-month follow-up study of 149 treated opiate addicts found that major depression and depressive symptoms often remitted without specific treatment (Rounsaville et al., 1982). Furthermore, there was much fluctuation in depressive symptomatology; most of those with a major depressive episode in the follow-up period were new cases. The authors concluded that depressive symptoms in opiate addicts entering treatment are often "stress related, in that addicts typically seek treatment due to some legal, social or pharmacological crisis", and suggested that "many depressive disorders in addicts are self-limiting conditions". Along the same line, a study comparing those with and without personality disorders in a sample of 210 opiate addicts in methadone maintenance (Cacciola et al., 1996) found pervasive improvements in drug and alcohol use scores, psychiatric symptomatology, illegal activities and family and social functioning, with little sign of a differential effect for those with personality disorders. A study of outcomes in an inpatient cocaine recovery clinic (Galanter et al., 1996) found that those with schizophrenia or major affective disorder did as well as others in terms of drug abstinence. A comparison of groups with opiate dependence only and with co-occurring major depression, antisocial personality disorder (APD), and all three diagnoses among 212 men receiving methadone maintenance and counselling (Alterman et al., 1996) found few significant differences in improvements in drug and alcohol use and psychiatric symptomatology, though there was limited evidence of poorer treatment response for those with APD only.

On the other hand, some studies have found evidence that untreated co-occurring conditions did not show a net improvement. In a one-year follow-up of treated cocaine abusers with half showing current psychiatric comorbidity at intake, Carroll et al. (1993) found that rates of current psychiatric disorders had not changed, except for a significant but small increase in anxiety disorder. And a one-year followup comparing three mental health-oriented treatments of homeless mentally ill people (Morse et al., 1992) found substantial treatment effects on homelessness, psychiatric symptoms, income and self-esteem, but no net effect on the level of weekly consumption of alcohol. In fact, net alcohol consumption rose for those treated by the modality ("continuous treatment team") which produced the greatest effect on homelessness.

There is also some evidence that a co-occurring disorder may affect the results of treatment oriented to an index disorder. In a six-month follow-up of male veterans treated in alcohol and drug abuse rehabilitation programs, McClellan et al. (1983) found that the strongest predictor of lack of treatment response was severity of psychiatric symptoms (see also McClellan (1986)). There have been findings of this type in several other studies, but not in all. Thus Powell et al. (1992) found that the co-occurrence of a depression or an antisocial personality diagnosis did not predict drinking outcomes in alcoholism treatment. The effect of a co-occurring condition seems sometimes to obviate a need for treatment, as when Kleber et al. (1983) found that methadone-maintained opiate addicts improved on depression scores whether or not they were treated for depression with imipramine.

The summaries above are indicative rather than exhaustive of the available studies of this sort. It can be seen that our knowledge of the course of co-occurrence of disorders, and of the effects of treatment interventions on it, remains limited. Remission of the co-occurring untreated disorder is

common without specific treatment of that disorder. On the other hand, there are instances of the net rate of the co-occurring disorder remaining unchanged despite a positive treatment effect in the treated disorder. A third possibility is for the co-occurring disorder to affect results of treatment for the index disorder. The empirical base is at present limited for distinguishing when to expect which of these results.

In general, it does not appear that there is a high risk of the co-occurring disorder getting worse in the course of treatment directed only towards a focal disorder.

TREATING CO-OCCURRENCE

The empirical literature on the effect of treating both sides of co-occurring addiction and mental disorders "remains relatively sparse", as Weiss et al. (1995) note in a review article. The authors add that "much of what is written about the treatment of these patients is anecdotal, theoretical, descriptive, or uncontrolled; most empirical studies with these patients have involved small numbers of patients, whose heterogeneity has made interpretation of data very difficult."

Weiss et al. (1995) describe the results of a number of the small-N studies which must be regarded primarily as pilot studies. We will briefly review here four larger studies, one of sequential treatment of co-occurring disorders, and three of integrated treatment models. A five-year follow-up of 127 clients treated for affective disorder but with co-occurring alcoholism at intake (Hasin et al., 1991) found that 59 had separately received some kind of alcohol-specific treatment (including Alcoholics Anonymous) during the five-year follow-up period. Obviously, entry into the alcohol-specific treatment was not randomly assigned. Remission from alcoholism at follow-up was not significantly predicted by having received alcohol-specific treatment.

In a sample of 109 clients meeting criteria for cocaine dependence, 37 were identified as having at least moderate depression (Carroll et al., 1995). Clients were enrolled in a 12-week course of treatment, with assessments before, during and after treatment. They were randomized between desipramine (an antidepressant) and a placebo, and also between cognitive-behavioural relapse prevention and clinical management. The cognitive behavioural treatment differentially increased length of abstinence periods but not days abstinent, but showed no differential effect on depression. Desipramine reduced depression scores, particularly in the depressed subgroup, but had no effect on cocaine outcomes for either the depressed or other clients.

In a study of the effects of adding supportive-expressive psychotherapy to drug counseling in 84 clients on methadone maintenance in community programs (Woody et al., 1995), 57 were probabilistically assigned to receive the psychotherapy over a 24-week period, while the remaining 27 received extra drug counseling. Both groups showed improvement on drug, alcohol and psychiatric measures at a one-month follow-up, but there was a tendency for this improvement decay at the six-month follow-up in the control group but not in those receiving the psychotherapy. The analysis was able to show some significant group-by-time interactions, supporting the interpretation of a differential longer-term effect, but the detailed comparisons show many inconclusive results.

The study's recruitment experience provides evidence on the difficulties in retention likely to occur in integrated treatment of co-occurring disorders: about half of those approached were interested and available; 76% among the subgroup of these who qualified for the study actually became engaged in it to the extent of completing three appointments; 90% of these were followed up at six months. Given that these results were with a methadone-maintained sample, they are

probably the upper limits of what may be expected in attracting and retaining for treatment those with co-occurring disorders.

The most substantial study yet published which compares outcomes for integrated treatment modalities for dually diagnosed clients was carried out in northern California community mental health centres (Jerrell and Ridgely, 1995a, 1995b; Ridgely and Jerrell, 1996). The study was designed to evaluate the "cost-effectiveness of three treatment approaches for severely mentally ill clients with secondary substance abuse or dependence" in a county mental health program. All 147 clients in the study (132 in some analyses) had previously had inpatient psychiatric treatment, had manifested disabilities in two or more of five areas of work, living skills and social behaviour in the previous two years, and had a secondary substance abuse disorder. In the follow-up results for the study cohort as a whole, tracked at 6, 12 and 18 months, there were significant improvements in the area of work, independent living and social contacts (Jerrell and Ridgely, 1995b). Overall social adjustment and satisfaction with life did not show significant change, and except for mania, psychiatric and substance abuse symptoms did not significantly decline, though the percents currently using alcohol and drugs fell. Amounts of mental health and support services utilized did not significantly change, except that the use of emergency services declined and outpatient and medication visits increased. It seems that, taken together, the interventions were associated with significant improvements in the clients' life situation, but not in their status on mental or addiction disorders.

The three interventions compared were 12-step social recovery, behavioural skills training, and intensive case management; half of the sample was randomly assigned. The results of the comparison of interventions are presented only in terms of transformed beta coefficients from regressions across the three time periods (Jerrell and Ridgely, 1995a; Ridgely and Jerrell, 1996); the reported data do not reveal whether there was an absolute improvement for an intervention. On alcohol and drug symptomatology, the behavioral skills training approach performed best and case management worst; on psychiatric symptoms, behavioral skills training generally performed best and 12-step social recovery worst; the behavioral skills model also performed the best on psychosocial adjustment and role functioning and carried the least mental health, medical and legal costs. Collating the study's reports, it seems likely that the behavioural skills model produced benefit both for psychiatric symptoms and for alcohol and drug symptomatology, and the 12-step social recovery may have produced benefit for alcohol and drug symptomatology.

These studies exemplify the best that is presently available in terms of outcome studies of treatments directly specifically at both sides of co-occurring disorders. At the moment, it cannot really be said that there is a single proven regime for the integrated treatment of any combination of co-occurring addiction and mental disorders.

ORGANIZING SERVICES FOR THOSE WITH CO-OCCURRING DISORDERS

In contrast to the scarcity of substantial clinical trials for treating co-occurring disorders, there is a burgeoning and self-confident advisory literature on methods of treatment and on the organization of treatment services. A number of recent edited volumes offer the clinician synoptic handbooks on treatment (e.g., Gold and Slaby, 1991; Solomon et al., 1993; Miller, 1994; Lehman and Dixon, 1995). The field is well supplied with visionary statements (e.g., Osher, 1996), proposals and descriptions of integrated treatment models (e.g., Minkoff, 1989; Carey, 1996), and proposals for training programs (e.g., Miller and Ries, 1991). As we have noted above, governmental agencies have

provided consensus conferences and discussion papers (e.g., Baker, 1991; Ries, 1994; Hood et al., 1996a, 1996b). But in the present state of knowledge, conclusions and recommendations about the organization of services must be seen as relying on clinical or political judgement rather than on research evidence.

The explicit or implicit focus of much of the literature about treatment organization has been on the relatively small population of severely mentally ill persons with multiple disorders, who are often also homeless. Despite intensive (and costly) treatment efforts, positive outcomes, or even retention in treatment, have often been difficult to accomplish in these populations (e.g., Bartels and Drake, 1996). Experience with such populations -- either on treatment outcome or on organization of services -- may not translate easily into the broader populations of those with co-occurring mental and alcohol or drug disorders.

As the literature notes (e.g., Ries, 1993), there are three choices in treating both of two co-occurring disorders: a "serial treatment model", a "parallel treatment model", and an "integrated treatment model". Though he expresses the general preference of the programmatic literature for an integrated model and against a serial model, Ries does offer some differentiations concerning which conditions might be appropriate for which model. Basically, he recommends integrated treatment for a wide swathe of clients: all patients with "acute and subacute" psychiatric disorders, or with chronic psychiatric or chronic addictive disorders.

The chief issues which the literature on organization of services aims to remedy are fragmentation of services and failures of referral or coordination. As Dill and Rochefort (1989) note, these issues have a longer history reaching more broadly than the specific area which concerns us: "strategies to increase coordination are central policy concerns wherever human services respond to individuals with multiple long-term needs" (see also Roizen and Weisner, 1979). There are, as Dill and Rochefort also point out, a number of ways to achieve greater coordination in service provision. On the specific question of managing co-occurring disorders, these could run the gamut from simple improvements in referral protocols and practices to service system amalgamation. In considering questions like this, the service utilization data we have discussed above underlines that the planning for service coordination should be on a broad canvas. To focus only on the specific addiction and mental health treatment systems would be to consider only a corner of the picture.

Often around the edges of main topics in the literature, there is some discussion of the politics and difficulties of service provision for co-occurring disorders. Proposals for particular solutions, it has been suggested (Glaser, 1993), often reflect professional and institutional ambitions and rivalries. Failures of coordination can also often reflect ideological differences between agencies and systems. Stereotypically, the basic orientation of mental health services is often to get patients to take their medications, while the addiction treatment system tends to take as its basic aim getting clients off psychoactive medications. In this vein, Ries (1993) has summarized the "key concept and methodologic differences between psychiatric and addiction treatment" in the United States: the psychiatric system is

"(1) more medical doctors and "degreed" staff, (2) emphasis on differential diagnosis (e.g., DSM-III-R), (3) use of medication to treat core disorder, and (4) uncovering "get to the bottom of it" psychotherapies. [In addiction treatment, there is] (1) more "recovering" staff, who have personally experienced the problems their patients experience, (2) emphasis on personal responsibility in recovery and on "being" in recovery on a day-to-day basis, (3)

availability of ongoing, no cost, nonprofessionally directed recovery [12 step programs], (4) more aggressive confrontation of illness (i.e., inducing stress to begin recovery), and (5) more often deleting, rather than prescribing, medications or drugs."

As Schmidt (1991) has noted, the specialization in service delivery systems thus "is also a specialization in therapeutic philosophies". Whether addiction and mental health services are organized in separate agencies or amalgamated, these differences in philosophy tend to crop up in the actual implementation of coordinated interventions (e.g., Ridgely and Jerrell, 1996).

CONCLUSIONS

1. Epidemiological analyses and research on co-occurrence of mental and alcohol or drug problems should move beyond the model of dichotomous diagnoses. Attention should be paid to patterns of symptomatology, both from a methodological perspective (dropping artefactual matches) and from a substantive perspective (understanding the course and patterning of co-occurrence). Consideration should be given to methods of determining the severity of disorders and their primary or secondary status, with an eye to both the epidemiological and the clinical utility of such methods.

2. Special research attention needs to be given to the issue of the relation between diagnostic and epidemiological measures and need, demand or justification for services. To be maximally useful in planning and organizing service systems, epidemiological data on rates of co-occurrence needs to be put on a basis of the need and demand of a case for services for mental problems, for addiction problems, and for co-occurring problems. Taking into account the existence of impairments of major social roles and other disabilities, and the link of these disabilities to mental functioning or alcohol or drug use, is a likely path forward in identifying cases which will actually make use of treatment if it is available. The International Classification of Impairments, Disabilities and Handicaps (ICIDH), currently under revision (Üstün et al., 1995) may be useful in this effort. Research on this line needs to keep in mind that those with addiction and mental problems do not necessarily desire to "get well", so that "demand" for treatment should not be assumed to be fully voluntary.

3. Research is urgently needed on patterns in the natural history of co-occurring disorders. Too much of our understanding of relationships between disorders in comorbidity is at the level of plausible hypothesis. Existing longitudinal studies should be canvassed for their potential for such analyses.

4. Service utilization research for those with co-occurring disorders needs to be expanded in scope well beyond the specialized addictions and mental health systems, to include not only the health system in general but also disability and social support and service systems and the criminal justice system. A cost element should be included in service utilization research.

5. There is a need for greater clarity in clinical guides and handbooks about the research base (or lack of it) for recommended treatments and practices in managing co-occurring disorders. Negative as well as positive findings need to be frankly acknowledged.

6. There is an urgent need for competent clinical trials across the whole range of co-occurring disorders and of comorbid population groups. A good contribution to knowledge in the field can be made by measuring current mental health status before and after treatment in trials of alcohol and drug treatments, and measuring current alcohol and drug problems status in trials of mental health treatments; clinical studies in both specialty areas should be strongly encouraged to do this. Further studies are also needed on interventions directed at mental disorders in the course of alcohol and drug

treatment, and interventions directed at alcohol or drug problems in the course of mental disorder treatment. For trials of conjoint treatment of both the co-occurring disorders, the field is wide open. Attention should be given not only to trials of psychotherapeutic modalities, of pharmacological modalities, and of social support modalities, but also of combined modalities. Attention should be given to measuring and analyzing differential success of modalities in recruitment to and retention in treatment, as well as to outcomes for both co-occurring disorders and in terms of functioning in different life-areas. Costing elements should be routinely included in clinical trials.

7. There is also a need for well-designed studies of the effects on outcomes of different organizational arrangements and sequencing of interventions. Recommendations about the organization and sequencing of treatment for co-occurring disorders are presently based purely on clinical hunch or ideological presupposition. Since it is often difficult to vary treatment system arrangements experimentally, there is a need to take advantage of policy-driven changes in treatment organization or systems for opportunistic "natural experiment" studies. Again, a broad range of outcome dimensions should be measured, including costing elements.

8. In the present situation, discussions of the treatment and organization of services for co-occurring addiction and mental problems need to acknowledge frankly the lack of firm empirical basis for recommending any particular organization of services for any particular comorbidity or comorbid population. Any potential substantial departure from the status quo should be considered and decided on as a potential experiment, in terms of what can be learned from the experiment -- and the potential to return to the previous situation in case of failure.

9. In the meantime, initiatives in improving referral and coordination between specialized services should be undertaken, with special attention to creating incentives for appropriate referral for both agency staff and clients. These initiatives should be evaluated for their effects and cost-effectiveness. Agency exclusion criteria (excluding the mentally disordered from addiction treatment or those with alcohol or drug problems from mental health treatment) should be in general disallowed, except as a compelling knowledge-based or practical rationale can be shown. On the basis of proven therapeutic manuals, training in assessing, referring and treating alcohol and drug problems should be a priority in the mental health system, and training in mental health problems treatment should be a priority in the addictions system (see Melinyshyn et al., 1996). Similarly, some competence in assessing, referring and treating addiction and mental health problems should be made a reality for primary health care providers and for the staffs of disability, social support, and criminal justice agencies. Again, the effectiveness of such efforts should be evaluated not only in terms of the treatment provider's behaviour but also in terms of effects on clients.

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