Comorbid mental disorders and substance use disorders

epidemiology, prevention and treatment.

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Chapter 1

Responding to comorbid mental disorders and substance use disorders

Maree Teesson and Heather Proudfoot

Comorbidity of mental disorders and substance use disorders is common. Furthermore, comorbidity is often associated with poor treatment outcome, severe illness course, and high service utilisation. This presents a significant challenge with respect to the identification, prevention and management of people with comorbid disorders. The unmet need for treatment within this group is considerable, the lack of research is unacceptable and the person with comorbid mental disorders and substance use disorders is often left to fall in the gap between the relevant services.

The issue of comorbidity between mental disorders and substance use disorders is demanding attention from researchers, clinicians and policy makers. Despite this demand there is very little guidance to date regarding best practice for individuals with more than one disorder. Controlled trials of treatment for comorbid disorders are urgently needed, so that we can deliver services to this population on a sound evidence base. Given the frequency and the impact of comorbidity on both individuals and the community, training of health practitioners should routinely incorporate what we already know about the assessment and management of co-occurring mental disorders and substance use.

The questions are clear:

1. *How common is comorbidity?* Which are the most common and most disabling comorbidities from both an individual and public health perspective using the epidemiological evidence?
2. *How would you prevent and treat comorbidity?* What is the research evidence on the prevention and treatment of the most common and most disabling comorbidities?
3. *What are the implications of comorbidity for service delivery?* How do we improve our response to comorbidity and what is current good practice in treatment and service system models?

The following chapters aim to assist with answers to these important questions.

How common is comorbidity?

The US Epidemiological Catchment Area study (ECA) was the first large-scale epidemiological study to collect information on comorbidity in the community. The study was conducted between 1980 and 1984 on approximately 20,000 respondents aged 18 years and older in the US. Among those respondents with a lifetime alcohol use disorder (alcohol abuse or dependence) 37% had at least one

other mental disorder and 22% had another drug disorder (Regier et al., 1990). Highest levels of comorbidity were found for those with a lifetime history of any drug disorder other than alcohol; with 53% with comorbid mental disorders and 47% with comorbid alcohol disorders. Conversely, among individuals with any lifetime mental disorder, 29% had some addictive disorder — 22% had a lifetime history of an alcohol use disorder and 15% had a lifetime history of a drug use disorder. Highest rates of substance use disorders were found amongst those with an antisocial personality disorder (84%) and schizophrenia (47%). Lesser but still substantial rates of substance abuse disorders were also found amongst those with affective disorders (32%) and anxiety disorders (24%).

The more recent National Comorbidity Survey (NCS) was undertaken between 1990 and 1992 to examine the extent of comorbidity between substance use and non-substance use disorders in the US population (Kessler et al., 1994). The NCS was conducted on approximately 8,000 respondents aged between 15 and 54 years. This study measured both lifetime and current prevalences of mental disorders. Lifetime comorbidities were found to be comparable to those found in the ECA. The prevalence of any current (12 month) diagnosis was 29.5% (Kessler et al., 1994). Among those with a 12 month diagnosis of any substance use disorder, 36% had at least one anxiety disorder whilst 25% had at least one affective disorder. Among those with a 12 month diagnosis of any mental disorder, 15% had at least one co-occurring substance use disorder (Kessler et al., 1996).

Australian National Survey of Mental Health and Wellbeing (NSMHWB)

In 1997, the Australian Bureau of Statistics was funded by the Australian Government to undertake the NSMHWB, a survey of the mental health of the Australian adult population. Until this survey Australia was reliant on US studies for epidemiological data on mental health, substance use disorders and comorbidity. The survey provides the first national Australian data on the prevalence and patterns of mental disorders among Australian men and women, highlighting the extent of comorbidity in the general population. It was conducted on a nationally representative sample of 10,641 Australians and designed to answer three main questions: How many Australians have which mental disorders? How disabled are they by these disorders and what services have they used for these disorders? A modified version of the Composite International Diagnostic Interview (CIDI, WHO, 1997) identified the most common mental disorders (namely, anxiety, affective and substance use disorders) using the two major psychiatric classification systems, DSM-IV and ICD-10. The survey achieved a high response rate — 78% of eligible adults aged 18 and over, completed the survey interview and very few who agreed to begin the interview withdrew. Results of the survey were weighted to ensure that the estimates were representative of the total adult population (Henderson, Andrews, & Hall, 2000).

In the Australian mental health survey, about 18% of the respondents (aged 18–90 years) met criteria for a DSM-IV mental disorder in the past 12 months. This is somewhat lower than the NCS figure of 29.5%. This difference may be due to the age groups covered (younger ages in the NCS); the omission of certain disorders from the NSMHWB (in particular Antisocial Personality Disorder and Specific Phobias); and the use of DSM-IV diagnoses in the NSMHWB and DSM-III-R in the NCS.

Results of the survey show a considerable degree of comorbidity in substance use disorders and other mental health (Teesson, Hall, Lynskey, & Degenhardt, 2000). About one in four persons with an anxiety, affective or substance use disorder also had at least one other mental disorder. This meant that they had two or more different classes of disorder, such as an anxiety and affective disorder, or an anxiety and a substance use disorder. A small proportion of men (0.8%) and women (0.8%) had all three types of disorder (ie. an anxiety, affective and substance use disorder) (Andrews, Hall, Teesson, & Henderson, 1999).

Figures 1 and 2 summarise the prevalence and comorbidity data found in the survey. Among those individuals with mental disorders, marginally more women than men had at least one other comorbid mental disorder (28% of women, as against 24% of men with any of these mental disorders). The patterns of comorbidity differed between men and women reflecting the differences in prevalence within the sexes for the individual disorders. Among women, affective and anxiety disorders most often occurred together, accounting for three quarters of women who had more than one mental disorder. Among men, comorbid disorders more often involved an anxiety or an affective disorder in combination with a substance use disorder. These combinations of disorders affected two thirds of men who had more than one mental disorder.

Figure 1: Prevalence (%) of single and comorbid affective, anxiety and substance use disorders amongst Australian males in the past year

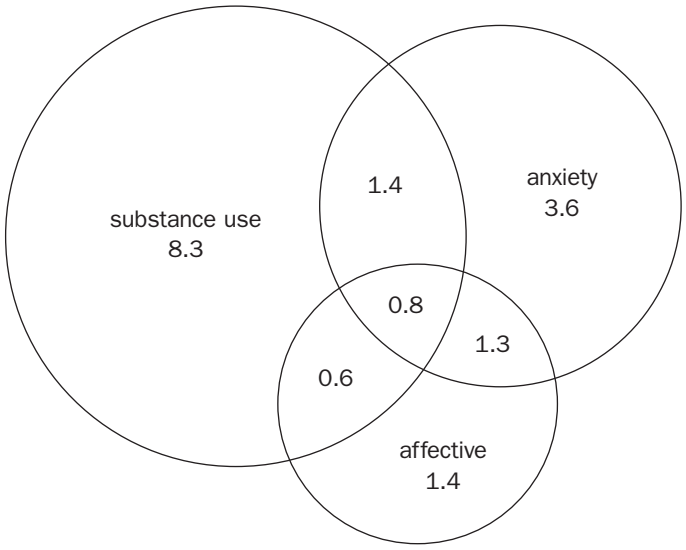
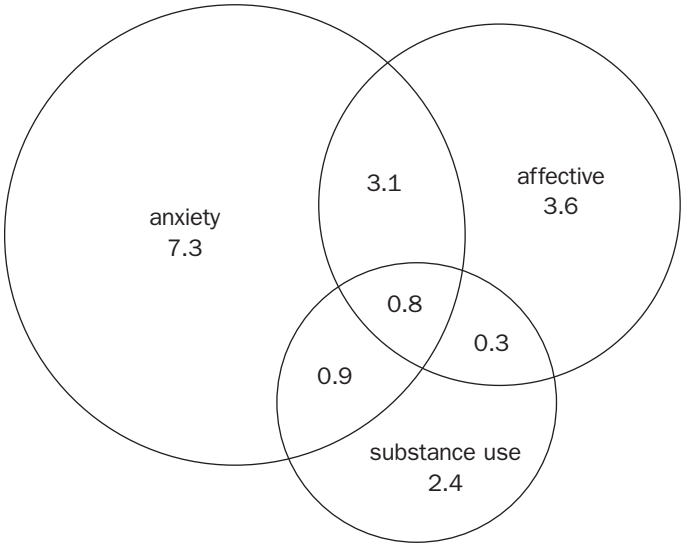


Figure 2: Prevalence (%) of single and comorbid affective, anxiety and substance use disorders amongst Australian females in the past year



The National Survey of Mental Health and Wellbeing included a low prevalence study of psychotic disorders. This study demonstrated that drug and alcohol use disorders were highly prevalent in those with psychotic illnesses. Nicotine was the most commonly used drug in this sample with 67% using nicotine in the previous 12 months. Lifetime diagnoses of alcohol use disorder were found in 30% of the sample and cannabis use disorder in 25%. Jablensky and co-workers (2000) also looked at a sample of people with psychoses who were marginalised or homeless and not seen by mainstream services. They found more than double the levels of comorbid substance abuse, which contributes to the intensification of psychotic symptoms found in this group.

The high rates of comorbidity have a number of implications for treatment and management. Mental disorders complicated by alcohol and other drug use disorders, and vice versa, have been recognised as having a poorer prognosis than those without such comorbid disorders. They are also more likely to become chronic and disabling, and result in greater service utilisation.

How would you prevent and treat comorbidity?

As with physical disorders, health care has always been, and will continue to be rationed, and there will never be sufficient funds to provide the care that all individuals with mental disorders need or would like. The UK spends 6.5%, Australia spends 8.5% and Canada spends 9.5% of their respective GDPs on health. Australia spends 5% of the health budget on mental health services (Andrews, Issakidis, & Carter, 2001). Yet, the burden to society of mental disorders and substance use disorders is considerably more than would be implied by this allocation to mental health care. The recent WHO Burden of Disease Report estimates that mental health and drug and alcohol contribute 20% to the burden of

disease in society (Murray & Lopez, 1996). Mental disorders are the third leading cause of burden in the developed countries after cardiovascular disease and neoplasms. Within the mental disorders, anxiety and depression account for 56% of the overall burden and substance use disorders account for 23%.

In all, 0.4% of the gross domestic product is spent on mental health and drug and alcohol in Australia. This is half of what Canada, the UK and New Zealand spend. We currently spend a considerable proportion of our health budget on people with chronic long-term disorders. While we have evidence that treatment for mental disorders can be effective (Issakidis, Sanderson, Teesson, Johnston, & Buhrich, 1999), there are substantial numbers of people disabled by mental disorders who do not get treatment and who also may benefit. *Importantly, these disorders are amenable to care.*

The epidemiology also demonstrates that comorbidity is of particular concern for young adults aged 15–24 years. The recent Australian burden of disease and injury study found that nine out of the ten leading causes of burden in young males, and eight out of ten leading causes in young females were substance use disorders or mental disorders (Table 1). Thus, apart from the burden resulting from road traffic accidents (and asthma in females), the disease burden in this group is the result of alcohol dependence, suicide, bipolar affective disorder, heroin dependence, schizophrenia, depression, social phobia, borderline personality disorder, generalised anxiety disorder and eating disorders (Mathers & Vos, 1999). Comorbidity of these disorders is high with over 50% having comorbid disorders.

Table 1: Ten leading causes of burden of disease and injury in 15–24 year olds in Australia in rank order

Males	Females
1. road traffic accidents	1. depression
2. alcohol dependence	2. bipolar affective
3. suicide	3. alcohol dependence
4. bipolar affective	4. eating disorders
5. heroin dependence	5. social phobia
6. schizophrenia	6. heroin
7. depression	7. asthma
8. social phobia	8. road traffic accidents
9. borderline personality	9. schizophrenia
10. generalised anxiety disorder	10. generalised anxiety disorder

This high concentration of mental illness in the young suggests that early intervention and prevention may assist to reduce the burden of mental disorders and, in particular, those that may arise from pre-existing disorders resulting in comorbidity. Prevention is a crucial component in the breadth of interventions considered in the area of comorbidity. A report from the American Institute of Medicine noted that prevention of mental disorders has a low priority in the health

care agendas of most countries (Mrazek & Haggerty, 1994). The report suggests that a greater emphasis should be placed on prevention in mental health. The authors argue that several factors make this possible. Firstly there has been a substantial growth in the knowledge about both environmental and genetic risk factors for mental disorders and substance use disorders. Secondly, a number of promising models for early intervention now exist.

One prevention opportunity, which is fairly unique to mental health, builds on comorbidity. The large US epidemiological studies identified more than 80% of all severe current psychiatric disorders in the USA among the 13% of the population who have a lifetime history of three or more disorders (Kessler et al, 1994). These results suggest that the prevention of comorbidity (ie. prevention of the first onset of a second disorder) might reduce a proportion of lifetime mental disorders or substance use disorders. Thus the epidemiological data suggests that prevention of comorbidity would reduce a substantial proportion of all lifetime psychiatric disorders and an even greater proportion of ongoing disorders. Yet despite such evidence, comorbidity has been largely ignored in risk factor research.

Although some comorbidities would be difficult to prevent, there are others for which successful prevention is a plausible possibility. An example is substance use disorders that occur secondary to primary phobias. There are a number of clinical trials which highlight this comorbidity, with phobias almost always preceding substance abuse in age of onset. This comorbidity is often conceptualised in terms of self-medication or at least use of alcohol and drugs to manage fear. Based on this work, interventions might be aimed either at curing the phobia before secondary alcohol and drug use begins or at teaching alternative strategies to manage fears. Such interventions may have the potential to reduce a substantial percent of lifetime substance use disorders and an even greater percent of current disorders.

Similarly, prevention programs introduced in childhood and adolescence have shown potential to reduce the onset of disorders on follow-up. Research has shown that prevention of anxiety disorders is a reasonable possibility (e.g. Dadds et al., 1999). Therefore, it is also a possibility that such reduction in anxiety disorders may also result in a reduction in the initiation of substance taking. The Dadds study found that for children who were already highly anxious, the program succeeded in reducing the onset of disorder. However, whether programs can prevent anxiety more broadly is still to be demonstrated.

While prevention is crucial, so too is investing in treatments that work. It is a truism that we benefit from knowing what works. That psychological treatments (undefined) benefit the majority of patients (undefined) is already well established. There are three major types of evidence we must examine (Chambless & Hollon, 1998): *Efficacy* is proven when clearly specified interventions have been shown to be beneficial in controlled research with a delineated population. A treatment manual or equivalent must be available and used, the results replicated and valid outcome measures and appropriate data analysis conducted. An *effective* intervention is a specific intervention which, when used under ordinary clinical circumstances, does what it is intended to do. Effectiveness studies answer the question "is the intervention effective in applied clinical settings and, if so, with what patients and under what circumstances?" Finally, *cost effectiveness* determines the economic benefit of an intervention.

Nathan and Gorman (1998) used findings from replicated randomised controlled trials to show that 38 specific treatments were more efficacious than placebo in 14 psychiatric disorders. However, not all have been demonstrated to be *effective*, and very few have been trialled with individuals with comorbid disorders.

What are the implications for service delivery?

Comorbidity presents substantial treatment problems — standard interventions are complicated or even excluded in individuals with comorbid disorders. On the one hand comorbid substance use disorders can pose difficulties for treatments that are narrowly defined for specific symptoms, or those treatments may have been developed on pure diagnostic groups and therefore of unknown benefit for comorbid individuals. Conversely, anxiety and depression can complicate the treatment of a substance use disorder. Yet the treatment services have to deal with disproportionate numbers of comorbid individuals who are over-represented in treatment settings. Staff are trained within the one discipline and rarely have the skills to recognise, let alone deal with, these more complex presentations.

The challenges outlined in this introduction are those addressed in the following chapters by experts in both the drug and alcohol and mental health fields.

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Introduction to the chapters in the monograph

The definitional issues surrounding comorbidity are in no way trivial. Degenhardt (Australia), Hall (Australia) and Lynskey (USA) provide a discussion of the definitional and methodological issues in the study of comorbidity in the second chapter. This chapter outlines the development of psychiatric diagnostic systems; the definition of what is meant by comorbidity; theories on the causes of comorbidity; and an outline of why comorbidity is important.

Chapter 3 by Andrews, Issakidis & Slade (Australia) is built on the strengths of recent national epidemiological studies in the USA, Australia, The Netherlands and Canada. The authors, from the WHO Research and Training Centre in Mental Health and Substance Abuse, provide an analysis of 'How common is comorbidity?' from a whole of population perspective. Most studies examining substance use and mental disorder comorbidity are in treatment settings. These studies provide valuable clinical information for the best estimates of comorbidity for individuals who are receiving treatment for at least one disorder. However, they overestimate the true level of comorbidity in the population because people with comorbid disorders are more likely to seek treatment simply because they have more disorders (Berkson's bias). An analysis of associated burden and unmet need and comorbidity are addressed in this chapter.

Prevention is a crucial component in the breadth of interventions considered in the area of comorbidity. Dadds and Atkinson (Australia) provide a critical analysis of prevention in chapter four. The prevention of mental disorders has a low priority in the health care agendas of most countries. The Chapter outlines the substantial growth in the knowledge about both environmental and genetic risk factors for mental disorders and substance use disorders. Secondly, a number of promising models for early intervention now exist and are reviewed.

The treatment research is reviewed by Kavanagh (Australia), Mueser (USA) and Baker (Australia) in Chapter 5, and the service delivery implications in Chapter 6 by Proudfoot (Australia), Teesson (Australia), Brewin (UK) and Gournay (UK). The chapter by Kavanagh and colleagues addresses the treatment implications of comorbidity, including the finding that comorbidity is more common in treatment samples than in the general population; assessment issues; evidence for the effectiveness of treatment interventions in persons with comorbid mental health and substance use disorders; and evidence as to whether the presence of comorbidity influences treatment outcomes. Chapter 6 reviews the evidence for service delivery structures and provides a discussion of the organisation of services and the extent to which current service organisation and funding systems address comorbidity. Finally, Chapter 7 by Manns provides the crucial consumer point of view that is often overlooked in research on best practice for mental illness.

Chapter 2

What is comorbidity and why does it occur?

Louisa Degenhardt, Wayne Hall and Michael Lynskey

Introduction

Comorbidity can be defined most generally as the co-occurrence of two or more mental health problems. It has emerged as a major clinical, public health and research issue over the past few decades. This is due in part to changes in psychiatric nomenclature, in which there is a greater focus upon elucidating any number of mental health problems with which an individual might present, rather than diagnosing one problem to the exclusion of others.

Currently, mental health problems are conceptualised as patterns of behaviour or thought that are associated with significant disability, distress, loss of individual freedom, or adverse events such as death; and which arise from dysfunction within the individual (Neugebauer, 1999). These problems can encompass a wide range of behaviours including substance use, mood disturbances, anxiety, and disturbances in thought and perception.

According to current classification systems in psychology and psychiatry, mental disorders are diagnosed according to operationalised diagnostic criteria, and the diagnosis of one disorder does not necessarily preclude the diagnosis of another (American Psychiatric Association, 1994; World Health Organisation, 1993). In some cases, more than one mental disorder is diagnosed — such comorbidity is examined in this chapter. Specifically, this chapter will define the concept of comorbidity; discuss the implications of comorbidity for theories of mental health, treatment and prevention; give a brief overview of epidemiological research into comorbidity; and examine the reasons why comorbidity might occur.

Definitions

'Comorbidity' was defined by Feinstein (1970) as "any distinct clinical entity that has co-existed or that may occur during the clinical course of a patient who has the index disease under study" (pp. 456–7). Within psychiatry, comorbidity is commonly used to refer to the overlap of two or more psychiatric disorders (Boyd, Burke, Gruenberg, et al., 1984). Comorbidity between substance use disorders and other mental disorders has gained increasing prominence in psychiatry and psychology within the past few decades (Wittchen, 1996). Angold and colleagues have recently drawn a distinction between two types of comorbidity (Angold, Costello, & Erkanli, 1999). *Homotypic comorbidity* refers to the co-occurrence of mental disorders within a diagnostic grouping (Angold et al., 1999). The co-occurrence of two different substance use disorders (e.g. cannabis and alcohol) is an example of homotypic comorbidity. *Heterotypic comorbidity* refers to the co-occurrence of two disorders from different diagnostic groupings (Angold et al., 1999). This might include, for example, the co-occurrence of a substance use disorder and an anxiety disorder.

Why study comorbidity?

Comorbidity potentially has implications for theories of aetiology, prevention and treatment of mental health problems.

Importance for theory

If mental health problems are more likely to occur among those with substance use disorders, this raises important questions about the aetiology of mental disorders (and vice versa). Several hypotheses exist concerning the reasons why comorbidity might occur, including that: (a) there is a causal relationship between the two; (b) that common factors increase the likelihood of both disorders; and (c) that the relationship is spurious (artefactual), resulting from factors such as the methods with which the sample was selected (Caron & Rutter, 1991; Kessler, 1995; Mueser, Drake, & Wallach, 1998). Before we can begin to unravel the reasons behind any 'comorbidity', we need to carefully document the nature of any associations. This will give some insight into possible mechanisms underlying the association.

Importance for treatment

If people who are problematic substance users are more likely to have other mental health problems, this needs to be taken into account both in the assessment of a client, and in determining the most appropriate treatment. Comorbidity is particularly relevant if co-occurring disorders predict a differential clinical outcome, which has been suggested by previous research (e.g. Carey, Carey, & Meisler, 1991; Haywood et al., 1995; Pristach & Smith, 1990; Rouillon, 1996). Attention to comorbid problems may also improve treatment outcome. The efficacy of treatment for alcohol and nicotine dependence, for example, may be improved if treatment for depression is also provided (Hall et al., 1998; Lynskey, 1998).

Importance for prevention

Prevention programs have traditionally operated in isolation from each other. For example, it is often the case that programs addressing suicide prevention, substance use prevention and sex education/sexual risk taking occur separately. There is rarely an attempt to conduct programs aimed at addressing multiple problems in an integrated fashion. Furthermore, there is an increased interest in psychiatry on prevention. The concept of comorbidity has two broad implications for prevention: a) if 'comorbidity' is real, then prevention efforts should be broad in their target; and b) an understanding of the nature of comorbidity will help dictate the targets of prevention. If comorbidity arises because different problems or disorders share the same risk factors, then interventions addressing these risk factors should reduce the prevalence of these multiple problems.

The importance of general population research on comorbidity

It is critically important to study patterns of comorbidity between different mental disorders in general population samples. It is not possible to know that patterns observed in clinical samples will reflect those in the general community, because significant biases may be present (Berkson, 1946; Galbaud Du Fort, Newman, & Bland, 1993). There are a variety of reasons why comorbidity might be more common in clinical samples. It is also likely that skewed patterns of comorbidity will exist because of factors such as areas of particular interest, or expertise of clinicians

in a given treatment centre, or alternatively, exclusionary policies of a treatment centre, or factors that may differentially influence a person's decision to seek help.

These factors are impediments to making accurate decisions about treatment needs of the general population from clinical samples. It is also difficult to make advances in theories about comorbidity since we do not know whether comorbidity observed in clinical samples is due to sampling, or referral biases. Only by studying representative samples of the general population can we ensure that our findings reflect general patterns of co-occurrence of different mental health problems in the community.

General studies of comorbidity

Most epidemiological research on comorbidity is relatively recent. In order to understand the development of research into comorbidity on a general population level, it will be useful to outline a brief summary of the history of epidemiological research into comorbidity.

The US Epidemiological Catchment Area study

In 1978, the US President's Commission on Mental Health decided to conduct epidemiological research to estimate the prevalence of mental disorders in the general community and the extent of health service use among persons with such disorders (President's Commission on Mental Health, 1978; Regier & Kaelber, 1995). The project was undertaken by the US National Institute of Mental Health (NIMH), and the resulting study was the Epidemiological Catchment Area study (ECA). The ECA aimed to provide estimates of the prevalence and incidence of the following major DSM-III disorders: mood disorders, substance use disorders, anxiety disorders, and psychotic disorders.

Researchers involved in the ECA decided to develop a diagnostic interview that incorporated the newly defined DSM-III diagnostic criteria, since no such DSM-III-based interview existed at that point (Regier & Kaelber, 1995). The NIMH Diagnostic Interview Schedule (DIS) (Robins, Helzer, Croughan, & Ratcliff, 1981; Robins, Helzer, Croughan, Williams, & Spitzer, 1981) was highly structured, designed to be administered by trained lay interviewers, and would identify persons who met operationalised criteria for specific DSM-III mental disorders (Regier & Kaelber, 1995). It was validated against existing diagnostic interviews, clinicians' diagnoses, and physicians' diagnoses (Folstein et al., 1985; Helzer et al., 1985; Orvaschel et al., 1985).

In the ECA study, samples were taken from five 'catchment area' sites with a total population of at least 200,000 persons. They were chosen by the NIMH from applications from the following institutions: Yale University, Johns Hopkins University, Washington University, Duke University, and the University of California in Los Angeles, which surveyed New Haven, Baltimore, St. Louis, Durham, and Los Angeles, respectively (Robins & Regier, 1991). Both community and institutional facilities (such as prisons, nursing homes, and psychiatric facilities) were sampled.

The ECA's response rate was 76%, with an overall sample size of 19,640 (Robins & Regier, 1991). Sample sizes of approximately 3,000 household residents and 500 institutional residents per site had been targeted to ensure that risk factors for

schizophrenia (which affects around 1% of the population) could be studied (Regier & Kaelber, 1995; Robins & Regier, 1991). The research groups were required by the NIMH to obtain representative samples of the population in the five sites (Holzer et al., 1985). The estimates obtained were weighted to project estimates for the entire United States (Robins & Regier, 1991). Lay interviewers, all trained at Washington University to ensure comparability of interview administration, conducted the interviews (Regier & Robins, 1991). Each site conducted its own survey and data collection.

The ECA has been called a "landmark study in psychiatric epidemiology" (p.81 Kessler, 1994a) in that: (a) it was the largest general population survey of mental disorders carried out to that date; (b) it was the first to administer a structured diagnostic interview; and (c) it was the first to estimate total population prevalence estimates, since institutionalised and non-institutionalised samples were obtained (Kessler, 1994a).

The ECA stimulated a number of epidemiological surveys in other countries, which used similar sampling methods, the same DSM-III diagnostic criteria, and the same survey instrument (the DIS). Studies were carried out in Munich, Germany (Fichter et al., 1996; Wittchen, Essau, von Zerssen, Krieg, & Zaudig, 1992); Edmonton, Canada (Bland, Newman, & Orn, 1988); Christchurch, New Zealand (Oakley-Browne, Joyce, Wells, Bushnell, & Hornblow, 1989; Wells, Bushnell, Hornblow, Joyce, & Oakley-Browne, 1989); Shanghai, China (Wang et al., 1992); Korea (Lee, 1992); and Taiwan (Hwu, Yeh, & Chang, 1989).

The US National Comorbidity Survey

The design of the ECA was improved upon by researchers who designed and conducted the US National Comorbidity Survey (NCS) in 1992 (Kessler, 1994a; 1994b). The NCS extended the ECA in the following ways:

1. the NCS used DSM-III-R diagnostic criteria, with some allowance for comparisons with DSM-IV when it was released, in contrast to the DSM-III criteria used in the ECA;
2. the NCS was designed not only as a study of the prevalence of mental disorders, but also as a study of the risk factors for such disorders;
3. it was a nationally representative sample of US adults, as opposed to the five catchment areas that were used in the ECA; and
4. as the title suggests, one of the primary aims of the NCS was to explore the patterns of comorbidity between different mental disorders that had been observed in the ECA.

The NCS was designed to explore the prevalence, causes and consequences of comorbidity. The age range (18 to 54 years) used in the survey was chosen because comorbidity was found to be most prevalent among this age group in the ECA (Kessler, 1994a, 1994b). The NCS was a national survey. Participants were selected from the non-institutionalised civil population in the 48 contiguous US States, with an additional sample of students from university campus housing. Institutional samples were not selected since the inclusion of such samples in the ECA had not been found to make a substantial difference to prevalence rates of mental disorders (Robins & Regier, 1991). Experienced field interviewers were used in the data

collection to ensure that interviews were conducted by competent staff. A special feature of the NCS was that non-responders to initial interviews were re-targeted for interview to ensure that prevalence estimates were not affected by non-response rates. This was because research had suggested that those who refused to participate in surveys had higher rates of mental disorders (Kessler, 1994b).

The NCS had a response rate of 83%, with a final sample size of 8,098. The psychiatric diagnoses assessed were DSM-III-R diagnoses of anxiety disorders, mood disorders, substance use disorders and psychotic disorders. The diagnostic interview was the Composite International Diagnostic Interview (CIDI), which was designed for administration by trained interviewers who are not clinicians (Kessler, 1994b). It was administered by staff at the Survey Research Centre at the University of Michigan between September 1990 and February 1992 (Kessler et al., 1994).

Other epidemiological studies

Since the conduct of the ECA and NCS, a number of epidemiological studies have been carried out using DSM-III-R or DSM-IV criteria with representative samples of persons from countries such as the US (Grant & Pickering, 1998), Canada (Ross, 1995), and the Netherlands (Bijl, Ravelli, & van Zessen, 1998).

The Australian National Survey of Mental Health and Wellbeing

Australian researchers planned and conducted the Australian National Survey of Mental Health and Wellbeing (NSMHWB) in 1997. It involved a modified version of the CIDI (which is a more recent version of the DIS) and used DSM-IV criteria. The nationally representative NSMHWB sample involved the assessment of ICD-10 *and* DSM-IV substance use disorders, mood disorders, anxiety disorders, and it also screened for likely cases of psychosis (Hall, Teesson, Lynskey, & Degenhardt, 1999; Henderson, Andrews, & Hall, 2000). The NSMHWB was conducted to provide representative information on the mental health of Australian adults aged 18 years and over. There were three major aims of the survey (Henderson et al., 2000): (a) to estimate the prevalence of mental disorders in the general population; (b) to estimate the amount of disability associated with such disorders; and (c) to estimate the use of health and other treatment services by persons with such disorders. The NSMHWB was consistent with the findings of other general population studies in finding that mental disorders are prevalent in the general population (Andrews, Henderson, & Hall, 2001). There were notable similarities in the socio-demographic correlates of the disorders examined (substance use disorders, mood disorders, anxiety disorders and screening positively for psychosis).

The UK conducted the National Psychiatric Morbidity Survey (1997; Jenkins, Lewis et al., 1997), using an adapted DIS interview for assessing ICD-10 substance dependence. They assessed mental health problems using the Clinical Interview Schedule-Revised (CIS-R) (Farrell et al., 1998), which may be used to estimate ICD-10 mental disorders, although this has subsequently been shown to have poor agreement when compared with semi structured clinical interviews using the SCAN (Brugha et al., 1999).

These studies were consistent in that they found mental disorders to be common in the adult population, and to be associated with disability and social disadvantage. They also found that comorbidity does occur in the general population.

Explanations of comorbidity

There are several reasons why two disorders might co-occur — that is, be *truly* comorbid (Caron & Rutter, 1991; Kessler, 1995). These are: (1) that there is a direct causal relationship between the two, with the presence of one disorder making another more likely to develop; (2) that there is an indirect causal relationship between the two, with one disorder affecting a third variable in a way that increases the likelihood of the second disorder; and (3) that there are common factors that increase the risk of both disorders. These are discussed in more detail below.

Direct causal relationship

There is a range of causal relationships that have been used to explain specific types of comorbidity between substance use problems and other mental health problems. Mental disorders have been argued to cause substance use disorders, and vice versa.

Mental health problems cause substance use problems

A plausible hypothesis of the relationship between substance use disorders and other mental health problems is that persons with mental health problems who begin to use substances to alleviate the symptoms of their illness develop problematic use as a result of over-use (Khantzian, 1985, 1997; Pope, 1979). A central assumption of this 'self-medication' hypothesis is that substances are used to alleviate symptoms and that specific substances will be selected for their specific effects upon mood and cognition. For example, it has been suggested that persons who are heroin dependent use heroin to ameliorate aggression and rage, while persons who are cocaine dependent use it to alleviate symptoms of depression (Khantzian, 1985).

A variation of the self-medication hypothesis has also been used to explain the relationship between schizophrenia and substance use. One such hypothesis is that persons with schizophrenia use tobacco to reduce positive symptoms such as hallucinations and delusions (Gilbert & Gilbert, 1995), and also to reduce negative symptoms such as blunted affect, apathy and anhedonia (Gilbert & Gilbert, 1995; McEvoy & Brown, 1999).

However, the evidence that *specific* drugs are used to 'treat' *specific* symptoms is less than compelling (Mueser et al., 1998). For example, self-report studies of persons with schizophrenia and substance use disorder have found very little evidence that different substances are used to alleviate specific mood states or symptoms (Dixon, Haas, Weiden, Sweeney, & Frances, 1991; Noordsy et al., 1991). Furthermore, patterns of substance use among persons with psychotic disorders tend to reflect substance availability and hence show the same patterns of substance use as are found in the general population (Hall, 1998).

The common co-occurrence of alcohol use and anxiety disorders has suggested the 'tension reduction' hypothesis (Cappell & Greeley, 1987). This hypothesis proposes that persons with anxiety disorders use alcohol to relieve anxiety or distress, and that problematic use becomes more likely (being reinforced) because alcohol becomes the means to control these negative mood states (Cappell & Greeley, 1987). This hypothesis is consistent with the acute anxiolytic effects of alcohol (Allan, 1995). However, it is less consistent with what is known about the longer-term effects of alcohol consumption. The effects of chronic alcohol use in high doses include *increased* anxiety (Stockwell & Bolderston, 1987; Stockwell, Hodgson, & Rankin,

1982). Studies of phobic disorders have also found that phobic anxiety is not alleviated by alcohol use (Marshall, 1997).

A more general form of the self-medication hypothesis proposes that substances are used in an attempt to relieve a variety of dysphoric moods, such as depression and anxiety, general malaise and boredom (Mueser et al., 1998). Research on self-reported reasons for substance use has provided some support for this notion (e.g. Warner et al., 1994); but it can be argued that alleviating dysphoria is simply one among many risk factors — such as poor social skills, poor social functioning and peer group influences — that increase the likelihood of both substance use and mental disorders (Mueser et al., 1998).

Substance use problems cause mental health problems

A different type of direct causal hypothesis is that substance use problems precipitate mental health problems. For example, there is evidence that some persons may develop depression that is secondary to alcohol dependence (Marc A. Schuckit et al., 1997) in the sense that it develops after alcohol dependence and is likely to remit with abstinence from alcohol (Brown & Schuckit, 1988).

There has also been considerable debate over whether cannabis use is causally related to schizophrenia (Blanchard, Brown, Horan, & Sherwood, 2000; Hall, 1998; Hall & Degenhardt, 2000; McKay & Tennant, 2000; Mueser et al., 1998; Thornicroft, 1990; Thornicroft, Meadows, & Politi, 1992). Some have argued that cannabis use can trigger a 'cannabis psychosis' (Solomons, Neppe, & Kuyl, 1990), while others have argued that its use might precipitate schizophrenia in vulnerable individuals (Andreasson, Allebeck, & Rydberg, 1987).

Comorbidity between different substance use problems has also been explained in causal terms. For instance, it has been hypothesised that the use of cannabis leads to the later use of other illicit drugs (O'Donnell & Clayton, 1982). There has been a great deal of debate about this 'gateway hypothesis'. A strong relationship exists between the use of cannabis and the later use of other illicit substances (Fergusson & Horwood, 1997; Fergusson & Horwood, 2000; Kandel & Faust, 1975; Kandel, Yamaguchi, & Chen, 1992), and it persists after statistical control for a wide range of personal, family background and environmental factors (Fergusson & Horwood, 2000). Nevertheless, it could be that other variables account for the association, which have not been considered in research to date. Alternatively, common genetic factors may play some role in increasing the likelihood of both cannabis use and other substance use, a possibility that has been given some support by twin studies (Tsuang et al., 1998). These possibilities are considered below.

Indirect causal relationship

An indirect causal relationship would exist between two comorbid disorders if one disorder had an effect upon another factor that, in turn, increased the likelihood of developing the second disorder. For example, research has shown that the presence of early-onset substance use disorders reduces the likelihood of completing high school, entering tertiary education, and completing tertiary education (Kessler, Foster, Saunders, & Stang, 1995). Difficulties encountered because of poor educational achievement might subsequently increase the likelihood of other problems, such as depression and continued substance use problems.

Similarly, persons who are alcohol dependent may be more likely to lose their jobs because of poor work performance or absenteeism. Indeed, one of the criteria for DSM-IV substance use disorders is disruption to, or failure to, complete roles such as occupational requirements (American Psychiatric Association, 1994). Unemployment could then lead to depression because of the lack of a regular income and perceived damage to their career.

Common factors

Common risk factors may well explain an association between two disorders (Caron & Rutter, 1991; Kessler, 1995; Mueser et al., 1998). If disorders are predominantly the result of a set of risk factors and these sets are the same or similar for two disorders, it may well be the case that 'comorbidity' reflects the fact that the pathways by which persons develop one disorder are the same as those by which they develop another. These common factors might be biological, personality, social and environmental, or a combination of these factors.

Biological factors

Neurotransmitter function

There is suggestive evidence that common physiological factors may explain the co-occurrence of different substance use disorders (homotypic comorbidity). This is plausible given that different substances act upon similar brain loci and upon the same neurotransmitter systems (Koob & Moal, 1997; Krishnan-Sarin, Rosen, & O'Malley, 1999; Nutt, 1997). Furthermore, some of the underlying neural substrates of mental disorders and substance use disorders are similar. There is considerable evidence that both substance use disorders and mental disorders are characterised by disturbances in monoamine neurotransmitter function (Doris, Ebmeier, & Shajahan, 1999; Iqbal & van Praag, 1995; Koob & Moal, 1997; Koob & Le Moal, 2001). Some have argued that one reason for comorbidity between alcohol use disorders and anxiety disorders may be reduced serotonin function (Tollefson, 1991).

Genetic factors

The possibility of a common genetic vulnerability to problematic use of different substances was examined in a sample of male twins (True et al., 1999; Tsuang et al., 1998). One of these studies examined the genetic and environmental contributions to illicit substance abuse of, and dependence on, cannabis, stimulants, sedatives, opiates and psychedelics (Tsuang et al., 1998). It found that while the vulnerability to dependence upon different substance types had some unique (drug-specific) genetic effects (0% for psychedelics, 5% sedatives, 9% stimulants, 11% cannabis and 38% heroin) there was a significant common genetic component. This comprised 6% of the variance for heroin use disorders, 22% for cannabis, stimulants, sedatives, and 26% for psychedelic use disorders. Analysis revealed that a 'common vulnerability' model provided the simplest explanation of the data, with around one third of the variance of this common vulnerability caused by genetic effects.

A similar analysis of alcohol and nicotine dependence (True et al., 1999) found that there was a significant common genetic vulnerability ($r = 0.68$) to both nicotine and alcohol dependence among male twins, with 26% of the variance in the risk for alcohol dependence shared with the genetic risk of nicotine dependence. This research needs to be replicated among female twins.

Twin studies have also provided some evidence that there are common genetic influences upon substance use disorders and mental disorders (i.e. for heterotypic comorbidity). For example, research has suggested that common genetic factors increase the risk of alcohol dependence, anxiety symptoms, and affective symptoms (Tambs, Harris, & Magnus, 1997).

A twin study of women also found that there were significant common genetic factors implicated in the comorbidity between major depression and tobacco smoking (K. Kendler et al., 1993). This study found that the heritability of liability to tobacco smoking and major depression was 55% and 48%, respectively. Analyses were conducted to examine whether there was a causal relationship between tobacco smoking in major depression, or whether common factors accounted for the association that was observed between the two. The best explanation of the co-occurrence of tobacco smoking and major depression in this sample was a *common genetic factor*. There was *no* evidence of common *environmental* factors. The correlation between smoking and major depression due to these genetic factors was estimated at + 0.56 (K. Kendler et al., 1993).

Individual factors

Temperament is commonly associated with substance use and mental health, particularly the trait of neuroticism. Persons scoring high on neuroticism have been characterised as more anxious, worrying, depressed and moody (Eysenck & Eysenck, 1991). Persons who are heavy substance users score higher on neuroticism than those who are not (Francis, 1996). Persons who suffer from mood and anxiety disturbances also have higher levels of trait neuroticism, and a considerable part of the liability to both mood and anxiety disorders is explained by higher levels of trait neuroticism (Andrews, 1996; Andrews, Stewart, Allen, & Henderson, 1990).

Social and environmental factors

Common genetic influences or individual factors play an incomplete part in explaining comorbidity. Twin studies have also shown that shared *environmental* factors increase the likelihood of both alcohol dependence and major depression among women (Tambs et al., 1997; True et al., 1999; Tsuang et al., 1998). Tsuang (1998) and colleagues found that *two thirds* of the common vulnerability to different types of illicit drug use disorders was explained by shared environmental factors.

This is not surprising, given that there is a wealth of evidence that a number of factors are common to both mental disorders and substance use disorders. For example, social disadvantage is more common among persons who are problematic substance users (Institute of Medicine, 1996); who meet criteria for mood disorders and anxiety disorders (Blazer, 1995; Kessler et al., 1994; Weissman, Livingston Bruce, Leaf, Flroio, & Holzer, 1991); and who meet criteria for psychotic disorders, and there is evidence to suggest that this is not merely because of social drift after developing the disorder (Mueser et al., 1998). For all these groups of disorders, studies have shown that there are higher rates of separation and divorce, and a lower likelihood that persons will be married or in a defacto relationship (Blazer, 1995; Jablensky, Sartorius, & Ernberg, 1991; Kessler et al., 1994; Weissman et al., 1991).

There is also a number of other factors that have been similarly associated with substance use disorders and with mental disorders, such as parental psychiatric illness and family dysfunction (Fergusson, Horwood, & Lawton, 1990; Fergusson,

Horwood, & Lynskey, 1994; Rutter, 1987; Velez, Johnson, & Cohen, 1989). It is possible that these social factors serve to increase the apparent 'comorbidity' of mental disorders.

Kendler and colleagues (1993) also found that common genetic influences explained the co-occurrence of nicotine dependence and major depression. Another study examined this issue using data from a longitudinal study of adolescents from Christchurch, New Zealand (Fergusson, Lynskey, & Horwood, 1996). It examined the association between nicotine dependence and major depression while controlling for a large number of demographic variables, family background characteristics, and personal characteristics. It found — in apparent contrast to the Kendler study — that the co-occurrence of the two could be almost completely explained by common *environmental* factors, and that the most parsimonious explanation of the relationships between the two *did not* include a causal relationship.

While this may appear to be a contradiction of the Kendler study, it must be borne in mind that genetic and environmental factors are *not independent*. There is evidence, for example, of a genetic influence both upon exposure to stressful life events, and in responses to them (Kendler, 1998; Kendler et al., 1995; K. S. Kendler et al., 1993). Hence, in controlling for a large number of environmental factors, Fergusson and colleagues may well have been controlling for some of the genetic influences upon both nicotine dependence and major depression. What is clear from both of these studies, regardless of which sort of influence accounted for the comorbidity (environmental and/or genetic influences), both studies agreed in that there was *no evidence that major depression caused nicotine dependence or vice versa*.

A similar conclusion was reached by Lynskey and colleagues (1998) in an examination of liability to alcohol, tobacco and cannabis use using the same New Zealand cohort. This study found that the simplest explanation of the relationship between alcohol, tobacco and cannabis use was a 'common vulnerability' model of increased liability to the use of the three substances, which could be completely explained by a large number of environmental factors included in the analyses (Lynskey et al., 1998).

Summary

While at present there remains much that is not known about the causes of comorbidity, there is increasing evidence to suggest that simple causal hypotheses may not easily explain the association. There is a broad convergence of risk factors for both problematic substance use and mental disorders; a plausible hypothesis for the comorbidity between these disorders is that substance use and mental disorders (mood disorders, anxiety disorders, personality disorders and psychotic disorders) share common risk factors and life pathways. A number of longitudinal cohort and twin studies have explicitly examined this hypothesis and have concluded that common factors explain the comorbidity between alcohol, tobacco and cannabis use (Lynskey et al., 1998); dependence on different illicit drugs (Tsuang et al., 1998); alcohol and nicotine dependence (True et al., 1999); and nicotine dependence and major depression (Fergusson et al., 1996; K. Kendler et al., 1993).

Conclusions

Interest in, and research on, comorbidity has been increasing over past decades. It has emerged as one of the complex issues facing theorists, clinicians and policymakers who are responsible for providing funding for mental health problems. This chapter has discussed the concept of comorbidity and discussed the importance of community samples in documenting the extent of comorbidity in the community. As will be documented in later chapters, these surveys have established that comorbidity occurs. This has implications for theory, prevention and treatment of mental health problems. There are a number of potential explanations for comorbidity.

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Chapter 3

How common is comorbidity?

Gavin Andrews, Cathy Issakidis and Tim Slade

Introduction

Comorbidity is a term that means having more than one disorder at various times. Concurrent disorders are those that actually occur at the same time. Neither is a strange concept in medicine. The elderly, if lucky, will only suffer from glaucoma and arthritis, the young don't mind if they have myopia and intermittent asthma. Having a disease is not uncommon; having two is not much less common.

Clinicians know this problem well. It is difficult to treat a person with schizophrenia whose psychotic symptoms are sometimes due to the psychosis and sometimes due to drug dependence. Likewise the combination of personality disorder and somatization disorder, or depression and anxiety, or any combination of the major groups of mental disorders produces more disability, makes the prognosis worse, the clinician's task more difficult, and the family's burden greater. Everyone calls for help when people have concurrent disorders. It can be an emergency, however judging things to be important from what forces itself upon our attention is a general type of human error. Our government swings into action following dramatic rural events like floods, and is slow to pay attention to insidious rural phenomena like the gradual loss of productive farmland by rising salinity, even though the burden of salinity is much greater than the burden of floods. So it is with comorbidity and concurrent disorders. Those that cause alarm will receive help; those that quietly destroy a person's productivity will often be ignored.

The prevalence of comorbidity is often addressed on a disorder by disorder basis. Rates of substance use disorders are examined among those with psychosis (Mueser et al., 1990; Regier et al., 1990), and rates of depression among those with panic disorder (Kessler et al., 1998). If groups of disorders are taken into account, the focus is usually on the co-occurrence of mental disorders with substance use disorders — and the prevalence of one group among cases of the other is not insubstantial, often around 45–55% (Kessler et al., 1997; Kessler et al., 1996; Regier et al., 1990; Ross, 1995). However, in order to put such figures in context it is necessary to examine the prevalence and patterns of all comorbidities in the community, not merely those that come to the attention of health services. Data from population samples allows us to do this. The current chapter takes a population approach to comorbidity, firstly reviewing the findings on the patterns and prevalences of comorbidity from several major population surveys, including the Australian National Survey of Mental Health and Wellbeing (NSMHWB), restricting the review in general to large-scale nationally representative samples. It then uses data from the Australian survey in which a random sample of Australian adults could have their say about what disorder troubled them the most, to estimate the clinical significance of each group of mental disorders. The discussion focuses on the health service planning implications of taking a population approach to comorbidity.

International studies

Up until ten years ago, most of what we knew about comorbidity, its prevalence, patterns and significance, was derived from clinical samples. Early research using clinical data focused on the co-occurrence of symptoms and the implications of this for diagnostic hierarchies in psychiatric classification (e.g., Foulds & Bedford, 1975; Sturt, 1981). However, a major limitation of using clinical data to determine patterns of symptom co-occurrence is that these analyses are confounded by a treatment-seeking bias. Focussing on clinical samples restricts the range of symptom presentation to the more severe cases. The development of structured diagnostic interviews and their use in large-scale epidemiological surveys have made it possible to study the co-occurrence of symptoms and syndromes across the whole spectrum of severity.

The Epidemiologic Catchment Area (ECA) study, which was the first large-scale community survey of the prevalence of mental disorders, determined that 18% of the total population or 60% of those with at least one DSM-III disorder, also had at least one other psychiatric disorder in their lifetime (Robins & Regier, 1991). The National Comorbidity Survey (NCS), which studied a probability sample of the US population aged 18-54, reported strikingly similar rates of comorbidity. Fifty six per cent of respondents with a lifetime history of at least one DSM-III-R disorder also had at least one other lifetime disorder (Kessler, 1995). Stated another way, nine out of ten severe 12 month disorders occurred in the 14% of the sample with a lifetime history of three or more disorders (Kessler et al., 1994).

With the exception of these two surveys, most of the large-scale epidemiological surveys have presented data on co-occurrence of disorders within a one, six or 12 month period, rather than over a person's lifetime. Similar findings emerge. The Netherlands Mental Health Survey and Incidence Study (NEMESIS, Bijl, Ravelli, & van Zessen, 1998) found over a 12 month period that 45% of people who met criteria for one disorder also met criteria for one or more additional disorders. In the Mental Health Supplement to The Ontario Health Survey, the figure was around 20% (Offord et al., 1996). When data from the ECA and the NCS are restricted to examine co-occurrence of disorders within a six month period the prevalence of comorbidity is similar (Kessler, 1995). In summary, multiple diagnoses, both current and past, are more common than expected from the prevalences of individual disorders and single diagnoses are less common, as though the burden of mental disorders tends to be concentrated in certain individuals.
This finding is independent of country or instrument and is unlikely to be artefact.

There is much discussion in the clinical and phenomenological literature about the possible causal mechanisms underlying the clustering of disorders in certain individuals. Andrews et al. (1996; 1990) studied the common neurotic disorders in volunteer twin and clinic samples and related comorbidity to the presence of a general vulnerability factor to these disorders. That is, while the clinical phenomenology may be distinct, the underlying disorders may not be. A full discussion of this issue is beyond the scope of this chapter and readers are referred to Chapter 2 in this monograph for a more detailed discussion.

When patterns of lifetime comorbidity were examined in the ECA and the NCS, three important findings emerged. Firstly, disorders within diagnostic categories

were generally more commonly comorbid than disorders from different diagnostic groups. For example, major depression was most strongly associated with dysthymia (OR = 12.8 in the NCS, OR = 14.3 in the ECA) and mania (OR = 16.9 in the NCS, OR = 31.8 in the ECA) and least strongly associated with the substance use disorders (OR = 1.9 – 2.4 in the NCS, OR = 1.9 – 3.5 in the ECA) and antisocial personality disorder (OR = 2.0 in the NCS, OR = 2.6 in the ECA). Secondly, and a notable exception to this finding, odds ratios within the anxiety disorder group were generally lower than between the anxiety and affective disorders. Thirdly, despite the strong focus in the clinical literature on comorbidity between substance use disorders and affective or anxiety disorders, these were found to be among the weakest lifetime comorbidities in both the ECA and the NCS.

When data from the ECA and the NCS was restricted to six month diagnoses, patterns were similar, with six month associations between disorder pairs generally stronger than lifetime associations. Again, anxiety and affective disorders are reported as an exception to this rule. Both the ECA and the NCS report that although six month associations of affective or anxiety disorders with substance use disorder are generally higher than lifetime associations, they are not strikingly so. When anxiety and affective disorders are comorbid with substance use disorders they are likely to be concurrent, that is to be present at the same time. It should be noted, however, that associations between anxiety and affective disorders were much stronger than between either of these disorder groups and substance use disorders, a pattern also observed in the UK National Survey of Psychiatric Morbidity (Jenkins et al., 1997; Meltzer, Gill, Petticrew, & Hinds, 1995). In summary, patterns of comorbidity observed across community samples indicate that despite the current focus of treatment and policy initiatives, comorbidities between the common mental disorders and substance use disorders are not the most prevalent comorbidities.

The Australian National Survey of Mental Health and Wellbeing (NSMHWB)

NSMHWB was a national epidemiological survey of mental disorders that used similar methodology to the NCS. It aimed to answer three main questions:

1. How many people meet DSM-IV and ICD-10 diagnostic criteria for the major mental disorders?
2. How disabled are they by their mental disorders? and
3. How many have seen a health professional for their mental disorder?

The major findings of the survey have been reported elsewhere (Andrews, Henderson, & Hall, 2001; Andrews, Issakidis, & Carter, 2001; Henderson, Andrews, & Hall, 2000; Teesson, Hall, Lynskey, & Degenhardt, 2000) and further analyses have examined such issues as perceived need for care (Meadows, Burgess, Fossey, & Harvey, 2000); and disability (Henderson, Korten, & Medway, 2001; Sanderson & Andrews, 2002). Parallel surveys were conducted to examine the low prevalence disorders (Jablensky et al., 2000) and the prevalence of mental disorders in children and adolescents (Sawyer et al., 2000).

Data from the Australian survey of low prevalence disorders indicates that among people with psychotic illnesses, the prevalence of alcohol use disorders is 36% among men and 17% among women. The figures for drug use or dependence are 38% for men and 16% for women (Jablensky et al., 2000). Data from the adult survey indicates that 48% of females and 34% of males who met criteria for an alcohol use disorder also met criteria for another mental disorder in the previous 12 months (Teesson et al., 2000). Comorbidity between mental disorders and substance use disorders in the Australian population is not uncommon. However, such information does not tell us about whether such comorbidities are the most common or disabling in the community, nor about the prevalence of comorbidity as a general phenomenon.

Andrews et al, (Andrews, Slade, & Issakidis, 2002) used the Australian national survey data to show that even within a 12 month time frame, people with symptoms that met criteria for three or more disorders over the 12 months had ten times the risk of having a current disorder when compared with people who had had only one disorder in the past 12 months. In other words, similar to previous international studies, the Australian survey found that comorbidity is more frequent than expected based on the prevalence of individual disorders.

When patterns of associations were examined, within-disorder group associations were significantly larger than between-disorder group associations, a finding similar to that reported from the ECA and the NCS. Andrews et al (Andrews et al., 2002) extended the analysis to include clusters of personality disorder defined by ICD-10 and found a similar pattern of very strong associations between clusters within the personality disorder group. Again, anxiety disorders displayed strong associations with affective disorders and, similar to the ECA and the NCS, were sometimes stronger than those within the anxiety disorder group. It has often been argued that depressive disorders follow anxiety disorders and Kessler (1999) for example, again using data from the NCS, estimated that 10-15% of depression could be attributed to earlier social phobia. Obsessive compulsive disorder did not show elevated associations with the other anxiety disorders and there is continuing discussion as to whether it is best categorised as part of a separate group of disorders sometimes referred to as the obsessive compulsive spectrum disorders (Hollander & Wong, 1995). Patterns of association both between, and within, disorder groups have the potential to inform discussion of classification and aetiology of psychiatric disorders (see Bogenschutz & Nurnberg, 2000; Vella, Aragona, & Alliani, 2000).

Earlier in this chapter we presented findings from the ECA and the NCS that showed stronger associations between disorders within a six-month timeframe compared to over a person's lifetime. Andrews et al (2002) used data from the NSMHWB to compare associations between disorders within a 12 month and one-month timeframe and found a similar pattern. Eighty three per cent of odds ratios for current associations between pairs of disorders were higher than those for a twelve-month timeframe. We suggested that this replicated finding raises the possibility that the occurrence of one disorder can be affected by the presence of another disorder. That is, the presence of one disorder might generate symptoms in an individual that could meet criteria for another disorder, or be sufficient to convert a sub-threshold secondary disorder into one that met diagnostic criteria.

In summary, data from community surveys of the Australian population indicates that comorbidity as a general phenomenon is common. Like previous epidemiological surveys, the most common associations are between disorders from the same diagnostic groups and between anxiety and affective disorders. Comorbid associations between the common mental disorders and substance use disorders are less so.

What are the most disabling comorbidities?

It is widely documented in community and in clinical samples that comorbidity is associated with high levels of disability (Bijl et al., 1998; Kessler et al., 1994). In the Australian survey, respondents with more than one disorder reported significantly higher levels of disability, distress and service utilisation, with levels increasing in a linear trend as the number of disorders increased (Andrews et al., 2002). However, what is not addressed in the literature is a way of determining which, if any, combinations of disorders are especially prevalent and disabling and how this information can be used to inform health planning. The following section presents a method for determining the clinical significance of the various groups of mental disorders.

As alluded to at the beginning of this chapter, comorbidity is a different issue to concurrence. Comorbidity refers to the clustering of mental disorders in certain individuals over time. That is, it refers to a history of disorders in the past as well as to the concurrence of disorders in the present (see Wittchen, 1996). The previous discussion has indicated that concurrent associations between disorders are often stronger than successive comorbid associations. Successive comorbidity, the presence of two or more disorders some time during an extended time period, is useful for discussing risk factors, disability or service utilisation but is less useful for determining service delivery priorities. Thus, the current analysis will focus on the prevalence and disability associated with concurrent disorders.

Method

Sample: The NSMHWB (Andrews, Henderson et al., 2001) was conducted by the Australian Bureau of Statistics under the terms of their Act that guarantees the privacy of respondents. The survey covered urban and rural areas across Australia. A multistage sample of private dwellings was drawn. Each state and territory was stratified and each dwelling within a stratum had an equal and known probability of selection. In all, 13,624 private dwellings were initially selected in the survey sample, and one adult member randomly selected as the possible respondent: 1,477 people refused, in 558 households contact could not be made with the identified respondent, and in 948 households no interview occurred because the identified respondent could not communicate, there was death or illness in the household, or the interview was prematurely terminated. The sample included people aged 18 years and over who were usual residents of households in the identified private dwellings. The sample did not include persons in hospitals, nursing homes, hotels, jails etc., or residents of households in remote and sparsely settled parts of the country. For this reason Aboriginal and Torres Strait Islander people were under-sampled and are not further identified in this paper. Ten thousand, six hundred and forty one people participated, a response rate of 78.1%. The age and sex characteristics of the sample were weighted to match the age and sex distribution in the national census.

Assessment: The whole interview was administered from a laptop computer. The Composite International Diagnostic Interview (Andrews & Peters, 1998; WHO, 1997) was used to determine, using ICD-10 and DSM-IV criteria, the presence of six anxiety disorders (panic disorder, agoraphobia, social phobia, [simple phobias were not identified], generalised anxiety disorder, obsessive compulsive disorder, post-traumatic stress disorder), two affective disorders (major depression, dysthymia), four substance use disorders (alcohol dependence and drug dependence for three classes of drugs). Screening questions were used to determine personality disorders (Loranger, Janca, & Sartorius, 1997) and an interview for ICD Neurasthenia (Tacchini, Janca, & Isaacs, 1995) was modified to reflect the CDC criteria for Chronic Fatigue Syndrome or DSM-IV undifferentiated somatoform disorder (Hickie et al., 1997). The CIDI module for schizophrenia generates false positive diagnoses (Kendler, Gallagher, Abelson, & Kessler, 1996) and a brief psychosis screener was used instead.

Disability was measured at the beginning of the interview by the Medical Outcomes Study Short Form-12 (SF-12, Ware, Kosinski, & Keller, 1996). The SF-12 is a generic measure of disability that has a mean of 50 and a standard deviation of 10. People who are disabled score less than 50, people who are very well score more than 50. The SF-12 produces two scores, a mental component scale score and a physical component scale score, the present data only refers to the former. It is reliable, valid and sensitive to change and the longer form (SF-36) has been widely used in Australia. We consider that it will become the standard health outcome measure in both mental and physical medicine. The mental health score relies on questions about vitality, social functioning, emotional role and mental health.

Training of Interviewers and Data Analysis: All interviewers were experienced interviewers employed by the Australian Bureau of Statistics. Supervisors for each State and Territory were trained to criterion at the WHO Training and Reference Centre for CIDI in Sydney and then had a subsidiary course on how to train field staff. Routine data analysis procedures were used but as a result of the complex sample design and weighting, special software was required to estimate standard errors (SE). The SE of prevalence estimates and proportions were estimated using delete-1 jackknife repeated replication in 30 design-based sub-samples (Kish & Frankel, 1974). These calculations used the SUDAAN software package (Shah, Barnwell, & Bieler, 1997).

Results

The data is presented in Table 1 and will be considered column by column. The first column is about the frequency of the diagnostic groups in the population. Anxiety disorders are the most common mental disorders and in any month, 739,000 Australian adults report symptoms that meet criteria for a DSM-IV anxiety disorder. People could have more than one anxiety disorder, say Post-Traumatic Stress Disorder (PTSD) and Obsessive Compulsive Disorder, but in this table they would still be counted as having an anxiety disorder. The frequency of personality disorders has never before been estimated in any population survey and while the prevalence (5.3%) is close to what was expected, more work is required to know exactly who was being identified. The diagnoses of affective, substance use and somatoform disorders are standard and as expected, and the rates are likely to be correct. Psychosis was the rarest disorder, 14 times less common than anxiety disorders. Although the rate of psychosis in this study (0.4%) was identified via a brief screening instrument, it is similar to that reported in the recent low prevalence survey (Jablensky et al., 2000) and is likely to be correct.

Table 1: Population prevalence and relative disability for 1 month diagnoses, NSMHWB

	Prevalence and Relative Disability		
	Population Prevalence	**Mean SF-12 Deviation**	**Population Disability Units**
Diagnosis	'000 (%)	■	'000
Affective	518 (3.8)	1.7	881
Anxiety	739 (5.5)	1.1	813
Substance Dependence†	297 (2.2)	0.6	178
Personality	709 (5.3)	0.8	566
Psychosis*	56 (0.4)	1.0	56
Somatoform	164 (1.2)	1.5	245
[Sum of the above]	2483 (18.4)	–	2739
Any mental disorder	**1660 (12.3)**	**0.8**	**1494**

† People who met criteria for abuse without dependence are not included in this analysis.

* If a weighting of severe disability for psychosis is used the population disability units are: 3.0 x 56 = 168,000.

The second column is about disability. The results in column 2 are the mean SF-12 deviations from the population mean in standard deviation units. For illustrative purposes, 0–1 is considered to indicate mild disability, 1–2 moderate disability and a score of more than 2 severe disability. Remember that these are group means, and individual scores will be distributed above and below the mean value. In this column the affective disorders generate the highest scores and the substance use disorders the lowest. We have evidence that such self-report measures do not accurately represent the true disability associated with psychosis and have arbitrarily assigned a score of 3 (severe disability) to cases of psychosis. The significance of this decision will become apparent in later tables.

The third column is about the total disability in the Australian population attributed to people with the various disorders. When the number of cases is multiplied by the average level of disability of those cases, the affective and anxiety disorders are principal causes of disability in the community and, psychosis aside, substance use and somatoform disorders the least. But even if one substitutes an SF-12 value of 3 for all persons with psychosis, psychosis still generates less total disability than any other group of disorders, simply because it is a rare disorder. The lowest disability score of any individual in the national mental health survey was 4.2 standard deviations below the mean of 50, thus an average score of 3 for the whole psychosis group is very low indeed.

The bottom row shows that 1.7 million (1,660,000) people in Australia met criteria for any current mental disorder, their average SF-12 score is 0.8 and the product of these scores is 1.5 million disability units. In the sub-total line above, we show the

total number of diagnoses as 2.5 million (50% greater) as though half the people had symptoms that meet criteria for two diagnosis groups. Actually some meet criteria for three or four diagnoses and rather fewer have two diagnoses. In the right hand column the population disability units are 2,739,000, twice as high as in the bottom or 'any disorder' row, demonstrating that people with comorbid disorders are more likely to have higher disability scores, higher even than the concurrence of two diagnoses would suggest.

Table 2a: Prevalence and disability of concurrent 1 month diagnoses, NSMHWB.

Diagnosis	Concurrent Diagnoses						
	Affective	Anxiety	Substance Dep.	Psychosis	Person-ality	Somato-form	Total
	'000	'000	'000	'000	'000	'000	'000
Affective	**183**	245	64	185	20	74	518
■ SF-12 deviation	**1.4**	1.8	1.9	1.8	1.9	2.2	
Anxiety	–	**324**	77	241	15	89	739
■ SF-12 deviation	–	**0.6**	1.5	1.5	1.9	1.8	
Substance Dep.	–	–	**165**	72	†	18	297
■ SF-12 deviation	–	–	**0.1**	1.2	†	2.1	
Personality	–	–	–	**378**	16	57	708
■ SF-12 deviation	–	–	–	**0.3**	1.8	2.0	
Psychosis	–	–	–	–	**23**	†	56
■ SF-12 deviation	–	–	–	–	**3.0**	†	
Somatoform	–	–	–	–	–	**47**	164
■ SF-12 deviation	–	–	–	–	–	**0.8**	

† < 10,000

Table 2a shows exactly the same people as in Table 1, now cross tabulated according to their concurrent diagnoses. In the top row 183,000 Australians met criteria for an affective disorder only and their mean disability score was 1.4; 245,000 Australians met criteria for concurrent anxiety and affective disorders and their mean disability score was 1.8 and so on. On the diagonal, in bold, are the disability scores for people who met criteria for only one current diagnosis. The top two disability values were psychosis (remember we re-scored all of them as severely disabled) and affective disorders. The least disabling single disorders were substance dependence and personality disorders, respondents with substance dependence and no other disorder returning an average score of 0.1 standard deviation drop on the SF-12. Thus while some might have regarded themselves as very well and others as disabled, it was the average of the group that was close to zero, not that all individuals with substance use disorders as their only mental disorder scored close to zero.

The cumulative disability associated with each single and double disorder is shown in Table 2b in the same population disability units as used in Table 1 column 3. In

fact the total disability scores by diagnosis are exactly the same as in the right hand column in Table 1. The largest contributor to disability at the population level is the combination of anxiety and affective disorders. The least significant is substance dependence alone (we have ignored cells with less than 10,000 people because the numbers in the survey on which they were based are too small to be reliable). While it is easy to identify the highest and the lowest single diagnoses, and the highest and lowest combinations of diagnoses that contribute to psychiatric disability, it is very difficult to form a judgement about the totality of the data in Table 2b, important as it is.

Table 2b: Population disability units for concurrent 1 month diagnoses from the NSMHWB.

Diagnosis	Concurrent Diagnoses						
	Affective	Anxiety	Substance Dep.	Personality	Psycho-sis	Somato-form	Total
	'000	'000	'000	'000	'000	'000	'000
Affective	**256**	441	122	333	38	163	881
Anxiety	–	**194**	116	362	29	160	813
Substance Dep.	–	–	**17**	86	†	38	178
Personality	–	–	–	**113**	29	114	566
Psychosis	–	–	–	–	**69**	†	168
Somatoform	–	–	–	–	–	**38**	245

† < 10,000

The prevalence and mean disability scores for people with only one current diagnosis are displayed in the first column of Table 3a and the population disability units in the first column of Table 3b. They are exactly the same numbers that were on the diagonals in Tables 2a and 2b.

In clinical practice, patients prioritise their symptoms and emphasise the symptoms that trouble them the most. It is that group of symptoms that is the focus of treatment. In the survey, once all diagnoses had been established, each person who was likely to meet criteria for more than one of the listed diagnoses was asked, "you mentioned having problems like (listing their groups of symptoms). Which troubled you the most?" Their response to this question was recorded as the main problem for those with concurrent disorders, and the numbers of people, and their mean disability and total disability units are displayed in column two of Tables 3a and 3b.

When people have two or more disorders, what proportion chose a particular group as their main disorder? At some level this gives an indication of what they might seek treatment for or the disorder they would most like to be without, not necessarily what might disable them the most. Seventy-seven per cent of people with a concurrent anxiety said that was their main complaint, 61% of people with psychosis and 54% of people with affective disorders said likewise. These three disorders were of greatest importance to the sufferer. Forty per cent of people with a concurrent substance use dependence chose it as their main complaint, 28% of people with a

personality disorder and 27% of people with a concurrent somatoform disorder did likewise. That is, in these three groups of disorders, other comorbid disorders were judged to be more troubling. Mostly these were the comorbid disorders listed in Table 2a, but sometimes people identified a concurrent physical disorder as their main complaint.

Table 3a: Prevalence and disability of only or main problem diagnosis, NSMHWB.

Diagnosis	Diagnosis as Only or Main Problem		Other Diagnosis as Main Problem					
	ONLY	MAIN	Affective	Anxiety	Substance Dep.	Person-ality	Psychosis	Somato-form
	'000	'000	'000	'000	'000	'000	'000	'000
Affective	**183**	**192**	–	107	†	†	13	†
■ SF-12 deviation	**1.4**	**1.9**	–	1.9	†	†	2.2	†
Anxiety	**324**	**324**	80	–	†	20	†	†
■ SF-12 deviation	**0.6**	**1.2**	2.1	–	†	1.6	†	†
Substance Dep.	**165**	**53**	23	35	–	†	†	†
■ SF-12 deviation	**0.1**	**0.4**	2.0	1.5	–	†	†	†
Personality	**378**	**99**	62	111	13	–	†	†
■ SF-12 deviation	**0.3**	**0.9**	1.8	1.5	0.7	–	†	†
Psychosis	**23**	**20**	†	†	†	†	–	†
■ SF-12 deviation	**3.0**	**3.0**	†	†	†	†	–	†
Somatoform	**47**	**32**	29	34	†	†	†	–
■ SF-12 deviation	**0.8**	**1.0**	2.4	1.7	†	†	†	–

† < 10,000

Table 3b. Population disability units for only or main problem diagnosis, NSMHWB

Diagnosis	PDU's: Diagnosis as Only or Main Problem			Relative Burden
	Only	Main	Total	% Total PDU's
	'000	'000	'000	%
Affective	256	365	621	38
Anxiety	194	389	583	35
Substance Dep.	17	21	38	2
Personality	113	89	202	12
Psychosis	69	60	129	8
Somatoform	38	32	70	4
TOTAL	**687**	**956**	**1643**	**100**

In Table 3b we list the population disability units for single or only disorders, for the identified main disorder when there were two or more present, and the total for the two classes. Nobody is counted twice. The total gives the sum of population disability units attributable to each group of disorders. The total, 1,643,000 population disability units, is greater than the sum of the averages in Table 1, because now we include only the disorders that the respondents see as primary, presumably most severe. However, it is less than the subtotal in Table 1 because there is no double counting of disability. The affective and anxiety disorders are the largest, accounting for 38% and 35% of the population total of disability respectively, or 73% in all. The remaining 27% is divided among the other three classes: personality disorders 12%, psychosis (even with the higher loading) 8%, somatoform disorders 4%, and substance use disorders 2%.

Discussion

The current analysis takes a population approach to determining the prevalence, disability and clinical significance associated with comorbid disorders. As shown in Table 2a, the disability associated with comorbidity among any two disorder groups is generally higher than that associated with any disorder group alone. These findings are not necessarily new. As mentioned in the introduction, results from the NCS and the NEMESIS epidemiological surveys of mental disorders showed that, regardless of disorder combinations, as the number of disorders increases so too does the level of functional disability (Bijl et al., 1998; Kessler et al., 1994). When the disability is combined with the prevalence of each comorbid disorder group combination the resultant population disability units show that the combination of affective with anxiety disorders or personality disorders with affective disorders or personality with anxiety disorders produce the greatest population burden (Table 2b). When the analysis was restricted to a single nominated main problem for each respondent it can be seen that affective and anxiety disorders are again the most prevalent and most disabling and therefore account for the highest amount of population disability (Tables 3a and 3b).

These results have implications for the Global Burden of Disease (GBD) project. Murray and Lopez (1996) showed that mental disorders were the principal cause of Years lived with disability and that, because of this, mental disorders ranked high in any table of the global burden of disease. It actually may have overestimated the burden of mental disorders because it did not control for concurrent disorders, and hence, while they took care to attribute years of life lost to only one disease, years lived with a disability were multiply attributed to all diseases a person currently had. There have been a number of attempts to rectify this (Andrews, Sanderson, & Beard, 1998). The recent Australian Burden of Disease study (Mathers & Vos, 1999) took a straightforward approach, apportioning the average disease weight between all disorders present. For this reason, as well as for other methodological changes, it calculated the burden of mental disorders in Australia at 15% of the total, third in importance after heart disease and cancer, a proportion that indicates the public health importance of mental disorders. Burden of disease calculations and health service planning require concurrent comorbidity to be addressed, and concurrent comorbidity is what the clinician must deal with. The current chapter presents one method for addressing the problem of concurrent comorbidity.

The results shown in Table 3b are not dissimilar to the years lived with disability proportions in the Australian Burden of Disease study. Mathers et al, (1999, Annex Table G) estimated that the affective disorders accounted for 38% of the years lived with a disability due to a mental disorder, the anxiety disorders 26%, the substance use disorders 21%, personality disorders 6% and psychosis 6%. They did not estimate the disability attributable to somatoform disorder. The disability weights used in that study came, not from self-report, but from judgements made by experts as to the impact of each disorder on the functioning of the average sufferer. The main difference between those results and the present results based on self-report is that people with substance use disorders underestimate the impact of them on their functioning. Both studies agree about the importance of the affective and anxiety disorders, and both note that psychosis is not the pre-eminent cause of disability attributed to mental disorders, because even though disabling, it is a rare disorder.

The size of the disability attributed to a particular disease group may not be a perfect indicator of relative importance. Merikangas et al, (1998) analysed data from seven community surveys in six countries and concluded that while there are strong comorbidities between mental disorders and substance use disorders, the mental disorders typically have an onset at an earlier age and are significant predictors of subsequent substance use disorders — probably by hastening the progression from use to problem use and from problem use to dependence. Simulations on the basis of this data suggest that about half of all drug dependence is associated with prior mental disorder: conduct disorder/adult antisocial behaviour in men, and conduct/antisocial behaviour and anxiety and mood disorders in women. These findings raise the possibility of prevention of substance use by early intervention with the mental disorder before the onset of the substance use disorder.

Australia spends 5% to 7% of its total health budget (public and private practice, specialist and general practitioner, in-patient and outpatient, veterans' affairs and the pharmaceutical benefits scheme) on mental health. This is half of the amount of money per capita that Canada and the United Kingdom spend. About half this money is spent on psychosis and substance dependence treatment: disorders that produce a substantial amount of individual suffering but do not account for a great deal of the total human suffering or disablement. If we were to respond to suffering or to the public health approach of relieving the burden of disease, we would prioritise both the anxiety and the affective disorders. The preferential funding of psychosis and substance use exists because, in a democracy, funds are allocated partly in response to voter demand. Families of young people who develop psychosis or substance dependence are rightly affronted by the visible suffering in their loved one. Other families are afraid their children might develop these disorders. Together, they form a potent advocacy group. But the wider society is also sensitive to these concerns. Fear of the 'crazed psychotic' or 'drug addict' is rightly, or wrongly, an important societal concern and protection from this perceived fear is seen as legitimate expenditure of taxes.

Rosenheck (1999) edited a series of articles on the 'care of the least well off'. He agreed that the relatively small number of people with the most serious illnesses (psychosis) consume a disproportionately large volume of health care services. He argued that there should be a balance between improving efficiency and maintaining intensive services for those with the greatest needs and put forward seven principles that could be used to guide resource allocation decisions. He rightly argued for the

autonomy of individual patient welfare "…that one should never withhold treatment from a patient to achieve some other goal", even if it is the potential to receive more benefit from the same resources. The argument between equity and efficiency has just been joined and there is no obvious solution. What is obvious is that data now exists to inform the argument and that advocacy alone is no longer sufficient (Andrews & Henderson, 2000).

Conclusions

This monograph arose from a cooperative endeavour between the Mental Health Branch and the Drug Strategy Branch whose concerns were centred on the epidemic comorbidity between psychosis and substance dependence. Data from epidemiological surveys both here and overseas suggests the main burden of concurrent disorders is elsewhere. WHO has argued that, as there are insufficient funds to provide health care to all, we might prioritise diseases of greatest burden and diseases in which there are cost effective treatments. On both grounds the anxiety and affective disorders rank higher than the other mental disorders. Earlier we noted the human tendency to respond to emergencies, to prefer flood mitigation to salinity control. At present our health system struggles to respond to the emergencies posed by substance use and psychosis. Responding to the quieter problem posed by anxiety and affective disorders will be a difficult task.

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Chapter 4

Comorbidity and early intervention/prevention

Mark Dadds and Erin Atkinson

Introduction: Aims and definitions

The aim of this chapter is to consider the question — Do prevention and early intervention programs for the major internalising (anxiety and depression) and externalising (behavioural) disorders in young people hold promise for reducing the incidence of substance use disorders in the community? The question is important for several reasons. First, substance use disorders represent a substantial health problem in society with significant economic and human costs. Second, traditional prevention strategies that focus on psychoeducation regarding the dangers of using alcohol and drugs, or teaching youth skills for resisting pressure to use substances, have generally been unsuccessful. Third, there is considerable evidence suggesting comorbidity between internalising and externalising problems and substance use problems (see Chapter 3). Therefore, it would seem plausible that early intervention and prevention strategies for internalising and externalising problems could impact on the incidence of substance use disorders. Addressing comorbid conditions is a vital concern for health professionals as comorbidity often means that the course of the problems is more chronic and severe compared with single disorders, and it can create more substantial social and occupational decline for the diagnosed person.

The current body of literature on the prevention of substance use problems suggests that in order to advance understanding in this area, researchers must adopt a risk-focused approach. That is, we need to specify aetiological theories of substance use disorders based on risk factor research, and design and evaluate interventions that reduce or eliminate the identified risk factors (Gorman, 1996; Hawkins, Catalano, & Miller, 1992). The central tenet of this paper is that the presence of anxiety, depression, or behavioural problems or their risk factors in young people can represent risk factors for the development of later substance use problems. Thus, it is predicted that these disorders and associated risk factors can be targeted for prevention of substance use disorders. The current paper will address this issue by a) outlining risk factors for substance use problems, b) highlighting links between risk factors for substance use disorders and other mental disorders in young people, c) addressing comorbidity between substance use disorders and other mental disorders, d) discussing the implications of risk factor approaches for prevention of substance use disorders, and e) outlining current early intervention programs for anxiety, depression, and behavioural disorders that could potentially reduce the incidence of substance use disorders.

It is noted that adopting a risk-reduction approach to substance abuse prevention is likely to require the development and evaluation of multiple interventions, rather than one generic intervention that can be successful in reducing the incidence of substance use problems for all people all of the time (Catalano, Kosterman,

Hawkins, & Newcomb, 1996). Thus, while the current paper focuses on interventions that target anxiety, depression, and behavioural problems, it does not disregard the potential success of other types of prevention programs that address empirically supported risk factors.

Substance use disorders will be used here to refer to both alcohol and drug disorders unless the point under discussion refers to one or the other specifically. Internalising disorders will be used to refer to the cluster of disorders characterised by negative affectivity, including the depressive disorders of Major Depressive Episode and Dysthymia, and the anxiety disorders of Generalised Anxiety Disorder, Panic Disorder, Agoraphobia, Social and Simple Phobias, Obsessive Compulsive Disorder, and Post-traumatic Stress Disorder. The depressive and anxiety disorders show high rates of comorbidity within and between each other, leading many researchers and clinicians to consider them as a general class (e.g., negative affectivity, neuroticism, or internalising disorders). Externalising disorders will be used to refer to the cluster of disorders characterised by behavioural problems including Oppositional Defiant Disorder, Conduct Disorder, and Attention Deficit Hyperactivity Disorder. A range of other behavioural problems may also be included within the term externalising disorders. Generally these refer to historical variations in terminology or diagnosis, or themselves contain other variants on the above diagnoses. For example, externalising disorders would also include antisocial behaviour, delinquency, and aggressive behaviour.

Much of the research reviewed in this area has used samples with subclinical problems rather than diagnosed disorders. For example, many studies of externalising disorders have used broad samples of children referred for disruptive behaviour problems, or children selected from non-referred samples who were found to have disruptive behaviour problems on the basis of a screening measure. Given this and the inherent arbitrariness of the cut-off between problem and disorder, the term 'disorder' will be used loosely to refer to a broad range of identified problems (including explicitly diagnosed disorders) unless otherwise specified.

Risk factors for individual disorders

There is a wide range of factors that have been cited as risk factors for the development of substance use disorders. Table 1 presents a summary of the findings of risk factor research conducted with regard to such disorders. The contents of this table are drawn from a variety of sources (Botvin, 1999; Bukstein, 1995; Cicchetti & Rogosch, 1999; Glantz & Hartel, 1999; Hawkins et al., 1992; Hawkins, Kosterman, Maguin, Catalano, & Arthur, 1997; Kilpatrick et al., 2000; Weinberg & Glantz, 1999). As can be seen, identified risk factors can broadly be separated into two classes — contextual and individual-interpersonal. Contextual risk factors are those that operate within a social context and include such things as current laws and legislation, moral and societal norms, and economic well being. Individual-interpersonal risk factors encompass personal, interpersonal, and environmental characteristics. It is noted that a number of familial/contextual factors play a significant role in the development of substance use disorders, including parental drug problems, poor child management strategies, limited family support/closeness, and family conflict/discord.

Table 1: Risk factors in the development of substance use disorders.

Contextual/societal factors	
	Risk Factor
Laws and Norms:	Decreased purchase cost Decreased drinking age No restrictions on sale
Availability	Increased availability
Extreme Economic Deprivation	Poverty (Not social class)
Neighbourhood Disorganisation	High population density High residential mobility Physical deterioration Low levels of attachment to neighbourhood
Individual/interpersonal factors	
Physiological Factors	Genetic risk for addictive behaviour
Psychological Factors	Comorbidity with other Psychological disorders (PTSD, Bipolar Disorder, Depression, Anxiety Disorders, Conduct and Antisocial Problems) High sensation seeking, low harm avoidance
Family Drug Behaviour	Parental/sibling alcoholism Parental use of illicit drugs High drug salience in family Modeling by older brother Father's substance use and emotional stability Perceived parental permissiveness
Family Management Practice	Inconsistent child management practices Low parental education Low aspirations for child Parental non-directiveness/permissiveness Negative communication patterns Inconsistent, unclear behaviour limits Unrealistic parental expectations Perceptions of father as hostile Parental interactions and psychological instability
Family Environment	Marital discord High family conflict Low parent-child closeness Low maternal involvement Low family bonding Low family involvement and attachment
Academic	Intellectual ability Poor school performance Lack of commitment to school Failure in school Truancy
Peer	Low peer acceptance Early aggression Low inhibition Peer substance use
Onset of Drug Use	Early onset predicts level of use and range of substances

Tables 2 and 3 present a summary of the risk factors commonly cited for anxiety and depression problems in young people. The contents of these tables have been drawn from multiple sources (Bruch, 1989; Dadds, 1997; Essau & Dobson, 1999; Lonigan & Phillips, 2001; McCauley, Pavlidis, & Kendall, 2001; Rubin & Burgess, 2001). The most salient factors emerging in the literature as risk factors for anxiety problems are temperamental dispositions to be shy and fearful of novel people, objects, or situations (behaviour inhibition or reticence), the existence of parental anxiety or depressive problems, and exposure to traumatic environmental events. Secure attachment, an easy temperament, and social skills stand out as ongoing protective mechanisms. Those emerging most commonly for depressive problems include parental depression, poor child management strategies characterised by criticism and limited reinforcement of positive behaviours, conflict, and child emotion dysregulation. Family support and closeness, adaptive communication strategies among family members, and perceived social support represent protective factors.

Table 4 contains a summary of risk factors for externalising behaviour problems (Dadds, 1997). A range of risk factors from individual, family and social contexts interact to contribute to a range of possible outcomes. Low socio-economic status has been established as a marker for many possible risk factors including genetics, environmental toxicity, poor educational opportunities, poverty, social isolation, lack of employment, and modeling of violence (Dadds, 1997). Age of onset is also significant in that earlier age of onset is associated with poorer prognosis for boys (Loeber, 1990). Similarly, the extent to which problem behaviour is expressed across multiple settings (ie., home, school, and community) is also a predictor of severity and durability of conduct problems (Kazdin, 1993; Loeber, 1990).

In comparing these three tables, it can be seen that there is some overlap between the risk factors for substance use disorders and the risk factors for the common mental disorders of childhood. Most notable is that at a broad level, early familial and contextual factors appear to play a significant role in the development of all of these problems, particularly through the presence of parental psychopathology, problematic child management strategies, and difficulties in parent/child relationships. Given the presence of shared early environmental risk factors for these disorders, it could be predicted that when children are exposed to such conditions they are at risk of developing more than one of these problems at some point in their life. More specifically, the evidence for common early risk factors would indicate that internalising and externalising problems in children could represent part of the developmental trajectory of substance use disorders. There could be pathways to such disorders through behavioural problems and delinquency, potentially related but diverse pathways to substance use disorders through internalising problems (ie., anxiety and depression), as well as possible pathways involving interrelationships between the three problems (ie., substance use disorders, anxiety, depression and conduct disorders). It is to this issue of comorbidity among disorders that we now turn.

Comorbidity

Comorbidity is defined as the co-occurrence of one or more disorders in the same child or adolescent either at the same time or in some causal sequence (Kessler, 1995; Ollendick & King, 1994). In relation to internalising disorders, data from clinical samples points to a high overlap between these disorders and substance use

disorders, independent of whether the referred problem is a substance use (Regier et al., 1990) or an internalising disorder (Bibb & Chambless, 1986). However, the frequency and nature of this comorbidity can be highly variable in substance misuse groups, ranging from acute internalising disorders at referral that appear secondary to the substance use disorder and quickly remit in treatment, leaving the "pure" substance use problem to run its course, to longstanding internalising disorders that may underlie the substance use disorder. Contamination by referral issues thus makes clinical studies unsuitable for obtaining community estimates of the comorbidity between substance use and internalising disorders and researchers must turn to epidemiological studies. Two of the most up-to-date and comprehensive of these were the Epidemiological Catchment Area study and the National Comorbidity Survey in the United States (see Kessler, 1995). These surveys were consistent in showing that the lifetime comorbidity odds-ratio of having both an internalising and a substance use disorder ranged from approximately 2.5 to 3.5. Thus, one has approximately three times the chance of suffering a substance use disorder if one has an internalising disorder, and vice versa, compared to a disorder-free person. These odds-ratios are means collapsed across specific mood and anxiety disorders and substance use disorders. They would be considerably higher if calculated according to the presence of any type of internalising disorder, and may be higher for social phobia and panic/depression in particular.

Externalising disorders have also been demonstrated to be strongly and consistently associated with substance use disorders (Glantz, Weinberg, Miner, & Colliver, 1999). For instance, results from the US National Comorbidity Survey (Kessler et al., 1996) indicate that nearly 60% of those with a lifetime diagnosis of conduct disorder also had at least one lifetime diagnosis of an addictive disorder. The same study estimates that comorbidity between Antisocial Personality Disorder and substance use disorders is even higher (83.6%), while accounts of the rates of comorbidity between Attention Deficit Disorder (ADD) and substance use disorders is less clear, possibly due to the complex relationship between ADD and a range of conduct disorder cluster behaviours.

It is also possible that the pathways to substance use disorders through internalising problems and externalising problems are interweaving. Recent research has shown that anxiety and depression may feature in externalising problems in young people far more significantly than has traditionally been acknowledged. For example, measures of attention deficit problems are highly confounded by the presence of anxiety problems (Perrin & Last, 1992), and internalising problems can enhance externalising problems through adolescence (Loeber, Russo, Stouthamer-Loeber, & Lahey, 1994). Unfortunately, longitudinal studies that simultaneously consider early internalising and externalising disorders as predictors of later substance use disorders are not available, and should be a research priority.

Table 2: Developmental risk for anxiety disorders and associated intervention strategies.

Developmental Phase		Risk Factors	Potential Mechanisms of Prevention
Infancy:	Child:	Shy temperament, behavioural inhibition	Early identification of high-risk children and anxious parents. Parental support & parent training to foster responsive parenting, secure attachment, and positive parental coping strategies.
	Family:	Neglect, or over-protection Parental psychopathology, especially anxiety	
	Society:	Environmental stress, e.g. loss, divorce	
Childhood:	Child:	Reticence, behavioural inhibition, shyness Social isolation.	Social problem-solving training encouraging proactive solutions. Increasing focus on cognitive strategies as child matures. Exposure programs to overcome fears. Enhancement of social skills and opportunities for peer interaction.
	Family:	Parental psychopathology Over-protection of child in the face of challenges Selective attention to threat, and avoidant solutions. Parental over-control or criticism.	Training parents to model effective cognitive and behavioural coping. Positive parental strategies to manage child avoidance.
	Society:	Social isolation, insularity.	Responsive parenting. Family connections to school and community.
Adolescence:	Child:	As above. Possibility of comorbid disorders, especially depression and substance use.	As above. Cognitive-behavioural training with increasing focus on adolescent and related issues (depression, substance use). Increasing focus on issues of autonomy for family.
	Family:	As above	Parental training in balancing autonomy and independence with family support.
	Society:	Peer pressure Regarding comorbidity: Prevalence of substance use.	

Table 3: Developmental Risk for Depressive Disorders and Associated Intervention Strategies.

Developmental Phase		Risk Factors	Potential Mechanisms of Prevention
Infancy:	Child:	Shy temperament, social inhibition; increased negative effect Insecure attachment — anxious, avoidant	Early identification of high-risk children and depressed parents. Parental support & parent training to foster responsive parenting, secure attachment, and positive parental coping strategies.
	Family:	Parent practices characterised by rejection, abuse, neglect; and, or overly intrusive parenting Low parental warmth and support/availability Parental psychopathology, especially depression Family conflict	
	Society:	Environmental stress e.g. loss, divorce	
Childhood:	Child:	Shyness Insecure attachment	Social problem-solving training encouraging proactive solutions. Increasing focus on cognitive strategies as child matures. Enhancement of social skills and opportunities for peer interaction.
	Family:	As above	Parental support and strategies for managing/regulating own mood. Positive parental strategies to manage child behaviour, encourage responsive parenting, and foster positive parent/child relationships.
	Society:	Social isolation, poor social skills Environmental stress	Family connections to school and community.
Adolescence:	Child:	As above, and also: Maladaptive cognitive style — negative view of self, others, and the future Deficits in active problem-solving Possibility of comorbid disorders, including anxiety and substance use Being female	As above. Cognitive-behavioural training with increasing focus on adolescent and related issues (e.g. emotion regulation and substance use). Increasing focus on issues of autonomy for family. Parental training in balancing autonomy and independence with family support.
	Family:	As above	
	Society:	Social isolation Regarding comorbidity: Prevalence of substance use.	

Table 4: Developmental Risk Factors for Externalising Disorders and Associated Intervention Opportunities.

Developmental Phase		Risk Factors	Potential Interventions
Prenatal — Infancy:	Child:	Environmental toxicity Temperamental difficulties	Environmental safety e.g. lead minimisation Early identification of children at risk through temperamental and behavioural problems, and families at high risk through socio-economic adversity and psychopathology.
	Family:	Poverty, low SES, social isolation Family violence, conflict, separation Parental psychopathology Poor health, nutrition	Provision of adequate health care/parental and infant support programs, home visiting programs.
	Social:	Economic hardship, unemployment Family breakdown, isolation Cultures of violence	Promotion of social equality/support/community connectedness. Provision of family support, education and therapy services, pre-marital and pre-parenting education programs. Promotion of non-violent cultures and communities.
Toddlerhood — Late Childhood:	Child:	Learning & language difficulties Impulsivity	Early remediation of learning and language difficulties. Provision of parent training and broader family interventions.
	Family:	Coercive family processes/violence Low care and nurturance Inadequate monitoring of child	Family and marital support programs. After-school care and monitoring of children. Peer social skills programs.
	Social:	Inadequate child care & parental support Lack of educational opportunities Negative parent-school relationship	Provision of positive school environments and educational opportunities. Promotion of quality parent-school relationships.
Adolescence:	Child:	School — employment failure Cognitive bias to threat/hostility Peer rejection/deviant peer group Substance abuse/depression	Cognitive-behavioural skills programs for teenagers. Academic and work transition skills programs. Crisis support for family/youth individuation problems, breakdown & homelessness.
	Family:	Conflict/individuation problems Rejection/homelessness	Family-adolescent therapy services. Substance abuse prevention programs.
	Social:	Lack of education/employment Culture of violence	Cultures of community respect and connectedness.

Given the presence of some shared risk factors between substance use, internalising and externalising disorders, and the prevalence of comorbidity amongst these disorders, a risk reduction approach to substance abuse prevention would predict that interventions that target the shared risk factors and/or comorbid conditions could help to reduce the incidence of substance use disorders. However, the design of specific preventive interventions would depend upon the nature of the causal links between other mental disorders and substance use disorders. Possible mechanisms of comorbidity are discussed next.

Causal models of comorbidity

Kessler and Price (1993) have proposed a model of four potential causal links between comorbid disorders, each of which has implications for the design of joint preventive efforts. Firstly, one type of disorder may lead directly to another. Thus, the abuse of certain drugs (cocaine, psychostimulants) can directly produce panic symptoms. For the purposes of this chapter, it is difficult to conceive of internalising or externalising disorders directly causing substance use disorders. Secondly, comorbidity can occur due to indirect effects of one disorder on another. Thus, social fears may lead directly to the abuse of drugs as a self-medication strategy. While evidence in this regard is limited to descriptive clinical studies, it is highly likely that this direct path is characteristic of a substantial proportion of those with substance use disorders. However, it should be noted that the reverse has been noted, whereby substance use disorders exacerbate anxiety and depression, at least in the short term. Thirdly, one disorder may be associated with contexts that potentiate the likelihood of another. Thus, disruptive behaviour problems and conduct disorder may lead to exposure to deviant peer groups that increase risk for substance use disorders. Depression may lead to an erosion of social networks that potentiates isolation and thus solitary drug taking. Fourth, comorbid conditions may share common causes. That is, problems may develop on a trajectory with each of the comorbid conditions representing different developmental stages of this trajectory. Recent research has demonstrated that generalised anxiety and depression share a genetic vulnerability (Kendler, 1996). As has been argued in this paper, it is possible, given the occurrence of shared risk factors, that anxiety, affective and conduct disorders represent earlier problems in the development of substance use disorders.

Clearly, Kessler and Price's (1993) model reflects a putative structure that is unlikely to be so distinctive in reality. Thus, two comorbid disorders may share some common causal variables, as well as having indirect effects on each other, and influencing contexts that serve to exacerbate or diminish the other disorder. Further, their model has very different implications at clinical versus population/epidemiological levels. Patterns of inter-causality will differ from person to person, and clinicians have long been in the habit of sorting out the causal sequences of anxiety, depression, and substance abuse as a treatment guide to working with the individual client. At the population level, and thus with regard to preventive interventions aimed at large populations, any one causal pathway will explain only part of the variance in comorbidity. However, this may be enough to justify its influence on the design of large-scale community interventions.

No studies specifically designed to look at developmental causal sequences linking substance use with internalising disorders could be located. Perhaps the closest study in the literature comes from Catalano et al,(1996) who showed that a 'social

development' model that emphasises social competence through late childhood and adolescence was the best predictor of substance use disorders in the late teen years. However, there exists enough indirect evidence to make some useful speculations. First, apart from transient anxiety or depression directly resulting from the abuse of specific substances, such disorders tend to precede substance use disorders developmentally. Secondly, it should be noted that in terms of comorbidity within internalising disorders, several studies have shown that anxiety problems typically precede and are risk factors for depressive disorders, although the reverse has not been found (Angst, Vollrath, Merikangas, & Ernst, 1990; Cole, Peeke, Martin, Truglio, & Seroczynski, 1998; Hagnell & Graesbeck, 1990). Thirdly, anxiety disorders and their early signs can be identified in childhood and many emerge as clear disorders in late childhood and early adolescence. Depression is relatively rare before middle adolescence and shares its initial onset period with substance use disorders, that is, in the teen years. Thus, it is likely that a pathway through anxiety disorders, depression, and then substance use disorders represents one pathway to substance use disorders that characterises many sufferers. Consequently, early intervention for internalising disorders, in particular the early signs of anxiety problems, may hold potential for reducing substance use problems in the community.

The causal pathway linking substance use disorders and externalising disorders has been more fully researched and documented in the literature. There exists a relatively clear developmental trajectory for substance use disorders that begins with early child behaviour problems, conduct problems, and attention deficit problems, high sensation seeking, and social adversity. For example, Reinherz, Giaconia, Carmola-Hauf, Wasserman and Paradis (2000) studied data from 360 respondents followed prospectively over a 17 year period to determine factors that would predict drug disorders in early adulthood. It was found that child behaviour problems such as hyperactivity, poor concentration, aggression, and hostility displayed at age six were predictive of substance disorders for both males and females at age 21. Other factors at age six predicting later substance problems included low socio-economic status, being born to young parents, and having a larger family size. In addition, a study by Windle (1990) found that antisocial behaviour in early adolescence predicted substance problems in late adolescence. Thus, based on the above evidence, it would be predicted that early intervention for childhood externalising problems could also hold potential for reducing the incidence of substance use disorders in the community.

In the following sections, implications of the comorbidity between substance use, internalising and externalising disorders for prevention efforts for substance use disorders will be considered. Traditional efforts to prevent substance use disorders will be briefly reviewed within a risk factor model. Prevention strategies based on the ideas presented in this paper regarding the interrelationships between substance use, internalising, and externalising disorders will then be addressed.

Traditional approaches to the prevention of substance use disorders

Until quite recently, principal attempts to prevent substance use disorders in the community have focused on two of the risk factors identified for such disorders (outlined previously) — societal norms/laws and social influence (association with people who use drugs) (Botvin, 2000; Hawkins et al., 1992). With regard to societal norms/laws, prevention programs have been designed to manipulate the supply and availability of substances, change the legal consequences of substance use, and

educate consumers about the adverse consequences of drug use (Hawkins et al., 1992). To address social influence issues, programs have been developed to teach young people social skills for resisting peer pressure to use substances (Hawkins et al., 1992). Unfortunately, prevention efforts targeted at these two risk factors have been shown to be ineffective (e.g., Bangert-Drowns, 1988). In fact, in some instances young people have been shown to increase their interest in substances following participation in these programs (e.g., Stuart, 1974).

The prevention programs based on psychoeducation and social skills training have been criticised for failing to change the developmental context experienced by children and youth (Hawkins et al., 1992). Given the literature already reviewed in this paper, it is clear that there are a variety of individual, familial, and interpersonal risk factors that can combine to produce a substance problem. A number of the early environmental risk factors that produce risk for substance use disorders are also risk factors for internalising and externalising disorders in young people, and these latter disorders themselves can be risk factors for the development of substance problems. It has been argued here that there are multiple pathways to substance use disorders that can begin with internalising and externalising disorders in children. Thus, it would seem reasonable to expect that effective prevention of substance use disorders could involve early intervention and prevention efforts for these comorbid conditions and associated risk factors, thus potentially interrupting the developmental trajectory for substance misuse. It is to this topic that we now turn.

Prevention of substance use disorders through comorbid pathways

As outlined above, a risk-reduction approach to prevention would predict that preventive interventions for both common mental disorders in young people hold promise for reducing the incidence of substance use disorders. Preventive interventions are categorised by either of two common systems. The traditional model examines prevention from the perspective of onset of disorder (Caplan, 1964). In this model, prevention can be implemented at three levels. The first level, primary prevention, intercedes prior to the onset of a disorder in order to reduce the likelihood of development of psychopathology. Secondary prevention is implemented once problems have been identified, but before these problems become severe. Finally, tertiary prevention involves treatment of current disorders with the aim of shortening the duration of the disorder and preventing relapse.

A second and subsequent model organises prevention initiatives based upon sample catchment boundaries (Mrazek & Haggerty, 1994). Within this model, a prevention program aimed at reaching a broad section of the community and applied to all individuals is considered a universal prevention program. An example would be a parent program to improve coping skills in parents and children. Alternatively, an indicated prevention specifically targets individuals who are at high risk for a disorder such as anxiety. A child who is behaviourally inhibited could be considered 'at risk' for anxiety. Thirdly, a selected prevention program targets people who are considered to be high-risk status based upon group membership, rather than individual characteristics. With respect to anxiety, this could include individuals who have been exposed to a natural disaster. With respect to conduct disorder, this could include children from low SES families. This review will discuss programs in terms of universal, indicated, and selected prevention, as at present this is the most widely used model.

There are advantages and disadvantages associated with the use of different types of intervention. An advantage of universal programs is that no selection procedures are needed and thus stigmatisation is unlikely to result. However, such programs are likely to be more expensive from both a financial and a human resource perspective. Importantly, and of ethical concern, without careful and thoughtful design, a universal program risks the possibility of doing harm to healthy people. Shochet and O'Gorman (1995) have argued that a guiding principle of any intervention must be to quarantine harm. Especially in initial trials when outcomes of prevention initiatives remain uncertain, it is imperative that, above all, people are not worse off as a result of participating in the program. For example, concern is often expressed about possible iatrogenic effects of suicide prevention programs when applied universally to young people.

Indicated or selected programs target those individuals most likely to be in need of assistance, thus optimising the use of financial and human resources. Additionally, indicated or selected programs increase the probability of identifying and intervening with individuals who otherwise may have gone unnoticed and progressed to a more severe level of dysfunction. Within some contexts, indicated and selected programs are termed 'early intervention', especially if some level of dysfunction already exists within the sample. However, the selection procedures associated with selected and indicated programs carry the risk of stigmatising or labeling individuals.

A number of criteria for developing prevention programs have been formulated by Simeonsson (1994), beginning with clear understanding of risk, protective factors, and characteristics of the targeted population. These factors inform the formulation of the prevention program. The design of choice is a randomised-controlled trial within a longitudinal study. Finally, adequate monitoring of the implementation and evaluation of the outcomes of the prevention program provides a guide for future development.

Windows of opportunity: outcome studies in the prevention of internalising disorders and externalising disorders

From a developmental perspective, there are likely to be optimum times and optimum methods for taking preventive action, an area that will eventually become clearer as further prevention studies are evaluated longitudinally. At this stage, although prevention has been receiving increasing press in the literature, the number of controlled, longitudinal studies is decidedly small. However, there are programs available that could be implemented and evaluated to test the hypothesised aetiological developmental trajectory of anxiety disorders, through depressive disorders, to substance use disorders, and the trajectory to substance use disorders through childhood externalising behaviour disorders. These programs are outlined below within a developmental framework, beginning with early childhood and moving to middle childhood and adolescence. Due to the suggested presence of anxiety disorders before depressive disorders in the case of internalising disorders, many of the programs presented for internalising disorders in young children focus on prevention of anxiety problems, before programs for the prevention of depression are introduced within a slightly older age group.

Early childhood, internalising disorders

In the realm of family and temperament risk factors, infancy and early childhood (children up to 4 to 5 years of age) are ideal points of prevention. One of the obstacles to determining the effectiveness of preventive efforts for children of this age is the lack of established assessment criteria suitable for use with such young children at the community level. Additionally, many of the cognitive-restructuring aspects of reducing anxiety are beyond the cognitive capacities of children in this age group, and adult modeling and shaping is the primary avenue of protection. Thus, for infants and preschoolers, the best treatment approach is working with parents (Bernstein, Borchardt, & Perwien, 1996). Knowledge of developmental needs, including differences in temperament, parental support, fostering secure attachment, and parental acquisition/modelling of coping strategies, are broad areas of prevention. These strategies provide opportunities for parents to learn patterns of interaction that support children's wellbeing, as well as skills to manage parental stress.

The most common forms of internalising disorders in this age group are anxiety problems such as Specific Phobias and Separation Anxiety Disorder. There is a body of literature showing that brief cognitive-behavioural treatments implemented through the parents are successful in reducing these problems (for a review see Dadds, Barrett, & Cobham, 1998), and in a general developmental sense, these thus offer potential as preventive interventions for substance use disorders. However, the evidence for the use of primary, secondary, indicated or selected interventions for internalising disorders in this age group is scarce.

LaFreniere and Capuano (1997) implemented a 6-month intensive home-based indicated prevention program for mothers and preschoolers. This project offered information on child development, including booklets on Development, Behaviour, Security, The Body, and Parental Needs. Additional sessions were provided to address core skills in parenting, as well as any additional personal or parental concerns presented. The aim of these sessions was to alleviate stress within the parent-child relationship. Finally, parents were assisted to build a social support network. At the conclusion of the program, anxious withdrawn preschoolers identified through teacher assessments showed significant gains in social competence, although reductions in anxious-withdrawn behaviour only approached significance. Parenting stress in the intervention group did not show a significant reduction relative to controls, although a subjective positive bias was noted in mothers who participated in the intervention.

A parent-teacher universal prevention program for children aged 4 to 5 years, aimed at reducing the incidence of internalising disorders later in childhood, was recently evaluated in Brisbane, Australia (Roth & Dadds, submitted). The project was a large-scale community program that attempted to identify children at risk in this young age group, and determine the short- and long-term effects of a prevention program through a controlled trial. Entitled, REACH for Resilience, the program aims to teach parents and teachers strategies and ways of thinking that can increase children's ability to cope with challenges, especially through adult modeling of these strategies and encouragement of children's efforts. Analysis of recruitment and retention patterns showed that, in the intervention group, the most stressed parents agreed to participate and attended the treatment sessions. In the comparison group,

the most stressed parents self-selected out. At post-treatment and follow-up, the groups were not different on any of the parent and child adjustment or diagnostic measures. Thus, while the results are encouraging in terms of reaching the most needy parents, this confounds results and makes conclusions about intervention effects dubious.

Summary: At this stage, the empirical evidence is inconclusive regarding optimal prevention of anxiety disorders in early childhood. Firstly, it would be drawing a very long bow to argue at this stage that such interventions could potentially reduce incidence of substance use disorders in later life. However, drawing from the literature on resilience (Cowen, Wyman, & Work, 1996; Cowen et al., 1997), the experience of a positive and continuing relationship with a caregiver seems to be a major factor influencing resilient versus non-resilient children (Werner, 1993). Secondly, children's temperament (easily soothed, low emotionality, sociable) tends to elicit positive responses from adults as well as children, thereby assisting with the development of social competence (Fox & Calkins, 1993). Thirdly, an internal locus of control (having a sense of influence over life's events) was more evident in resilient children, and can be supported by age appropriate problem solving strategies (Shure, 1997; Wyman, Cowen, Work, & Kerley, 1993). Fourthly, an optimistic outlook predicted socio-emotional adjustment and a stronger internal locus of control (Wyman et al., 1993). Thus, prevention initiatives in early childhood might focus on developing secure attachments; modeling of appropriate coping strategies such as optimism, problem solving, and seeking social support; and ultimately taking action. Longitudinal studies are necessary to a) develop efficacious and effective programs; b) discover the specific factors necessary and sufficient to prevent the onset of anxiety disorders and build resilience; and c) track the effectiveness of these strategies over time.

Early childhood, externalising disorders

The externalising disorders that most commonly appear within early childhood are generally characterised by disruptive behaviour in the home and preschool (Tremblay, Pagani-Kurtz, Masse, Vitaro, & et al., 1995). Research shows that disruptive behaviour in early childhood represents a salient risk factor for the continued expression of behavioural disorders (Dadds, 1997; Hawkins et al., 1992; Tremblay et al., 1995) and substance use disorders (Cicchetti & Rogosch, 1999; Hawkins et al., 1992). Research further suggests that brief behavioural treatments implemented with multiple points of focus, for instance via parenting skills in the home and via social skills training in schools, can prove more effective than programs which only target one of these domains (Kazdin, 1993, 1995). Similarly, it is recognised that programs seeking to change behaviour produced within a particular developmental context must address all of the components of that context. Thus, preventive interventions that include both parent- and child-focused components would be expected to be more optimally effective than programs that incorporate only one of these intervention targets (Coie & Jacobs, 1993; Dodge, 1993).

Considerable work has been done on the development and evaluation of tertiary treatments for externalising disorders. The most successful are parent training and family interventions, and for older children, individual or group social-cognitive work with the child. Research has supported the efficacy of behavioural family interventions in the short term and over follow-up periods of years after the

termination of treatment (Miller & Prinz, 1990). The last few decades have witnessed continuous refinement of the behavioural family intervention approach. Empirical evidence and clinical experience suggests that not all parents or families benefit to the same extent from treatment (Miller & Prinz, 1990), and difficulties are commonly encountered when there are concurrent family problems, parental psychopathology, and economic hardship. Several authors have made various proposals to improve the outcome of treatment by expanding the focus of treatment to the multiple systems that provide the context for family life (Henggeler, Melton, Brondino, Scherer, & Hanley, 1997; Miller & Prinz, 1990). Of particular interest to early intervention is the Triple P approach (Sanders, 1999). The Triple P framework offers various levels of intervention intensity, from simple provision of information through to a full multisystemic, individually tailored intervention. Of the different approaches encompassed by behavioural family intervention, parent training for the treatment of younger Oppositional Defiant Disorder children has the most accumulated evidence regarding its therapeutic effectiveness. There is less evidence to suggest that behavioural family intervention is effective in altering the course of the more severe end conduct problem children, especially beyond the years of early childhood.

One example of an effective multi-focused preventive intervention administered to a select sample comes from Tremblay et al., (1995). In this study, disruptive kindergarten boys were randomly allocated to a dual focused preventive intervention condition or to a control condition. All the participants were from inner city low socio-economic neighbourhoods. The components of the dual focused intervention program included home-based parent training in effective child rearing practice, and appropriate social skills training for child participants. The child participants were compared with controls at four time points — at the end of the program, prior to puberty, at puberty, and during adolescence. Based on these comparisons the program was judged successful for the following reasons — a) compared with children in the control group, a significantly larger number of boys who undertook the intervention remained in regular and age appropriate classrooms until the end of elementary school, and b) the boys who participated in the treatment program showed significantly less delinquent behaviour at the post-intervention assessments carried out each year while the children were between 10 and 15 years of age.

Middle childhood, internalising disorders

Middle childhood appears to be an especially advantageous time for anxiety prevention and early intervention. Developmentally, this is the time when most anxiety disorders emerge, and these have been shown to be predictive of adolescent depression (Cole et al., 1998). As children's cognitive abilities mature, cognitive restructuring techniques are able to be utilised in helping at-risk children change the meaning of aversive events and experiences. This is especially important because the impact of stressful events on children appears to be largely mediated by the children's evaluation of the event in relation to their wellbeing. Dadds et al., (1998) suggest that intervention with parents is especially important with younger age groups of children, whereas for older children cognitive work and exposure may be sufficient. A further advantage for this age group is that the children can complete self-report measures, providing additional reliable and valid assessment information. It should be noted, however, that collecting assessment information from multiple sources is still vital due to the tendency of anxious children to portray themselves in

socially desirable ways. Using teacher nominations in conjunction with children's self-reports seems most efficacious as each of these methods tap different types of anxiety problems, while at the same time being supported as valid assessment tools by structured interviews (Dadds et al., 1998).

Controlled clinical trials with children diagnosed with anxiety disorders have only been reported recently. The programs have included individual cognitive work to reduce threat appraisal, exposure, and enhancement of parental communication and child-rearing skills. The results are impressive with improvement maintained in 60% to 90% of cases overall in the controlled trials. Although these studies were treatment and not prevention studies, they are worth considering in some detail due to their important implications for the design and implementation of anxiety prevention and early intervention.

Two controlled treatment studies for children with a primary anxiety disorder diagnosis were conducted by Kendall and his colleagues (Kendall, 1994; Kendall, Flannery-Schroeder, Panichelli-Mindel, Southam-Gerow, & et al., 1997). These trials consisted of 16 to 20 cognitive-behaviour therapy (CBT) sessions for anxious children. The first eight weeks of the treatment involved psychoeducation regarding anxiety, and teaching children cognitive and behavioural strategies for managing and reducing their anxiety. The second 8 weeks involved practising the anxiety management skills learned previously during both imaginal and in vivo exposure to threat related situations.

In the first controlled trial (N=47), over 60% of the treatment group no longer met criteria for an anxiety disorder at post-treatment, and these gains were maintained at one-year follow-up. The second randomised clinical trial (N=94), which used the same CBT treatment as the first study, yielded very similar results. Over 50% of children diagnosed with a DSM-IV anxiety disorder pre-treatment no longer retained their diagnosis post-treatment, compared to only 6% (n=2) in the waitlisted group. For those children who did retain diagnoses at post-treatment, significant reductions were still seen in the severity of their problems. Effects were not modified by comorbidity, gender, or ethnicity. Participants completed assessment measures at eight weeks following the completion of the psychoeducation component of the treatment, allowing an examination of the effectiveness of the two different components of the treatment (psychoeducation and active exposure to anxiety provoking stimuli). Results suggested that the psychoeducation component alone was not sufficient to reduce children's anxiety disorders. However, when followed by eight sessions of active exposure, the two components together created significant reductions in diagnosable anxiety problems.

A similar treatment program (12 sessions) which involved parents as well as children was found to be superior to one which involved only children (Barrett, Dadds, & Rapee, 1996). Children (N=79) aged seven to 14 years who met criteria for separation anxiety, overanxious disorder, or social phobia were randomly assigned to one of three treatment groups — cognitive-behavioural therapy (CBT) (child only), CBT plus family/parent management, or a waitlist group. In the child plus parent treatment group, 84% of children no longer met criteria for an anxiety disorder at post-treatment, and this increased to 95% at 12 month follow-up. In the child-only treatment group, 57% of children were assessed as having no anxiety disorder at post-treatment, increasing to 70% at 12 month follow-up.

Barrett (1998) showed that similar success rates could be achieved by presenting the combined CBT-family treatment in a group format to anxious children and their parents, thereby significantly reducing costs of intervention. Barrett et al., (2001) showed durable treatment effects up to six years following treatment. Mendlowitz et al. (1999) also examined the effect of parental involvement in CBT group intervention on anxiety, depression, and coping strategies in school-age children. Similar to Barrett et al., (1996), all treatment groups showed positive change, and concurrent parental involvement enhanced the treatment effects. Cobham et al, (1998) used the same group intervention to assess the role of parental anxiety in treatment outcome, and the extent to which the second component of Barrett et al's family treatment (parent skills for managing their own anxiety) could alleviate putative poorer treatment outcomes associated with high parental anxiety. Results indicated that high parental anxiety was a risk factor for poorer treatment outcomes for anxious children, and that specifically targeting parental anxiety for intervention could overcome this risk factor in the context of a cognitive-behavioural program for the child.

Silverman et al., (1999) used a randomised clinical trial to evaluate the therapeutic efficacy of group CBT therapy versus a wait list control condition to treat anxiety disorders in children. Results indicated that group CBT, with concurrent parent sessions, was highly efficacious in producing and maintaining treatment gains. Children in group CBT showed substantial improvement on all the main outcome measures, and these gains were maintained at three, six, and 12 month follow-ups. Silverman et al. (1999) evaluated the relative efficacy of an exposure-based contingency management treatment condition and an exposure-based cognitive self-control treatment condition relative to an education support control condition for treating children with phobic disorders. 81 children and their parents completed a 10 week treatment program in which children and parents were seen in separate treatment sessions with the therapist, followed by a brief conjoint meeting. Children in both the contingency management and self-control conditions showed substantial improvement on all of the outcome measures. These gains were maintained at 3, 6, and 12 month follow-ups. Interestingly, children in the education support control condition also showed comparable improvements at post-treatment and at 3, 6, and 12 month follow-ups.

A selected prevention project targeted children (N=1786) aged seven to 14 in Brisbane, Australia (Dadds, Spence, Holland, Barrett, & Laurens, 1997). Those included in the project ranged from children who were exhibiting mild anxious features, but remained disorder free, to those who were in the less severe range of a DSM-IV anxiety disorder. An intensive screening process incorporated parent, child and teacher reports, telephone calls and face-to-face interviews. Children with a) disruptive behaviours (impulsive, aggressive, hyperactive, non-compliant), b) lack of English as a first language in the home, c) developmental delay or other problem, d) no anxiety problem according to teacher reports, and e) invalid child reports (ticked 'yes' to all items) were excluded from the sample. The final sample consisted of 128 children. Any child with severe symptoms or whose parents requested individual help for their child's anxiety were referred for individual treatment and were no longer included in follow-up assessments.

The intervention was based upon an adaptation of Kendall's Coping Cat Workbook, a 10 session program presented in group format for teaching children strategies to cope with anxiety. The sessions were conducted weekly for one hour at the child's school, in groups of five to 12 children. In addition, parents periodically attended three sessions covering: a) child management skills, b) modelling and encouraging the strategies children were learning through the Coping Koala Prevention Program, and c) how to use Kendall's FEAR plan to manage their own anxiety. The monitoring group received no intervention, but was contacted at planned intervals for follow-up assessments.

Interestingly, at post-intervention no significant differences were found between the monitoring and the intervention groups. Yet, at 6 months follow-up, the intervention group showed a significant reduction in the onset of disorder (16% onset), relative to the monitored group (54% onset). Most importantly, the success of their program in reducing the existing rate of anxiety disorder and preventing the onset of new anxiety disorders was successfully maintained at a two year follow-up (Dadds et al., 1999). These results are very promising. Given that over half of the at-risk children in the monitoring group progressed from mild anxious symptoms into a full-blown anxiety disorder, middle childhood and early adolescence appear to provide an important 'window of opportunity' for prevention initiatives.

When conducting an indicated prevention, such as described above, an important ethical caveat surrounds the potential to negatively label children who are deemed 'at-risk', and thus raise concern in parents as well as stigmatising children amongst their school peers. The Queensland project surmounted this dilemma by describing the intervention as 'a positive skill building experience', and the monitoring group provided 'an information gathering/learning exercise for researchers'. This ethical consideration should be addressed in any future programs that are designed and delivered to investigate the potential of early intervention for anxiety disorders in middle childhood to reduce later incidence of substance use disorders.

Finally, there is evidence that programs that build social skills in primary school children, without necessarily focusing on internalising disorders, can reduce the symptoms of these disorders. Such effects have been shown in the PATHS program, for example, using a range of well-designed studies with unselected, deaf, and behaviourally at-risk students (Greenberg, Zins, Elias, & Weissberg, in press).

Summary: The above review would suggest that successful prevention, early intervention and treatment in middle childhood has been achieved with regard to anxiety disorders and symptoms. Studies have been able to demonstrate long-term improvements for children up to two years post-intervention. The long-term success of these interventions has clear implications for a concomitant reduction in community costs and family distress. None of the above studies took measures of substance misuse at follow-up. However, it is reasonable to speculate that these interventions have some potential for reducing the incidence of depression and substance use disorders in the adolescent years.

Middle childhood, externalising disorders

The evidence with regard to the treatment and prevention of externalising disorders in middle childhood is also strong. There are a number of prevention programs that aim to reduce aggression and promote social skills in children via universal

curriculum-based programs in schools. These may have some impact on externalising disorders but are outside the scope of this review (see Greenberg, Domitrovich, & Bumbarger, 2000). Greenberg et al. (2000) located 10 early intervention programs that have shown success in reducing externalising disorders or their risk factors. Similar to tertiary models, the majority of these utilise child-cognitive skills training, parent training, or both. Only the most recent and well-evaluated will be reviewed here.

As an example of a child-focussed program, Lochman et al. (1993) evaluated a 26 session social skills training program focusing on peer-relations, problem solving, and anger management, with a sample (n=52) of 9 to 11-year-old aggressive-rejected children. Compared to controls, the program children were rated as significantly less aggressive by teachers and more socially accepted by peers at post-treatment and at one-year follow-up. By contrast, in Lochman's (1985) program, children who had received an anger coping program were, three years after the intervention, not different from controls in terms of parent-ratings of aggression and observations of disruptive-aggressive behaviour, or in terms of self-reported delinquency. In another child-focused intervention, Tierney et al. (Big Brother/Big Sister Program: 1995) randomly assigned 959 between 10 and 16 year old adolescents to a mentor or a wait list control condition. Those with a mentor reported that they engaged in significantly less fighting, were less likely to initiate the use of drugs and alcohol, and perceived their family relationships more positively. However, there were no significant differences between groups in terms of self-reported delinquency. While encouraging, these data are based solely on self-report.

One problem with the use of group interventions for indicated externalising disorder youth is that iatrogenic effects have been found in programs where antisocial youth were grouped together (Dishion, Andrews, Kavanagh, & Soberman, 1996). In contrast, studies have found that externalising disordered youth benefit from being in groups with non-problem children. For example, Hudley and Graham (1993; 1995) paired aggressive 10 to 12 year old boys with non-aggressive peers in a 12 lesson school-based intervention that focused on improving the accuracy of children's perceptions and interpretations of others' actions. Compared to controls, teacher ratings indicated that the program successfully reduced aggressive behaviour immediately following the intervention. There has been no follow-up data to date. A similar 22 session integration program by Prinz, Blechman and Dumas (1994) was evaluated up to six months following the intervention. Children in the program were rated by teachers as significantly less aggressive than controls at post-test and follow-up. Compared to controls, the intervention group also showed significant improvements in pro-social coping and teacher-rated social skills.

Overall, the evidence is not strong that child-focused early interventions are effective with externalising disorders. In general, their results are modest and not durable, the sample sizes are small, and due to the nature of the interventions, they are limited to older children and adolescents. The limited applicability of child-focused interventions for externalising disorders is not surprising given the literature reviewed earlier regarding the importance of early contextual factors in the development and maintenance of such disorders. More comprehensive programs that contain interventions to change problematic early parenting/and environmental issues; and others that include parenting interventions in combination with the child-focused interventions, are showing more impressive results. These are reviewed next.

Parent focused interventions generally have produced more clinically significant outcomes. As noted earlier, there have been numerous demonstrations of the effectiveness of social-learning based parent-training programs for families of children with externalising disorders. Numerous independent replications in community settings have produced significant results (Sanders, 1999). While most of these programs were designed as tertiary treatments and have been evaluated on clinical populations, a number of authors have argued that they are excellent early intervention strategies in that they effectively reduce externalising disorders early on in their developmental trajectory (e.g., Sanders, 1999). However, as we saw earlier, one limitation of a referral-based approach is that it leaves initiatives for intervention in the hands of parents, who may not seek help even in extreme situations.

Parent interventions have also been recently applied in both universal prevention and early intervention formats. Webster-Stratton (1998) has used a parent training model with young Head Start children. Because the entry procedure was based on screening of children rather than parent-referrals, the program can be regarded as a *selected* program. Parents of Head Start children were randomly assigned to receive the intervention or serve as a control by only receiving the usual services. The 9-week intervention consisted of parent training groups and a teacher-training program. Results at post-test and 12 to 18 months follow-up indicated significant improvements in parent behaviour, parental involvement in school, child conduct problems, and school-based behaviour.

A number of early intervention programs have been evaluated that adopt developmental models of externalising disorders and, as such, utilise multiple interventions across settings and time. This is consistent with a general view that a more comprehensive approach is necessary to alter the developmental trajectories of children who live in high-risk environments and show early signs of these disorders (Conduct Problems Prevention Research Group, 1992; Reid & Anderson, 1997).

One recent study entitled the LIFT (Linking the Interests of Families and Teachers) Intervention examined the efficacy of a universal preventive intervention in the reduction of conduct problems (Reid, Eddy, Fetrow, & Stoolmiller, 1999). LIFT was 10 weeks in duration, and targeted three distinct domains that had been identified by a developmental model of the trajectory of conduct problems. A sample of 671 first and fifth graders and their families was drawn from 12 elementary schools. The intervention condition consisted of a parent training component in the behavioural family intervention tradition, together with a playground behavioural program and a teacher parent communication program. It was hypothesised that the intervention would have significant effects on three specific areas, levels of child physical aggression in the playground, mother aversive behaviour that was displayed during interactions with their children, and teacher ratings of child peer positive behaviour over the year following the intervention. The results indicated that the intervention had significant results on child physical aggression in the playground, and on mother aversive behaviour in mother-child interactions. In addition, the results for the children's behaviour in the classroom were in the expected direction. All results were immediate and applied to both first and fifth grade participants.

Kazdin and Wassell (2000) evaluated a preventive intervention involving cognitive problem solving skills training (PSST) for the child and child/parent management training (PMT). PSST involved seeing children individually for 20 to 25 sessions to

teach adaptive problem-solving skills for use in interpersonal situations such as those with family, peers, siblings, and teachers. The PMT condition was in the tradition of behavioural family intervention. For children attending school, school-based issues were included in treatment through contact with school teachers, and incorporating home-based reinforcement interventions for the school issues. In general, the children (aged between two and 14 years), their parents, and their families all responded to treatment. Children's functioning, as well as parent and family functioning, improved over the course of the intervention. This improvement was demonstrated within a range of child behavioural symptoms, parental symptoms and levels of stress, and family functioning, relationships and support (Kazdin & Wassell, 2000). Generally, larger effects were demonstrated on childrens' outcome measures, and effects of less magnitude were demonstrated on parent and family outcome measures. While the authors note that the children in this study were all under referral for conduct problems, and that similar experimental results have not been demonstrated for populations exhibiting internalising disorders, support for the generalisability of therapy based on demonstration of risk factors is warranted. For instance, it is noteworthy that improvements in both parental functioning and stress, as well as family functioning, relationships and support, have been demonstrated as important for children with both internalising and externalising disorders (Cobham et al., 1998; Kazdin & Wassell, 2000). In addition, changes in family and parent functioning may be expected to contribute to beneficial outcomes as far as long-term treatment effects for children are concerned.

In the Montreal Prevention Experiment, Tremblay and colleagues (McCord, Tremblay, Vitaro, & Desmarais-Gervais, 1994; Tremblay, Masse, Pagani, & Vitaro, 1996; Tremblay et al., 1992; Vitaro & Tremblay, 1994) combined parent training and child skill training. Primary school boys rated high on aggressive and disruptive behaviour (n = 166) were randomly assigned to a two year intervention or placebo control condition. Children worked with normative peers to develop more pro-social and adaptive social behaviour, while parents worked with family consultants approximately twice a month for two years to learn positive discipline techniques and how to support their child's positive behaviour. Initial results did not reveal clear group differences. At the three year follow-up when the boys were age 12, the treatment group was significantly less likely than control boys to engage in fighting, be classified as having serious adjustment difficulties, and to engage in aggression or delinquent activity. These results came from a variety of self, teacher, peer, and parent report measures. Effects of the treatment on other forms of antisocial behaviour (e.g., self-reported stealing) and substance use continued into early adolescence. Other early intervention programs have found durable effects which did not emerge until follow-up assessments (see Dadds et al., 1997). It should also be noted that intervention effects were reported by multiple informants across multiple domains of adjustment (i.e., behavioural, social, school/academic).

The First Steps Program (Walker, Kavanagh et al., 1998; Walker, Stiller, Severson, Feil, & Golly, 1998) also intervenes with both parents and children, the latter having been identified at kindergarten for exhibiting elevated levels of antisocial behaviour. Families with an at-risk child receive a 6 week home intervention and children participate in a classroom-based, skill-building and reinforcement program that lasts two months. The program has been evaluated with 42 subjects in two cohorts using a randomized controlled design. Positive treatment effects were found for both adaptive

and academic behaviour at post-intervention and at follow-up into early primary school. A replication (Golly, Stiller, & Walker, 1998) with a new sample of 20 kindergarten students has produced similar results. Comparable positive results have also been found for a program that targets students aged six to 12 exhibiting aggressive and disruptive behaviour, their parents, and the classroom (Pepler, King, Craig, Byrd, & Bream, 1995; Pepler, King, & Byrd, 1991). In this program, the parent training is optional. It is important to note that in this study, significant differences between intervention and control children were only found on teacher ratings. Parents failed to see significant behaviour changes in the intervention children.

The CPPRG (Conduct Problems Prevention Research Group, 1992) implemented Fast Track, a school-wide program that integrates universal, selective, and indicated models of prevention into a comprehensive longitudinal model for the prevention of conduct disorders and associated adolescent problem behaviours. A randomised-controlled trial of 50 elementary schools in four U.S. urban and rural locations is still underway. The universal intervention includes teacher consultation in the use of a series of grade level versions of the PATHS Curriculum throughout the elementary years. The targeted intervention package includes a series of family (e.g., home visiting, parenting skills, case management), child (e.g., academic tutoring, social skills training), school, peer group, and community interventions. Targeted children were identified by multi-gate screening for externalising behaviour problems during kindergarten. The target group consisted of children from schools in neighbourhoods with high crime and poverty rates and who displayed the most extreme behaviour problems (top 10% of children as reported on externalising behaviour measures). At present, evaluations are available for the first three years (CPPRG, 1999a; 1999b). There have been significant reductions in special education referrals and aggression both at home and at school for the targeted children. The initial results provide evidence for improved social and academic development, including lower sociometric reports of peer aggression, and improved observers' ratings of the classroom atmosphere in the intervention sample. Evaluations will continue through middle school as Fast Track adopts an ecological-developmental model that assumes that, for high-risk groups, prevention of antisocial behaviour will be achieved by enhancing and linking protective factors within the child, family, school, and community.

Summary: It can be seen that recent community trials have been conducted that use randomised-controlled designs to evaluate multi-component programs based on comprehensive ecological and developmental models of externalising disorders. There are a number of characteristics that appear to be associated with successful EI for externalising problems in children. These include: 1) early identification and intervention beginning not later than preschool or early primary school years; 2) incorporation of family-based intervention as a core target for change; 3) adoption of a comprehensive model that emphasises a broad ecology (child, family, school, community); 4) adoption of a longitudinal/developmental approach to risk and protective factors and windows of opportunity for intervention; and 5) use of a comprehensive mix of selected (e.g., poor neighbourhoods), indicated (identification of aggressive children), and universal (e.g., classroom program) strategies.

Thus, successful prevention/early intervention and treatment in middle childhood has been achieved with regard to both internalising disorders and externalising disorders. Some of the studies cited have been able to demonstrate long-term

improvements for children up to two years post-intervention. The long-term success of these interventions has clear implications for a concomitant reduction in community costs and family distress. None of the above studies took measures of substance use disorders at follow-up. However, given their focus on early risk factors for psychopathology, it is reasonable to speculate that these interventions have some potential for reducing the incidence of depression and substance use disorders in the adolescent years.

Adolescence, internalising disorders

Convincing literature points to the effectiveness of brief psychological interventions for internalising disorders in adolescents. However, the community impact of these brief programs is less convincing because of the low referral rates for internalising disorders during adolescence. The majority of adolescents in need of treatment simply do not receive it (Tuma, 1989). Thus, broader identification, recruitment, early intervention and prevention strategies become particularly important. Prevention of anxiety disorders in adolescence has received limited attention, although it should be noted that the treatment and prevention studies by Kendall, Barrett, Dadds, and Silverman reviewed above all included children up to 14 or 16 years in their successful reductions in anxiety disorders. Stress Inoculation Training Programs, which use a similar intervention to the anxiety treatments, have been shown to reduce anxious symptomology in universal adolescent samples (Kiselica, Baker, Thomas, & Reedy, 1994), as well as children evaluated to be at risk due to family breakdown (Pedro-Carroll, Alpert-Gillis, & Cowen, 1992).

In later adolescence, the pressing nature of such life threatening issues as depression, suicide, drug and alcohol abuse, or safe sex practices come to the forefront. With respect to internalising problems, the prevention of depression has gained more prominence than anxiety prevention in research investigations. This trend is in keeping with the proposals put forward in this chapter concerning a possible developmental pathway to substance use disorders from anxiety disorders in younger children, through depression as children move into adolescence, to substance use disorders. Thus, in this section the primary focus is on reviewing relevant programs for the prevention of depression.

To date, one of the most successful programs for reduction of depressive symptoms in young people has been the Pennsylvania Depression Program for adolescents aged 10 to 13 years (Jaycox, Reivich, Gillham, & Seligman, 1994). The study included three separate programs focusing on teaching (a) cognitive skills, (b) social problem solving skills, and (c) a combination of cognitive and social problem solving skills. Training in assertiveness, negotiation, and coping skills were also included. After finding no significant difference between the three intervention modalities, the groups were combined, resulting in a treatment sample of 69 participants and a wait list control group of 74 participants. Significant improvements in depressive symptoms were obtained for the intervention group compared to controls at post-testing, 6 month follow-up, and 2 year follow-up (Gillham, Reivich, Jaycox, & Seligman, 1995). This innovative study indicates that psycho-educational prevention efforts to build resilience to depression seem promising during early adolescence. A limitation of the study was the possible biasing effect of a self-selected sample in conjunction with the low initial recruitment rate (between 13% and 19%) and high attrition rate (30%).

In a second innovative study using an adaptation of the tertiary treatment approach developed by Lewinson et al. (1990), Clarke et al., (1995) reported significant improvements in depression for an indicated intervention group compared to a wait list group for 14 to 15 year old adolescents. The program was more successful than the Jaycox et al. (1994) study at recruiting adolescents. However, it still only succeeded in engaging less than 50% of the adolescents identified as being at risk for depression. There was also a reasonably high attrition rate, particularly in the intervention group (21 out of 76). In another indicated trial, Hains and Ellmann (1994) reported positive results for their program which consisted of problem solving, cognitive restructuring, and anxiety management, reducing depression scores in volunteer adolescents who had been classified as having high arousal levels. These authors also experienced difficulty with possible self-selection bias.

Beardslee and colleagues (Beardslee, 1989; Beardslee, Hoke, Wheelock, Rothberg, & et al., 1992; Beardslee & MacMillan, 1993; Beardslee, Salt, Porterfield, Rothberg, & et al., 1993) evaluated a selective program for adolescents and parents, where one or both parents had a major affective disorder, often in combination with other serious psychiatric disorders. The authors used family therapy and psycho-educational approaches to help families develop a shared perspective on the depressive illness, and to change parents' behaviour in relation to their children. In a controlled trial of 20 families, parents who received family-based interventions reported significantly more improvements in behaviour and attitudes than parents who received information alone. Recruitment was conducted through Medical Health Fund advertising, so no information is available regarding recruitment rates and self-selection processes.

The above studies provide evidence for the usefulness of selective and indicated prevention programs. They also highlight the well-known difficulties associated with recruitment and retention of adolescents. To the adolescent, such programs could be seen to single them out from the peer group at an age when peer group acceptance is especially important. This problem might be substantially reduced if intervention programs for adolescent depression could be implemented routinely as part of the school curriculum, as either an alternative or complement to indicated programs.

The Resourceful Adolescent Program (RAP: Schochet, Holland, & Whitefield, 1997) was developed to meet this need. It consists of components for adolescents (RAP-A) and their families (RAP-F). The RAP-A is a fully manualised 10 week group treatment (eight to 10 participants) focused on preventing depression through building adolescent resiliency. Given its universal delivery, participation rates approach 100% for the adolescents, although recruitment of families has remained a problem. Early results from controlled trials indicate that it is associated with reductions in self-reported depression, especially for adolescents with pre-existing depression at pre-treatment (Schochet et al., in press).

Summary: Thus, the evidence from adolescent groups is consistent with that from younger groups, supporting the efficacy of psychological skills building programs to reduce the incidence of internalising disorders in young people. It should be noted that the content of the anxiety prevention and depression prevention programs tends to be very similar, and includes core foci on cognitive skills, emotion regulation, dealing with challenges, and social problem solving skills. Unfortunately, none of the above studies has specifically measured substance use disorders as an outcome

variable. Thus, the effect of these programs on reducing the prevalence of substance use disorders is at this stage unknown.

Adolescence, externalising disorders

The picture is somewhat different for externalising disorders, since adolescents who display various disorders consistent with externalising disorders represent a population at high risk for the development of substance use disorders, and therefore a population for whom intervention may well be beneficial. If such interventions are effective, reductions may not only be expected in recurrent prevalence of externalising disorders, but also in the incidence, prevalence and severity of substance use disorders (Bukstein, 1995). Of the preventive interventions for externalising disorders, particularly conduct problems, research indicates that behavioural family intervention has a high degree of efficacy both in the short term and after long-term follow-up (Prinz & Miller, 1994). Typically, behavioural family intervention will target parental interaction skills and parenting practice skills. In addition, a range of additional family risk factors will be addressed where warranted, for instance psychological state of parents (depression, anxiety, irritability), the presence of other identifiable marital problems, social support training, and the presence of substance use disorders.

Additional evidence for prevention of substance use disorders by intervening with internalising disorders and externalising disorders

The vast majority of substance misuse prevention studies for adolescents have focussed on externalising behaviours and social adversity risk factors. Several programs of research have now shown that reductions in externalising disorders can be effectively produced by the provision of skills building programs for the child, his or her family, and the school environment during the primary school years (see Greenberg et al., in press). Several of these studies have shown effective reductions in substance use disorders following targeting of externalising behaviour (e.g., The Anger Coping Program: Lochman, 1992; Big Brother/Sister: Tierney et al., 1995).

There are a number of studies in which the promotion of general resilience in primary school children has been shown to reduce substance use into adolescence. For example, Schinke and Tepavac (1995) showed that a universal school-based intervention that focuses on personal and social decision making and assertive skills, reduced actual and potential substance use in eight to 11 year olds. The Seattle Social Development Project is a universal program that combines parent and teacher training throughout the primary school years. Controlled trials have compared early versus late scheduling of the intervention in large samples. Secondary school intervention was not effective. However, the early intervention model (i.e., targeting social competence in the primary school years and continuing across developmental phases) has been shown to effectively reduce substance use disorders at 18 years of age (Hawkins, Catalano, Kosterman, Abbott, & Hill, in press). Similarly, a number of well-designed studies that have targeted improved parent-child relationships have shown positive long-term benefits in terms of reductions or delays in drug taking (e.g., Kosterman, Hawkins, Spoth, Haggerty, & Zhu, 1997).

Several programs that aim to build skills and general resilience have been presented as selective programs. For example, Short (1998) reports on a preventive intervention for 10 to 13 year old children from divorced homes based on the

rationale that coping skills mediate the effects of family stress on adolescent mental health and substance use. The intervention has been associated with improved coping and reductions in externalising, internalising, and substance use problems.

The overlap in skills focus between these programs and those aiming to reduce internalising disorders and externalising disorders is notable. That is, the focus on improving coping skills, problem solving skills and interpersonal relationships are common to most of the interventions. Also similar is their demonstrable positive outcomes, encouraging some optimism that the utilisation of school-based programs that increase resilience and reduce social and personal problems have the potential to reduce the development of substance use disorders.

Intervention and community health issues in the prevention of internalising disorders, externalising disorders and substance use disorders

Efficacy vs. effectiveness

The extent to which intervention technologies can actually make a difference in the community is influenced by a number of pragmatic public health issues. Most of the intervention studies reviewed were a combination of effectiveness with efficacy trials. That is, while they were conducted in 'real world' settings, they evaluated the intervention under optimal delivery conditions, e.g., within the context of a funded research program, using careful experimental designs and measures, and implemented by highly trained and motivated staff. The question remains as to the community effectiveness of such interventions when implemented in the not-so-optimal conditions of existing mental health and educational systems. Many interventions are evaluated up to the efficacy trial stage and the community effectiveness remains unknown. In the area of prevention, effectiveness trials are essential and thus more work is needed to evaluate these interventions when implemented in community settings by non-specialist, non-research motivated staff.

Low participation rates

Recruitment of participants is one of the major obstacles of preventive interventions, regardless of the type of prevention. Because participants have not self-referred for treatment and may not even feel they have any problems, especially in early childhood, the sense of urgency and motivation that drives clinical interventions is often absent. With childhood anxiety problems, parents and teachers often have not even noticed anxiety problems, or often assume that children will 'grow out of it'. In the La Freniere and Capuano (1997) study of selected children, less than one-third of identified participants were successfully recruited. The Roth and Dadds (submitted) trial of a parenting intervention applied universally to preschool children has maintained contact with approximately half of those invited to participate. Indicated prevention projects in middle childhood show similar rates of recruitment. Although no adolescent studies were found specifically targeting adolescent anxiety problems, selected and indicated programs for depression in adolescents have typically achieved very low participation rates. The Shochet et al. (in press) school-based universal prevention of depression program received parental consent for 86% of potential students. However, when an additional parental component was added to the program, attendance by parents at three evening sessions was very low, with 36% attending one session and only 10% attending all three sessions.

With regard to substance use disorders, there may be more precise ways to use indicated and selected programs. The preventive and early intervention studies reviewed above either used universal interventions or targeted children already showing signs of the common mental disorders, or who are at risk of displaying problems due to the presence of risk factors such as family conflict or psychopathology. While there are many similarities in the risk factors for internalising, externalising and substance use disorders, there may be risk factors that are more relevant to identifying children particularly at risk for substance use disorders. Children of parents with existing substance use disorders is an obvious one. There is clear evidence that these children are at risk for substance use disorders themselves, as well as a range of other social and health problems (Chassin, Pitts, DeLucia, & Todd, 1999). The mechanisms of transmission appear to be a combination of specific biological risk for addiction as well as social adversity (O'Connor, Caspi, DeFries, & Plomin, 2000). Pragmatically, however, this is a difficult group to recruit effectively. While numerous programs have reported working with such children, the numbers are small and the ratio of participants to those offered participation is often not made clear. In contrast, for studies that have deliberately measured the success rates of recruiting children of parents with substance use disorders into intervention programs, the data is not encouraging (Gensheimer, Roosa, & Ayers, 1990; Michaels, Roosa, & Gensheimer, 1992). Understandably, identifying oneself as having a parent with a substance use problem is not appealing to young people, and few do. Thus, identification of young people at risk via direct family experience with substance use disorders may be a useful tertiary clinical strategy but is unlikely to offer much power as a larger community strategy. One solution to this is to offer such programs universally in schools with particular attention paid to the needs of children with substance abusing parents (e.g., Nastasi & DeZolt, 1994). Studies reviewed above indicate that recruiting young people via universal strategies and indicated and selected strategies for internalising disorders and externalising disorders have done well in reaching children potentially at risk for substance use disorders. As such, there is a good basis for arguing for increased attention to such programs.

Parent-child relationships where substance use disorders are involved

Caution must be used when findings on parent-child relationships are generalised to substance-using families. Positive relationships with peers and family are a common target in programs that aim to build resilience and reduce mental health problems in young people. As would be expected, these also form a central focus for many preventive programs for substance use disorders. However, it should be noted that the situation may be a little more complex with regard to substance use disorders than simply conceiving of positive interpersonal relationships as a protective factor. Modelling of substance use habits via close relationships is a key factor in the development of many forms of substance use and longitudinal studies show that adolescents are more likely to imitate substance use if they have a close relationship with the substance user (Andrews, Hops, & Duncan, 1997). Further, studies on families with opiate addiction show that positive family management practices have minimal protective influence on child development compared to that typically found in addiction free families (Gainey, Catalano, Haggerty, & Hoppe, 1997).

Service delivery

A final issue concerns the administrative systems that control the resource allocations and structures for mental health services. As we have seen, the most evidence to date that anxiety and depression problems can be prevented comes from school-based intervention trials. However, the responsibility for mental health promotion is typically within statutory health rather than education departments, and program designers may find their efforts frustrated by a lack of communication between the two groups. Inter-sectorial issues, concerned with the overlapping structure and functions of the various agencies that have responsibility for health and education of young people, are a major issue for the science and practice of prevention, particularly for substance use disorders where statutory responsibilities may span several agencies.

Conclusions

Substance use disorders are a substantial health and community problem. Traditional prevention strategies that focus on educating people about the dangers of substance use have been to date unsuccessful. In contrast, reductions in substance use disorders can be achieved by reducing risk factors and increasing general mental health and resiliency in young people. Such interventions typically focus on the pathway to substance use disorders through conduct problems and delinquency with their associated features of social adversity, school failure, and family conflict and breakdown. However, increasing evidence shows that there is a related but diverse pathway to substance misuse associated with internalising problems, that is, anxiety and depression. Given that strong evidence shows the incidence of both internalising and externalising problems can be reduced via developmentally informed tertiary and preventive interventions, these strategies have considerable potential for reducing the incidence of substance use disorders in the community. An attempt was made to present a developmental map of the risk and protective factors that influence the persistence versus transience of internalising disorders and externalising disorders in young people. These switch in and out at various developmental points of the lifespan, and thus, a series of windows of opportunity for intervention can be identified.

To demonstrate useful preventive effects for internalising disorders and externalising disorders on substance use disorders, two logical conditions were proposed. First, it must be shown that interventions can reduce internalising disorders and externalising disorders at a community level. In terms of developmental trajectories of anxiety disorders and the available data on intervention effectiveness, anxiety prevention and early intervention during middle to late childhood holds great promise. Family and school-based programs during early childhood have the potential to lay a foundation of social competence, and recent evidence supports the long-term benefits. Developmentally, the primary to early secondary school years, the age of onset of most anxiety disorders, appears to be an optimum time to provide both universal and indicated prevention and early intervention initiatives. Issues of recruitment become more difficult in the adolescent years but programs for depression have shown similar potential. With regard to externalising disorders, middle childhood appears to be a propitious time for prevention. Programs based on behavioural family intervention models that incorporate individual child as well as

contextual interventions (i.e., home, school, community) have shown considerable success in reducing externalising disorders.

The second condition is that reductions in the incidence of internalising disorders and externalising disorders must be shown to have an impact on substance use disorders. This has not been demonstrated as yet due to lack of longitudinal studies that test the interweaving pathways of internalising, externalising and substance use disorders, as well as intervention effects. However, two lines of indirect evidence suggest optimism is warranted. First, available data on developmental pathways of internalising disorders, externalising disorders and substance use disorders indicates that the first two groups of disorders precede substance use disorders in a substantial number of cases and may contribute to the occurrence of substance use disorders through a variety of indirect and shared causal links. Second, it has been shown that promotion of resilience in the primary school years, using similar strategies as are used to reduce internalising disorders, do in fact reduce internalising disorders and substance use disorders in the adolescent years.

Is it worth pursuing a focus on internalising disorders and externalising disorders as a way of reducing the incidence of substance use disorders? At this point the answer seems to be an encouraging but cautious 'yes'. A high priority for research should involve longitudinal studies of the inter-relations of internalising, externalising, and substance use disorders through childhood to early adulthood, with a subset of subjects offered intervention for internalising disorders and externalising disorders to assess their impact on substance use disorders.

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Chapter 5

Management of comorbidity

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Introduction

Comorbidity of substance use disorders and mental disorders is very common, and there is substantial heterogeneity within subgroups in terms of both their characteristics and the nature of causal relationships between the disorders. Assessment and management strategies need to deal with both the size of the problem across the community and its severe impact in some subgroups, including those with psychosis. At this stage, the research base from which we can derive recommendations is very narrow, but it does offer a foundation for preliminary conclusions. This chapter reviews the current evidence and makes some suggestions for assessment and for both psychological and pharmacological management.

Implications of comorbidity for management

Interventions for substance use disorders for those with mental disorders need to take account of several key features of comorbidity, many of which are reviewed more extensively in previous chapters. These include:

1. *Frequencies are high.* Comorbidity between substance use and other mental disorders is very common (Degenhardt, Hall, & Lynskey, 2001; Regier et al., 1990), especially in higher intensity treatment settings (Kavanagh, Saunders et al., 1999), and it often involves multiple substances (Degenhardt et al., 2001; Kavanagh et al., 2002). Predictive factors for comorbidity (especially in relation to illegal drugs) are similar to those in the general community, including male gender, young age, lower educational level, and single (or divorced) marital status (Burns & Teesson, 2002; Mueser, Noordsy, Fox, & Wolfe, 2000; Salyers & Mueser, 2001).
2. *Highest risk vs. highest frequency produce different target groups.* The greatest numbers of people with this comorbidity in the population are those with the most commonly occurring disorders — i.e. anxiety or depression, and misuse of alcohol or nicotine (Degenhardt et al., 2001). On the other hand, the greatest increased risk in Axis I disorders is seen in psychoses (Regier et al., 1990), and these people are also more likely to show significant functional deficits from substance use, even at relatively low levels of intake (Drake, Osher, & Wallach, 1989; Drake & Wallach, 1993).
3. *The greatest health impact is from cigarette smoking.* Smoking-related diseases represent a critical source of excess morbidity and early mortality in mental disorders, especially in people with schizophrenia (Brown, Inskip, & Barraclough, 2000; Lichtermann, Ekelund, Pukkala, Tanskanen, & Lonnqvist, 2001), for whom the rates of cigarette smoking are very high (Reichler, Baker, Lewin, & Carr, 2001). However smoking has been relatively neglected in the development of specific management approaches for people with comorbid mental disorders.

4. *Higher rates of comorbidity are found in more intensive treatment settings.* Patients with either substance use or mental disorders who are receiving emergency or inpatient treatment are likely to show very high rates of comorbidity, partly because of what has become known as Berkson's bias (Berkson, 1946). The joint symptomatic and functional impacts from both disorders increases the chance that the person will receive treatment (Mueser et al., 1990). If patients from populations with exceptionally high risk are examined — such as hospitalised young people with psychosis — a substantial majority may have comorbid substance use disorders (Galanter & Castaneda, 1988; D. J. Kavanagh et al., 1999).
5. *Correlates may differ across substances.* While many correlates of substance use disorders in clinical populations closely parallel those in the general population (Salyers & Mueser, 2001), there is also evidence that the pattern of correlates differs across substances (Mueser, Bellack, & Blanchard, 1992; Mueser et al., 1990). For example, young people with psychosis are especially prone to abuse of cannabis, cocaine, and amphetamines, whereas alcohol use disorders tend to occur more over the life span.
6. *Comorbidity results in poorer physical and psychiatric outcomes.* Comorbidity of substance use and severe mental disorders is associated with an increased risk of illness and injury (Dickey, Azeni, Weiss, & Sederer, 2000), including self-harm and suicide (Allebeck & Allgulander, 1990), and poorer psychiatric outcomes (Mueser et al., 1992). Treatment is often less effective (Worthington et al., 1996) and the risk and severity of significant medication side-effects are increased in clients with substance misuse (Dixon, Weiden, Haas, Sweeney, & Frances, 1992; Zaretsky, Rector, Seeman, & Fornazzari, 1993). Among the contributors to increased relapse rates and reduced treatment effects is a reduced rate of medication adherence and appointment attendance (Owen, Fischer, Booth, & Cuffel, 1996). Assertive follow-up is rendered more difficult by increased rates of mobility and homelessness (Mueser et al., 1992), and the engagement and retention in treatment for comorbidity is often a significant challenge.
7. *A variety of causal relationships may apply.* In some cases, the management of one disorder may result in recovery from the other. For example, in Brown and Schuckit (1988), 42% of people entering inpatient alcohol dependence treatment had a depressive syndrome, but after four weeks of abstinence only 6% were clinically depressed. The reverse is less often true, although the pharmacological treatment of comorbid depression together with an alcohol intervention may sometimes produce improved alcohol outcomes in comparison with a placebo plus alcohol treatment (Cornelius, Salloum Ihsan, Ehler, & Jarrett, 1997). However comorbid disorders often appear to be in a relationship of mutual influence rather than falling neatly into primary vs. secondary categories (Mueser, Drake, & Wallach, 1998), and the relationship between disorders may change over time e.g., depression may trigger alcohol use at some times and the reverse may occur at others (Hodgkins, el-Guebaly, Armstrong, & Dufour, 1999).
8. *Different intervention structures may be necessary in different subgroups.* A relationship of mutual influence implies that comorbidity will often be best treated in a fully integrated manner, and this does appear to be the case in people with psychosis and Substance use Disorder (SUD) (Drake, Mercer-McFadden, Mueser, McHugo, & Bond, 1998). The situation is less clear with anxiety or depression comorbid with substance misuse at this time (Oei & Loveday, 1997; Scott, Gilvarry, & Farrell, 1998).

9. *Comorbidity is under-serviced.* One UK survey estimated that even for psychosis and SUD, only 20% of people were offered substance misuse interventions and only 5% were compliant (Weaver et al., 2001). Part of the problem is that many people with comorbidity are not identified because of a lack of systematic screening (Appleby, Dyson, Luchins, & Cohen, 1997). This is discussed in greater detail in Chapter 6. Another issue is that people with comorbidity are sometimes excluded from services that might otherwise assist them (D. J. Kavanagh et al., 2000). In another sense, people with comorbid substance and mental health disorders are not under-serviced; they tend to be higher users of emergency, inpatient and intensive treatment services than people without comorbidity, because of their poorer outcomes (Bartels et al., 1993).

Several implications follow from these points. Firstly, the very large group of people in the community with the most common disorders presents different challenges for service delivery than the groups that form the majority of the people being seen by current treatment services. The former will require relatively inexpensive, highly accessible interventions that focus particularly on anxiety or depression and alcohol, nicotine and cannabis. The latter will demand interventions that can meet the needs of people with severe disorders and that may often be more intensive. Within services there will also be differing needs and emphases. Alcohol and drug services are likely to see people with more severe substance use disorders (especially substance dependence), while mental health services will more often see people with less common but more severe mental health problems such as psychoses (Primm et al., 2000). People with different substance use problems may have differing characteristics from each other, and may even sometimes form different sub-cultural groups.

Collectively, these issues pose considerable demands on interventions for comorbidity. The high comorbidity rates, especially within intensive treatment services or population subgroups at very high risk, highlight the need for the delivery of sound comorbidity interventions to be core business for health services; and facility in their delivery to be a core skill of practitioners in specialist mental health or substance use disorder services. Without these skills, many people will continue to miss receiving appropriate treatment, and will continue to both have poor outcomes and to be disproportionately represented among the users of emergency and other high-cost services. On the other hand, the high population numbers suggest that comorbidity of substance use and mental disorders also needs to be a priority for primary care.

The complex social and legal issues that often arise in connection with comorbidity and the increased risks of serious illness, suicide and symptomatic relapse imply that interventions to address these multiple problems will often be necessary. At the same time, the difficulties often experienced in engagement and retention in treatment and the increased mobility of the more severely affected patients pose a significant challenge for treatment agents.

Overall, it seems that a set of interventions may be required rather than a single intervention format. We will try to encompass this diversity in the remainder of this chapter, but will necessarily not do equal justice to all of the possible intervention variants.

Assessment of comorbidity

Retrospective self-report

Given the high prevalence of comorbidity, especially in treated populations, inquiries about each disorder should routinely be undertaken when the other is detected. Failure to do this will result in a significant proportion of people with comorbidity being missed (Appleby et al., 1997). Sound assessment requires the prior development of rapport with the patient, so that the person feels safe to disclose substance use without fear of rejection or other punitive responses. This general principle is especially important when the person is currently paranoid or is being assessed for involuntary treatment. In people experiencing positive psychotic symptoms, selective attention and other cognitive deficits can present further problems — minimising distraction, using simple sentence construction and repeating questions may assist in maintaining attention. Self-reports that are gathered in sub-optimal conditions may need to be checked against later reports, and either collateral information or biochemical data to examine their accuracy.

Questioning about usual intake tends to result in an underestimation, especially in heavy users (Feunekes, van 't Veer, van Staveren, & Kok, 1999; Townshend & Duka, 2002). There are several reasons for this problem. For example, where there is substantial variability of intake from day to day (e.g., based on substance availability), judgments about usual intake are prone to retrospective biases based on beliefs about usual intake and the salience of consumption occasions (Nisbett & Ross, 1980). Respondents can provide an index of the difficulty they experienced in providing a "usual" quantity, frequency estimate as a result of this variability (Hasin & Carpenter, 1998). However the problem can be better addressed in the interview setting by use of the Timeline Followback method (Sobell & Sobell, 1995), which uses situations and events that the person has experienced to cue recall of consumption. This strategy allows the gathering of accurate retrospective data on consumption over recent weeks or months. The method is of course difficult to undertake when the person is acutely thought disordered. If there is a risk of underestimation, examples of high levels of consumption may reduce unwillingness to report these and shift the reporting anchor (Nisbett & Ross, 1980). In the case of alcohol, additional issues include the difficulty in people summating intake of different types of drinks (Feunekes et al., 1999, suggesting a need for separate questioning on each type), and a substantial underestimation of amounts poured at home (Kaskutas & Graves, 2000), emphasising the need for concrete examples (and often, measurement practice) when explaining the size of standard drinks.

The Opiate Treatment Index (OTI, Darke, Ward, Hall, Heather, & Wodak, 1991) is a structured interview which assesses demographic characteristics and treatment history, consumption of 11 classes of drugs during the month preceding interview, as well as HIV risk-taking behaviour, health, social functioning, criminality and psychological comorbidity (General Health Questionnaire GHQ-28, Goldberg & Williams, 1988). The OTI has excellent psychometric properties (Darke, Hall, Wodak, Heather, & Ward, 1992). Baker and colleagues (in press) have used this instrument successfully with people with severe mental disorders on in-patient and outpatient bases. However, as clinical trials with the OTI indicated that there were difficulties with the recent use episodes methodology, Teesson, Gallagher and Ozols (1997) modified the OTI for use among people with severe mental disorders by

expanding the treatment history section to include psychiatric history; referring to drug use over the preceding three months; adding cough syrup and medications for side-effects as two additional drug classes; and eliminating a question concerning conflict with relatives.

Self-monitoring

Daily monitoring of substance use can provide excellent data about intake, and variants can also give information about the situations in which consumption is most likely to occur, the cognitions or activities that precede it or the effects that follow. The accuracy is of course limited by delays before recording and by effects of intoxication upon memory. It can be difficult in some social settings to take out a monitoring form and record use at the time, but surreptitious recording strategies (e.g., moving a coin from one pocket to another) and noticing the products of use (e.g., empty bottles, cigarette ends) can aid later recall. Self-monitoring may also have reactive effects on intake (Kavanagh, Sitharthan, Spilsbury, & Vignaendra, 1999), especially where the person records their consumption against a contracted intake goal. However as in other contexts, systematic completion of the monitoring on a daily basis can be an onerous task in itself, and adherence to the self-monitoring is a significant clinical challenge. In comorbid populations, there is little data on adherence with self-monitoring, but in severe mental disorders it may prove to be especially difficult to obtain daily data. Devices to remind the person to record self-monitoring data have been successfully used in smoking research (Shiffman et al., 1997), and may assist in the collection of data in comorbid populations as well.

Self-report screening tests for substance use disorders

Screening for significant substance abuse or dependence in mild mental disorders can usefully apply standard screening tests (Dawe, Loxton, Hides, Kavanagh, & Mattick, in press). However in more severe disorders, where only a small proportion of comorbid patients have high levels of physical dependence (D. J. Kavanagh et al., 1999), some of these measures are insufficiently sensitive to detect substance abuse, and others require a high degree of intact cognitive functioning that may not be present. Thus, measures such as the Addiction Severity Index (ASI), (McLellan, Luborsky, Woody, & O'Brien, 1980), Michigan Alcoholism Screening Test (MAST), (Selzer, 1971) and the CAGE alcohol questions (Ewing, 1984) perform relatively poorly in severe mental disorders (Carey, Cocco, & Correia, 1997; Wolford et al., 1999; Zanis, McLellan, & Corse, 1997). In contrast, the Alcohol Use Disorders Identification Test (AUDIT, Saunders, Aasland, Babor, Fuente, & Grant, 1993), which is a sensitive measure of both milder and more severe forms of alcohol misuse in the general population, is also appropriate for use in populations with severe mental illness (D. J. Kavanagh et al., 1999; Maisto, Carey, Carey, Gordon, & Gleason, 2000; Seinen, Dawe, Kavanagh, & Bahr, 2000). The Severity of Dependence Scale (SDS, D. J. Kavanagh et al., 1999) also performs well in identifying substance use disorders in those with severe mental illness.

Some screening measures have been especially designed for this population. In the US context, the Dartmouth Assessment of Lifestyle Instrument (DALI), (Rosenberg et al., 1998) has demonstrated high levels of sensitivity and specificity to alcohol, cannabis or cocaine abuse within in-patients with severe mental disorders. Locally, the DrugCheck Problem List (D. J. Kavanagh et al., 1999) has also shown a high rate of correct classification in relation to full interview assessment.

Biochemical assays

Standard biochemical assays for substance use can assist in validating self-reports. However the accuracy of these assays is limited by the duration over which the substance and its metabolites may be accurately detected and by the detection levels that are set in the analyses. Breath analysis gives a particularly short window for detection of alcohol or cigarette use (e.g., carbon monoxide from cigarette smoke can be reliably detected over about 6 hours). In most cases, urine samples will detect the parent drug or its metabolites within 48 hours of last use of the drug. Sometimes an associated substance may be detected by biochemical measures over a longer period — for example, salivary thiocyanate (reflecting cyanide present in cigarette smoke) has a half-life of about 9.5 days. Hair samples allow analysis of substance use over several weeks by capture of the substance within the growing hair, and this method is readily used even in severe mental disorders (McPhillips et al., 1997). However hair analysis has not as yet become a standard clinical procedure.

Collateral information

Data from other informants may also be used for validation of the self-reports, although collateral informants are themselves prone to biased reporting, including minimising or exaggerating current use, or being affected by beliefs about the person and their intake (e.g., that their substance use will not change). They are also likely to be influenced by salient past events (e.g., unusually high levels of use or the theft of personal items, Nisbett & Ross, 1980) and misattribution of symptoms (mistaking symptoms of mental illness for evidence of substance use and vice versa). In addition, collaterals may not have full information about the substance use, especially if the substance use is being concealed. They may be more likely to accurately report substance use when they are in close contact with the person (Carey & Simons, 2000).

Biochemical assays and collateral data not only attest to the validity of self-reports, they can also encourage accuracy in self-reports when the person is aware of the check being in place (the 'bogus pipeline effect', Aguinis, Pierce, & Quigley, 1995). In practice however, self-reports are usually reliable as long as incentives for accurate reporting are in place. The addition of biochemical assays or collateral assessments does not usually add substantially to this accuracy (Rankin, 1990), even in comorbid substance use and severe mental disorders (Carey & Simons, 2000). In an urban US sample of psychiatric patients attending an emergency department, a self-reported history of intake over the previous three days was more likely to result in reported use of alcohol and cannabis than a urine screen (Perrone, De Roos, Jayaraman, & Hollander, 2001). The urine screen did not show significantly more identified cases than the history on any substance.

Screening for mental disorders in people with substance use disorders

Screening for mental disorders in people with substance use disorders may use standard tests that have been developed for the general population (Dawe et al., in press). The General Health Questionnaire (GHQ), (Goldberg & Williams, 1988) is a self-administered questionnaire that provides a measure of generalised distress, with the 12-item version performing about as well in detecting disorder as the 28-item version (Goldberg, Gater, Sartorius, Ustun, & et al., 1997). An alternative to the GHQ is the Self-Reporting Questionnaire (SRQ), (Beusenberg & Orley, 1994),

which has been validated internationally as a screen for psychiatric disorder. Versions have been examined with 20 or 24 items. The Symptom Check List-90-Revised (SCL-90-R), (Derogatis, 1994) — also a self-report measure — displays high sensitivity and moderate specificity for anxiety and depressive disorders in patients with substance misuse, and is better able to identify these disorders than the Addiction Severity Index (Franken & Hendriks, 1999). It is only available for use under the supervision of a clinical psychologist. Brief forms of the scale such as the Brief Symptom Inventory (BSI, Derogatis & Meilisaratos, 1983) show high correlations with the full SCL-90-R.

The Brief Psychiatric Rating Scale (BPRS), (Lukoff, Liberman, & Nuechterlein, 1986; Overall & Gorham, 1962) is a clinician-completed scale providing both screening and detection of changes in symptoms. It has been commonly used in studies on comorbid populations as a criterion measure (e.g., Dixon, Haas, Weiden, Sweeney, & Frances, 1991; Warner et al., 1994). The scale takes about 20 minutes to complete, and includes both standard questions and observational ratings. Detailed descriptions have been published (Ventura, Green, Shaner, & Liberman, 1993; Woerner, Mannuzza, & Kane, 1988) to assist in anchoring ratings. The Positive and Negative Syndrome Scale (PANSS, Kay, Fiszbein, & Opler, 1987) is an adaptation of the BPRS that was designed to provide scores on positive and negative syndromes of schizophrenia and general psychopathology. Both scales require training and calibration of interviewers to ensure reliability and validity of the assessments.

Assessment of psychiatric symptoms in people with substance use disorders

The Psychiatric Diagnostic Screening Questionnaire (PDSQ), (M. Zimmerman & J.I. Mattia, 2001; M. Zimmerman & J. I. Mattia, 2001) is a recently developed self-report screening instrument that requires approximately 20 minutes to complete and produces predictions for a broad range of 13 common DSM-IV disorders, including alcohol and drug use disorders, as well as major depression, bipolar disorder, post-traumatic stress disorder (PTSD), and psychosis. Studies on the PDSQ have indicated good test-retest reliability, and high sensitivity, specificity, and predictive value when compared with structured clinical interviews. Considering the ease of administration, the strong association with structured clinical interviews, and experience with the scale reported in several thousand people, the PDSQ would appear to have broad applicability in mental health, substance abuse, or primary health care settings.

Assessment of insight

Insight is one of the most consistently reported predictors of compliance with psychiatric treatment. The Schedule for the Assessment of Insight (SAI), (David, 1990) is a semi-structured interview that measures three aspects of insight: willingness to accept that one has an illness; ability to correctly label psychotic experiences; and acceptance of treatment. Scores on this scale are expressed as a percentage of maximum insight. Kemp and colleagues (1998) reported a significant difference in scores on this measure as a function of compliance therapy, based on motivational interviewing and cognitive approaches to psychotic symptoms and supportive counselling among 74 acutely psychotic in-patients. The Insight Scale for Psychosis, (Birchwood et al., 1994) was shown to have adequate psychometric properties among 133 subjects with varying non-affective psychoses and is suggested

as a quick and acceptable self-report measure that is reliable, valid, and sensitive to individual difference and change.

Readiness to change substance use or to accept treatment does not necessarily require full insight. If efforts are concentrated on agreement with a diagnosis or even a full understanding of symptoms, a failure to obtain that agreement often becomes a block to engagement. Furthermore, the acceptance of disorder often produces dysphoria and a loss of self-efficacy that can damage commitment to change. Understanding can initially be partial, as long as it is sufficient to motivate some change. Assistance can then focus on the issues that are effectively motivating the person.

Assessment strategies covering both mental disorders and substance use disorders

A number of standardised diagnostic interviews are available to assess both substance use disorders and other mental disorders in a single assessment. These include the Composite International Diagnostic Interview (CIDI, Semler et al., 1987), the Structured Clinical Interview for DSM-IV (SCID, First, Spitzer, Gibbon, Williams, & Benjamin, 1994; Spitzer, Williams, Gibbon, & First, 1992), and the Schedules for Clinical Assessment in Neuropsychiatry (SCAN, Wing et al., 1990). The full interviews take some time to administer and score, although segments can be selected for specific focus (e.g., substance use, anxiety disorders). A personality disorders segment of SCID is also available (Structured Clinical Interview for DSM-IV Axis II Personality Disorders—SCID-II, First et al., 1994). All of the structured interviews require training and calibration on the conduct of the interviews and the use of interviewer ratings. The CIDI is available in a computerised, self-administered version (CIDI-Auto), (Peters & Andrews, 1995), and comparable results on anxiety and depression are available in that format (Peters, Clarke, & Carroll, 1999). Some recent data suggests that there may be problems with the concordance of diagnoses derived from CIDI and SCAN interviews given sequentially (Brugha, Jenkins, Taub, Meltzer, & Bebbington, 2001).

The Primary Care Evaluation of Mental Disorders (PRIME-MD), (Spitzer et al., 1994) is a questionnaire and interview instrument designed for detection of psychiatric or substance use disorders within primary care settings. A version of the interview can be administered over the telephone using interactive voice response technology (Kobak et al., 1997). PRIME-MD found high sensitivity and specificity in relation to the Structured Clinical Interview for DSM-IV (SCID). The computer-assisted version of PRIME provides similar results to the face-to-face interview, except that more patients report alcohol-related problems on the computerised version (Kobak et al., 1997).

Cognitive dysfunction is an issue in both mental illness and substance use disorders. The Mini-Mental State Examination (MMSE), (Folstein, Folstein, & McHugo, 1975) is a helpful quick screen for cognitive dysfunction that does not require psychological training (Mattick & Jarvis, 1993). Testing should not be conducted during detoxification and only when the client is sober Mattick & Jarvis (1993); and Saunders & Robinson, (in press) recommended that a small cadre of staff on each alcohol and other drug agency be trained in the MMSE as it assists in recognising the presence of mental health symptoms and improves ability to communicate with mental health staff.

Distinguishing true comorbidity from secondary effects

At initial presentations, it is often difficult to distinguish between effects of substance use and psychiatric symptoms. For example, symptoms of anxiety or depression can arise during intoxication or withdrawal from a variety of substances. Similarly, there are few differences between the acute symptoms of schizophrenia and those from a transient substance-induced psychosis. Some diagnostic issues may be clarified by taking a careful history from the patient or other informants and by tracking the resolution of symptoms. For example, a stimulant-induced psychosis usually resolves within days of ceasing the stimulants (Schuckit, 2000). However the basis of current symptoms can often be unclear in cases where both problems have been present at times in the past.

In some cases the basis of a specific symptom may be of little immediate importance for its management. The immediate pharmacological treatment may often be identical, although often shorter in duration when psychiatric symptoms are primarily due to substance use. Where both substance use and mental disorders are current, the psychological management may often need to address both disorders rather than be confined to the trigger for symptoms on this occasion (K. T. Mueser et al., 1998). Detecting current causal influences does have importance even in cases where much of the treatment is unchanged, since it allows better prediction of outcomes (e.g., if increased symptoms have repeatedly been associated with greater substance use, this may well recur at the next exacerbation). However the identification of the causal influences is often difficult or impossible to disentangle, and delaying treatment of one or both disorders in order to determine one's "primacy" or the instigating trigger/s can have deleterious effects on both disorders. In consequence, the detection of causal influences is generally conducted in the context of attempting to treat both disorders.

Assessment of readiness to change

Prochaska, DiClemente and colleagues (e.g., 1986; 1992) have proposed a transtheoretical model that can be used to assess readiness to change and allow appropriate tailoring of interventions. During 'pre-contemplation' the person is not considering change, and is either unaware of the benefits of change or is contented with their behaviour. At 'contemplation', the person is ambivalent about change but has not determined to change. During 'preparation', the person prepares to take action. The 'action' stage is characterised by active attempts to change. During the 'maintenance' stage the person focuses on maintaining the changes made. People who are in earlier stages of change tend to respond to action-oriented strategies with resistance. Motivational interviewing may help to prepare the person for change, nudging them from pre-contemplation to contemplation and preparation. It can also be employed to encourage optimism and self-efficacy in the action and maintenance stages of change (Miller & Rollnick, 2002).

How a person with comorbid psychosis and substance misuse fares in treatment depends on their readiness to acknowledge both disorders (Smyth, 1996), adhere to medication (Kemp, Hayward, Applewhaite, Everitt, & David, 1996; 1998), and participate in non-pharmacological interventions such as vocational rehabilitation programs (Rogers et al., 2001). Their readiness to change in each of these areas should be assessed. For example, insight into illness will affect recognition of the role

of medication and the potential for substance use to exacerbate symptoms and interfere with effectiveness of medication. Stage of change should be assessed early on in treatment and reassessed regularly, providing opportunities for early detection and treatment matching (Ziedonis & Trudeau, 1997). Ongoing stage of change assessment over the longer-term is also important because participation in treatment for mental or substance use disorders, especially when coerced, may lead to a return to previous behaviour when pressure to comply has been lifted (Smyth, 1996).

Readiness to change alcohol and other drug use

Although the utility of self-report measures of readiness to change substance use among people with psychosis and substance use disorders has been questioned (Addington, el-Guebaly, Duchak, & Hodgins, 1999), others have used such measures successfully. Oral administration of questionnaires may be helpful (e.g., Carey, Purnine, Maisto, & Carey, 2001). Velasquez, Carbonari and DiClemente (1999) measured stages of change, decisional balance, temptation and self-efficacy among 132 alcohol dependent people in a public mental health clinic's outpatient dual diagnosis program. Primary diagnoses for the sample comprised depression (41%), schizophrenia (30%), bipolar disorder (16%), psychosis (7%), mood disorder (3%), anxiety (2%) and adjustment disorder (1%). The Readiness to Change Scale of the 28-item University of Rhode Island Change Assessment Scale-Alcohol (URICA-A, DiClemente & Hughes, 1990) was used to assess readiness to change drinking. Cronbach's alpha was 0.91 for the URICA measure, indicating that presence of an Axis 1 mental disorder may not be associated with poor internal consistency of instruments designed to measure readiness to change substance use, although test-retest reliability was not assessed (Carey et al., 2001).

Carey and colleagues (2001) subsequently evaluated the psychometric adequacy of three instruments designed to assess readiness to change substance misuse among 84 people with severe and persistent mental illness. The instruments were the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES, Miller & Tonigan, 1996), the Decisional Balance Scale (DBS), (King & DiClemente, 1993), and the Alcohol and Drug Consequences Questionnaire (ADCQ, Cunningham, Sobell, Gavin, Sobell, & Breslin, 1997). All three instruments demonstrated good internal consistency, reliability and validity. Carey and colleagues concluded that the use of self-report instruments of readiness to change can be justified among people with severe mental illness and substance use disorders, and that such measures may also be usefully included in outcome assessments.

The 12-item Readiness to Change Questionnaire (RTC), (Rollnick, Heather, Gold, & Hall, 1992) has been employed in several studies among people with co-occurring psychiatric and substance use disorders (e.g., Blume & Marlatt, 2000; Blume & Schmaling, 1997; Blume, Schmaling, & Marlatt, 2001; Claus, Mannen, & Schicht, 1999). This questionnaire yields three scores, Pre-contemplation, Contemplation and Action, and a total score that provides a measure of overall motivation to change. It has been found to have satisfactory internal consistency and test-retest reliability (Rollnick et al., 1992) and to have predictive validity for drinking rates among people without comorbid problems (Heather, Rollnick, & Bell, 1993).

Some brief measures of the stages of change for substance use appear to be reliable and valid in comorbid populations, particularly when they are orally administered.

However, further research in this area is required to establish the psychometric properties of these instruments among people with comorbid disorders.

Readiness for treatment and treatment adherence

There have been few studies examining readiness for treatment among people with comorbid mental and substance use disorders. The Substance Abuse Treatment Scale (SATS), (McHugo, Drake, Burton, & Ackerson, 1995) is a clinician-rated scale assessing stage of change of substance abuse treatment during the past six months among people with severe mental illness and SUD. Psychometric data were derived from seven community mental health centres over a three-year period from clients, case managers, families and mental health and non-mental health treatment and service providers. The SATS has adequate content, construct and criterion validity and adequate test-retest and inter-rater reliability (Teesson, Clement, Copeland, Conroy, & Reid, 2000).

Rogers and colleagues (2001) assessed readiness for treatment using the Change Assessment Scale (CAS), (McConnaughy, Prochaska, & Velicer, 1983), a 32-item questionnaire, among 163 comorbid individuals, primarily with psychotic disorder, major depression or bipolar disorder. The instrument was administered at baseline and 24 months after entry to the study. Participants were asked to consider their vocational or employment situation as they completed the items. Rogers et al. reported that the contemplation, action and maintenance sub-scales achieved the satisfactory level of internal consistency found in the non-comorbid original sample. However, the pre-contemplation scale did not achieve this level of internal consistency and did not correlate negatively with the maintenance sub-scale. The authors suggested that people with comorbid disorders may be less aware of their need to change and remain more entrenched at the pre-contemplation stage. Factor analysis revealed considerable overlap between the contemplation and action stages. They suggested that past work failures may have led to more ambivalent attitudes about attempting vocational changes. The CAS was able to predict early attrition in that there were significant differences between dropouts and completers. However, the CAS was not able to predict later behaviour change well and the authors suggested that readiness to change may not be a stable phenomenon, making it difficult to use as a predictor of long-term change. The authors suggested that further studies of the instrument's psychometric properties be undertaken and suggested it may be a reasonable predictor of proximal rather than long-term change.

DeLeon (2001) has suggested that as client motivation and readiness for treatment have been shown to be important in treatment retention, brief, reliable, valid and user-friendly questionnaires should be used to assess these areas. He suggested using the Texas Christian University scales (Joe, Simpson & Broome, 1998) and/or the Circumstance, Motivation, and Readiness (CMR) scales (DeLeon, Melnick, Kressel, & Jainchill, 1994), measuring external motivation, internal motivation and readiness for treatment. No data was reported on their use among people with comorbid mental and substance use disorders.

The Attitudes to Medication Questionnaire (ATM) is a 14-item semi-structured interview designed to measure patients' attitudes to psychotropic drugs, developed by Hayward et al. (1995). Patients are asked about their feelings about their medication, the role of staff in dispensing their medication, and their plans for the

future. Higher scores indicate more positive attitudes towards medication. The test-retest reliability of this measure was 0.77 in a small pilot study. Kemp et al. (1998) have reported a treatment effect for scores on this measure.

Compliance with medication is difficult to measure. An indirect measure of compliance used by Kemp et al. was sensitive to differences between control and treatment groups. This measure correlated highly with attitudes to medication. Estimates of compliance were rated on a Likert scale (1=complete refusal, 7=active participation) by at least two people involved in the care of participants (eg., health practitioners, relatives) and converted into a composite compliance score. The Medication Adherence Rating Scale (MARS), (Thompson, Kulkarni, & Sergejew, 2000), a refinement of the Drug Attitude Inventory (DAI), (Hogan, Awad, & Eastwood, 1983), was administered to 66 people, the majority diagnosed with schizophrenia. Lithium levels and carer ratings were also recorded to verify compliance when available. Results indicated that the inventory appeared to be a reliable and valid measure of compliance to psychoactive medications.

Importance, confidence and readiness

Rollnick, Mason and Butler (1999) have described the use of open-ended questions to assess importance, confidence and readiness to change. They suggest that the following line of questioning may be helpful: "How do you feel at the moment about [change]? How important is it to you personally to [change]? If zero was 'not important' and 10 was 'very important', what number would you give yourself?" [p 63]. Similar questions can be asked of confidence about behaviour change and overall readiness to change. Rollnick et al. recommend that motivational interviewing may be indicated when a person indicates low importance, whilst high importance and low confidence may indicate training the person in strategies to enhance confidence and ability to change. Assessment of importance, confidence and readiness in this way may be an efficient and non-intrusive tool for the concurrent assessment of stage of change for mental and substance use disorders; adherence to medication; and participation in non-pharmacological interventions. No evidence on the specific utility of this assessment in comorbid populations is available at present.

Summary and recommendations

The selection of assessment instruments will depend on the context and the assessment objectives. Standard screening instruments for substance use disorders and for mental disorders should routinely be used in situations where staffing time or expertise prohibit the universal application of more extended assessments. Without this routine screening, cases of comorbidity will be missed. Procedures also need to be in place to alert staff to conduct additional assessment for comorbidity in positively screened cases. The AUDIT for alcohol and the SDS, DALI and DrugCheck for other drugs appear to be performing well as screening instruments. On current evidence we have no reason to doubt the validity of standard instruments such as BPRS for the assessment of psychiatric symptoms within people with substance use disorders, although further data specifically addressing their use by substance treatment staff is required. Current data on PRIME-MD offers effective mental disorder and substance use disorder screening in primary care, and the voice-activated telephone method may provide significant cost advantages over a live interview approach.

Ideally, a standardised interview should be used to validate diagnoses, and this will be especially important in research. With appropriate training, the SCID and SCAN perform particularly well. The computerised CIDI may also assist with diagnosis, but current data suggests that such assessment should be supplemented by observation and checking of responses by trained and experienced clinicians.

Retrospective self-reports of substance intake appear to provide valid estimates when there are incentives for accuracy and where a Timeline FollowBack technique is used to assist recall. Knowledge that collateral information and/or biochemical assays are being collected may assist in maximising accuracy. The accuracy of collateral reports requires observational access and is subject to the same potential retrospectivity and biasing constraints as self-report. The utility of biochemical assays is subject to the speed of elimination of the substance and its metabolites and to cost constraints, but should be considered a standard procedure at in-patient admission and at random intervals during treatment. Self-monitoring of substances and symptoms presents challenges in people with significant cognitive impairment or high negative symptoms, but variants such as brief telephone interviews can assist. Assessments of insight such as the SAI or ISP, and of mental status using the MMSE provide important additional information.

It appears that readiness to change substance use may be reliably assessed with measures such as the RTC, SOCRATES, DBS and ADCQ, although further data is needed. Further work on the development of assessments of readiness for treatment within comorbid populations is required before other specific recommendations can be made. Assessment of readiness to change may present particular challenges with involuntary patients, where there is a risk of over-reporting intentions in order to obtain desired changes in treatment status.

This field is developing very quickly. Over the next few years, we can expect a variety of psychometrically sound assessment instruments and protocols to emerge for use in specific contexts. Cost-effective administration procedures including computer-based methods can also be expected to develop further, although in comorbid populations with cognitive deficits or limited insight we may anticipate that live interview assessment will still be needed.

Accuracy of assessment relies on the development of rapport and trust, and this will be one reason why we expect that live assessment will continue to have an important role. As in other populations, assessment and treatment necessarily come together in the development of this rapport. Aspects of the following section are therefore also of key importance in the assessment process.

Interventions for comorbidity

The literature on the management of comorbidity is currently very sparse, and much of it is of poor methodological quality. The current Cochrane review (Ley, Jeffrey, McLaren, & Siegfried, 2001) concludes that no effective treatments have been established (i.e., no standardised interventions for comorbid disorders have been shown in multiple studies to improve outcome. It recommends additional controlled trials. We concur with this assessment, and would extend it to include psychological management of non-psychotic disorders that co-occur with substance use disorders. However there are some statements about intervention that can be made with varying degrees of confidence.

Integration of treatment

It is tempting to address comorbid problems by having specialists from mental health and alcohol and other drug services to each address the combined problem. This is both consistent with the growth of separate service systems and with the specialist model of medical care. There are two possible ways in which this might be done: either the problems can be treated in a parallel fashion, or they may be addressed sequentially. If one disorder is considered secondary to the other, the "primary" disorder is sometimes treated first, with treatment only being given for the secondary disorder if it does not remit.

The use of parallel or sequential treatment models either assumes an absence of close, mutual relationships between the disorders or the presence of a unidirectional relationship between a primary and secondary disorder. As already noted, the treatment of one disorder can sometimes result in remission of the other (Brown & Schuckit, 1988). However such recovery may not necessarily imply a simple primary, secondary relationship. For example, the treatment (or expectancies of its effects) may have effects on both disorders. Furthermore, the existence of a causal influence in one direction does not preclude the possibility of the reverse influence, or of the causal relationships changing over time (Hodgkins et al., 1999).

The close mutual relationships that appear the norm in comorbidity of severe mental disorders and substance use disorders (Mueser et al., 1992), produce significant problems for parallel or sequential treatment models (Mueser, Drake, & Noordsy, 1998). At the very least, the timing and nature of interventions need to take account of the status of both disorders. The intervention agents need to be in very close communication — a level of communication that is difficult with separate services. However this is only part of the problem. The interlacing of the problems is illustrated by the common use of substances to deal with medication side-effects, where those side-effects are being exacerbated by the high dosages that are being used to deal with substance-induced symptoms. A treatment for the substance use may need to comprise a combination of reduced medication dosage, effective medical and psychological strategies for symptom control, together with a substance use treatment that is compatible with other psychiatric symptoms that at times may only be partially controlled. The management plan as a whole needs to avoid over-taxing the patient, or increasing either symptoms or personal risk. These requirements are very difficult to fulfil in an environment with separate services for substance misuse and mental illness, where each has evolved differing service priorities and treatment philosophies. Many patients miss out on effective treatment for one or both disorders, staff in each service often have difficulty obtaining consultations and timely referrals, and joint case conferences are rare (D. J. Kavanagh et al., 2000). Jointly managed patients often face conflicting advice, and interventions that are at odds (e.g., confrontational interventions for substance use that exacerbate psychiatric symptoms, or increased dosage of antipsychotic medication at the same time as a quit-smoking attempt).

By the early 1990s there was a widespread awareness that parallel and sequential approaches to substance use disorders comorbid with severe mental disorders were relatively ineffective (Polcin, 1992; Ridgely, Goldman, & Willenbring, 1990). Integrated models of treatment were established (Drake, Antosca, Noordsy, Bartels, & Osher, 1991; Minkoff, 1989; Rosenthal, Hellerstein, & Miner, 1992), in which the

same clinician treated both disorders simultaneously. Integrated treatments for substance use disorders and severe mental disorders tend to have superior outcomes to standard treatment and to parallel or sequential approaches (Carmichael et al., 1998; Drake, Yovetich, Bebout, Harris, & McHugo, 1997; Godley, Hoewing-Roberson, & Godley, 1994; Herman et al., 2000).

Despite the high prevalence of anxiety and depression comorbid with substance misuse, we have very little evidence on their management. There are still commentators who argue in favour of parallel (Oei & Loveday, 1997), or sequential treatment (Scott et al., 1998). In some disorders such as phobias that have a relatively low risk of recurrence, a treatment that deals with mutual influences may be less critical to outcomes than in disorders that are more subject to recurrence.

A sample study illustrates some of the difficulties in interpreting the current evidence. In one of the few controlled trials on psychological management of comorbid non-psychotic disorders, Randall et al., (2001) compared the impact of alcohol treatment alone, and alcohol plus social phobia treatments within the same sessions. Participants were 93 people with current alcohol dependence and social phobia who completed at least one treatment session and the post-treatment assessment. All treatment was delivered individually, and the combined treatment involved somewhat more contact time (18 hours) than alcohol treatment alone (12 hours). Despite the additional content and treatment time, the combined group had an equivalent degree of improvement in social anxiety and depression, and actually had worse alcohol outcomes than the alcohol-only group. Furthermore, improvements in social anxiety and alcohol measures were unrelated, suggesting that the comorbid disorders in this sample may not have been closely interlinked over the course of the treatment.

At first glance, this study may be considered to argue against integrated treatment in anxiety disorders and alcohol dependence. However, as the authors acknowledge, the combined treatment was better described as adjunctive rather than integrated, since the content of each treatment was not closely related to the other. In fact, the addition of a second set of apparently unrelated learning and homework tasks may have made it harder for either treatment to have full effect. The social phobia treatment also appears to have been sub-optimal: while based on empirically validated procedures, it omitted in vivo practice within sessions (either outside the therapy room or involving a therapy group) and it included relatively weak versions of some other procedures (e.g., only one relaxation training session). If a more effective and more closely integrated form of social phobia treatment had been included, it may have both had more substantial effect and have triggered a greater association between the disorders. The study does not therefore provide a clear test of the integration hypothesis.

In most studies, the psychological treatment of alcohol misuse (Lennox, Scott-Lennox, & Bohlig, 1993; Project MATCH Research Team, 1997) and the pharmacological management of depression (Worthington et al., 1996) have both tended to be less effective when conducted in the presence of the other disorder than when the comorbidity is not present. Where both depression and substance misuse are addressed in an integrated treatment, better outcomes may be observed (Charney, Paraherakis, & Gill, 2001). Even in cases where the depression is not clearly independent of the substance use disorder, treatment of the depressive symptoms

can reduce their severity and duration in treatment, and may also assist in prevention of relapse to substance misuse (Mason, Kocsis, Ritvo, & Cutler, 1996).

A significant problem with approaches that neglect the presence of a non-psychotic disorder in treatment for substance use disorders is that some people may be more vulnerable to subsequent relapse. However, an additional relapse vulnerability in substance-misusing samples with comorbid anxiety or depressive symptoms at the time of treatment will not always occur (R. A. Brown et al., 1998; Sellman & Joyce, 1996). This situation is most likely where the psychiatric symptoms are consequences of substance use, and there is little or no influence of mental disorder on the substance use disorder. However the risk is that in cases where there is potential for a causal influence of increased psychiatric symptoms upon substance misuse, inadequate treatment of the mental disorder or of its link with the substance misuse, will mean that a recurrence of psychiatric symptoms renders the person vulnerable to relapse in substance use (Brown, Stout, & Gannon-Rowley, 1998). An alternative is to train participants to maintain their self-management of substance (especially alcohol) use in the face of the anxiety or dysphoria.

Since people with comorbid anxiety or depression tend to be higher functioning than people with psychotic disorders, the treatment of comorbidity may not always need to be as extensive as in comorbid substance misuse and psychosis. For example, simply drawing attention to alcohol misuse by initial assessment and ongoing alcohol monitoring may sometimes be sufficient to trigger self-management of the problem in cases of panic disorder where alcohol dependence is low (Lehman, Brown, & Barlow, 1998). However, in depression there is often a need for more extensive intervention for the comorbidity. Engagement often needs to overcome low self-efficacy and pessimism about positive outcome (Kavanagh, 1992), and this process needs to be practised so it can be used as a self-management strategy for maintenance or re-engagement after treatment has finished. Where substances have been used as a short-term method of mood enhancement during dysphoria, attention to strategies to minimise this risk may be required, including cognitive therapy to address unrealistically positive substance expectancies. Conversely, training to deal with lapses in substance use may need to include additional work on the reduction of associated self-blame and on the retention of a focus on problem solving to prevent recurrence. A treatment that focuses on strategies that will benefit both the depression and the substance misuse may be particularly useful — such as encouragement to engage in non-substance-related, enjoyable activities, positive self-statements to combat low self-esteem related to depression and vulnerability to substance use, or an emphasis on problem solving and social support in response to setbacks in either disorder.

Some common features of integrated programs

Treatment for comorbidity is often divided into stages that are derived from Prochaska and Di Clemente's (1983) concept of stages of change as a guide to treatment planning (Osher & Kofoed, 1989). The stages are described as:

1. engagement in a working alliance;
2. persuasion;
3. active treatment; and
4. relapse prevention.

Movement through the stages is defined behaviourally in terms of the person's response. Separate groups may sometimes be offered to cater for the different needs of people at each stage. Common elements in programs for severe mental disorders tend to include assertive outreach, comprehensive services to address the full range of patient needs, the provision of safe and protective living environments, and a long-term supportive commitment (K T Mueser et al., 1998).

Fostering engagement and motivation to change

Rationale

As with substance use disorders within the general population, a major challenge in comorbid populations is engaging patients in an attempt to change their substance use. Some treatment services, particularly in the US, have even required a period of abstinence before entry to the program, and use expulsion from the program as a sanction for lapses during the program. It seems odd that a program that has control of substance use as its therapeutic goal should have the partial achievement of this goal as a criterion for entry, or that failure to achieve or maintain this goal should be attributed solely to the participants. Other programs have tended to wait for people to reach a crisis point that pushes them into action rather than attempting to engage them before the often permanent damage associated with such crises has been sustained.

We argue that these approaches abrogate responsibility on the part of the treatment service towards engagement and display a lack of empathy towards patients in relation to the difficulty many have in dealing with substance misuse. An inability to initially succeed at the control of substance use problems does not necessarily imply a lack of commitment: successive attempts are commonly needed before smokers from the general population can permanently quit (US Department of Health and Human Services, 1994). We need to recognise this reality and reward intermediate success. There is however one appropriate feature of approaches that insist on commitment before entry: if people with substance use disorders are not engaged and ready to change their substance use, other interventions may often be of little effect, since they are used half-heartedly by the person if at all. This appears to apply as much to people with comorbidity as to those with substance use disorders alone (Bellack & DiClemente, 1999). In other populations with substance use disorders, motivational enhancement procedures including motivational interviewing have been found to assist in engagement and goal selection (Miller & Rollnick, 2002).

Motivational interviewing

Rollnick and Miller (1995) define motivational interviewing as a "directive, client-centred counselling style for eliciting behaviour change by helping clients to explore and resolve ambivalence" (p. 326). Motivational interviewing emphasises that the person's readiness to change is a process that involves the resolution of internal conflict and that this process can be facilitated within a context where it is safe to conduct searching appraisals and confront one's own ambivalence. The therapeutic relationship involves a collaboration in discovering the alternatives that will maximise payoffs for the individual rather than a context where a therapist attempts to persuade or confront the person. Key components of motivational interviewing involve encouraging the person to examine the benefits and costs of their substance misuse and eliciting cognitive dissonance between the substance use and other goals.

Information is given in response to the person's questions, but behaviour change is not seen as requiring full knowledge of substances and their effects. An emphasis is placed on the emotional response of the person to aspects of his or her substance use rather than on intellectual knowledge. The procedures are integrated with assessment. For example, the lifeline technique, in which the important life events are charted against the course of psychiatric illness and then substance use history, enables the examination of the interrelationship of substance use, mental disorder and psychosocial problems (Smyth, 1996). In cases where the person is unwilling to consider changing their substance use at the moment, the therapist encourages them to consider what would need to happen before they would contemplate such change. A positive outcome may involve the person developing their goals for changing their substance use, but also includes the progressive understanding of the impacts of their substance use and the development of a relationship in which they will feel sufficiently safe to discuss the issue again in the future. Motivational interviewing can be conducted individually or in groups, where people with substance use disorders share their experiences with substance use (Smyth, 1996; Van Horn & Bux, 2001).

Evidence on motivational interviewing as a stand-alone treatment

In general populations, a single session of a motivational intervention has been shown to have a powerful effect on alcohol abuse, producing about double the rate of moderation of drinking compared to no intervention (Wilk, Jensen, & Havighurst, 1997). Brief interventions for alcohol misuse currently are supported by 68% of the 31 published trials (Miller & Wilbourne, 2002). They are typically as effective as much more extended interventions (Moyer, Finney, Swearingen, & Vergun, 2002). Some of the studies on brief intervention have simply used information and advice about alcohol use (Fleming, Barry, Manwell, Johnson, & London, 1997); others have used motivational interviewing (Monti et al., 1999). Motivational interviewing itself is supported by 71% of the 17 available trials (Miller & Wilbourne, 2002).

Little research has been conducted on brief interventions incorporating motivational interviewing as the primary intervention strategy in people with severe comorbid psychiatric conditions. A pilot study by Kavanagh et al. (in submission) randomly allocated 25 in-patients at their first to third episode of psychosis to standard care or to a brief intervention (Start Over and Survive, SOS), comparing it with routine care. All SOS participants who received at least one session of motivational interviewing reported less substance use at six months. This compared with 58% in routine care. However nearly 38% of patients allocated to SOS did not proceed beyond the initial rapport building, highlighting the continuing challenge of initial engagement in sessions with this population. The study employed blind raters for the final assessment, which checked on all previous reports. Its results beyond the six months assessment point are subject to a greater dropout from assessments by participants in the control condition, although this result may also be interpreted as reflecting a greater engagement in substance-related assessment in the SOS group. A replication in a study with larger numbers and equalised contact time is required, and a study along those lines by the research group is nearing completion.

Hulse & Tait, (2002) have reported the results of a randomised controlled trial in which 120 psychiatric in-patients in a general hospital setting who scored at least eight on the AUDIT but less than 30 on the SADQ, were randomised either to brief

motivational interviewing or education. At the six-month follow-up, the motivational interviewing group reported a significantly greater reduction in weekly consumption of alcohol and a greater proportion were improved compared to the education group. Hulse and Tait recommended that screening for alcohol consumption and brief interventions should be routinely conducted in psychiatric units.

Motivational interviewing can even be effective in comorbid individuals who are currently experiencing a psychotic episode (Kavanagh et al., in submission). Timing the intervention during an episode may actually assist the motivational process, by offering compelling evidence of negative effects from substance use (Walitzer, Dermen, & Connors, 1999). Having the person present in an in-patient setting also has the advantage that it is easier to keep track of the person and ensure that sessions do occur (a problem that otherwise can be significant in patients who are itinerant or who are leading chaotic and unpredictable lifestyles).

Conducting motivational interviewing with people with severe mental disorders also of course presents additional challenges, especially if it is conducted during an acute episode. Some of these were mentioned earlier in relation to assessment (e.g., suspicion, concerns over involuntary treatment, and high levels of thought disorder). We address these problems by using the initial part of the admission to develop rapport and conduct assessments, and waiting until the person can concentrate for at least 10 minutes before beginning motivation enhancement. Together with others in this field (Carey et al., 2001), we also tend to spread the motivational interviewing over several sessions, allowing rehearsal by the person of key aspects such as the motivational 'balance sheet' in relation to their drug use. Difficulties in holding several positive and negative aspects in mind simultaneously are addressed by the use of written summaries that provide immediate visual feedback (e.g., the length of the lists of good and 'not-so-good' features of substance use, or the circling of one key reason for change).

Another challenge for motivational interviewing in people with severe mental disorders is the loss of alternative goals and activities. Functional goals that the person had before the illness developed, may not have been replaced with ones that are now attainable. Any former friends who were not substance users tend to be progressively lost in more chronic forms of the disorder (Jackson & Edwards, 1992). The picture rapidly becomes very like the impoverished and substance-focused lifestyle seen in people with severe, non-comorbid substance use disorders. A significant part of the motivational interviewing process often becomes the elicitation of new goals and activities that might be substituted. However the degree of behavioural change and of potential losses to the person if they begin an attempt should not be underestimated. One possible strategy is to identify a specific goal that the client wants to achieve (preparation or action stage of change), and explore how substance use affects difficulty in achieving this goal (Smyth, 1996).

Lack of engagement is not only about competitive incentives. As Miller and Rollnick (1995) recognised, low self-efficacy about being able to control substance use is a further reason for people not beginning an attempt. Depression makes it difficult for people to start significant behaviour change, not only because it reduces the power of incentives, but it undermines self-efficacy (Kavanagh, 1992). Verbal persuasion is a relatively weak method of developing greater self-efficacy: a much more powerful strategy is to obtain feedback of successful performance (Bandura, 1986). How then

can we encourage people to begin an attempt? One strategy is to take a shaping approach to goal setting by encouraging the initial adoption of an intermediate goal that they have already reached at some time in the past (e.g., delayed use, or use only on particular days). This goal has a high probability of again being obtained, and the success will provide confidence in gradually adopting more ambitious goals. A second strategy is to acknowledge the person's commitment to change, and discuss one new method or skill he or she might use in the following week to obtain a degree of control over their use on one or more days. Evidence of the success of this strategy is then used to encourage further goal setting.

Evidence on motivational interviewing to promote engagement in comorbid populations

The evidence is more substantial that an adaptation of motivational interviewing can enhance engagement of people with comorbidity into more substantial treatments. For example, motivational interviewing improves treatment adherence by patients with depression and cocaine dependence (Daley, Salloum, Zuckoff, Kirisci, & Thase, 1998). Positive results have also been shown in people with severe mental disorders (Swanson, Pantalon, & Cohen, 1999). Conversely, trials of psychological therapies for substance misuse in psychosis that have not employed these strategies, have not resulted in strong clinical outcomes (Hellerstein, Rosenthal, & Miner, 1995; Lehman, Myers, Thompson, & Corty, 1993). Several controlled trials have evaluated the effectiveness of motivational interviewing among people with severe mental illness and substance use disorders. Swanson and colleagues (1999) conducted a randomised controlled trial of a brief motivational intervention comprising a 15-minute feedback session on their readiness for change at the beginning of hospitalisation and a one hour motivational interview one or two days prior to discharge versus standard treatment among 121 psychiatric in-patients, the majority (77%) of whom were diagnosed with comorbid substance abuse or dependence disorders. The proportion of subjects who attended their first psychiatric outpatient clinic appointment was significantly higher in the motivational interviewing group.

Martino and colleagues (2000) conducted a pilot study in which 23 people with either mood or psychotic disorders and comorbid substance abuse/dependence were randomly assigned to either a motivational interview or standard interview prior to participation in a 12-week partial hospital program. Subjects who received a motivational interview attended the program for significantly more days compared to patients in an historical control group, with standard interview subjects' attendance falling between the two groups. Subjects who had received motivational interviewing were also less tardy in their attendance and had fewer early departures.

Baker and colleagues (in press) randomly assigned 160 in-patients in a psychiatric hospital to either a motivational interview or brief advice, with the aim of increasing engagement in a specialist treatment service for people with comorbid problems and reducing alcohol and other drug use. The motivational interview was not associated with increased attendance at the specialist treatment service. However, there was a trend for subjects who received the motivational interview to report a clinically significant, short-term reduction in polydrug use compared to the control condition (Baker et al., in press (b)).

Thus, there is accumulating evidence that brief motivational interviewing is associated with at least modest behaviour change in the short term among people

with severe mental disorders. Improved staff training with ongoing support for sustained changes in therapist behaviour, combined with longer motivational interventions, which are applied flexibly as clients move forwards and backwards through the stages of change, may lead to longer-term therapist and client change.

Selection of a substance use goal

Many comorbid people would like to keep using one or more substances such as alcohol, on occasion, even when a moderation target may not be seen by others as appropriate. There are in fact substantial reasons in many cases to recommend abstinence. For example, maintaining even a low alcohol intake in schizophrenia has been found in some studies to be problematic or unstable (Drake & Wallach, 1993), and as already mentioned above, even small amounts of substance use can produce problems for people with severe mental disorders. However, moderated substance use may remain an achievable and functional goal for some people with even severe types of mental disorders (Kavanagh et al., in submission). As in other populations, a trial of reduced intake often provides an effective initial strategy, especially where the person agrees to review their goal after a set period to see if it needs to change. Similarly, self-selection of the initially targeted substance allows the person to own the process. Thus, nicotine smoking is sometimes selected by people with multiple substance misuse as an initial target, because of the success of media coverage about the effects of smoking on health, even though smoking may not be the most pressing functional target and may not be the easiest to control.

Additional psychological interventions

Research on psychological strategies for substance abuse which might follow motivation enhancement is in its infancy. Twelve-step approaches, such as Alcoholics Anonymous (AA) are commonly used for comorbid groups, especially in North America (Kurtz et al., 1995). However they are unlikely to prove the most effective methods for many patients, because they do not typically involve an integrated approach to the disorders, and have an inflexible goal that many people do not at least initially identify with. Often these groups also require a level of social performance that exceeds the current capabilities (or anxiety tolerance) of many people with mental disorders (Noordsy, Schwab, Fox, & Drake, 1996). Some members of groups even oppose medication, which is an important component of successful management of severe mental disorders, although one survey indicated that the vast majority of contact persons for AA were not opposed to the use of psychotropic medications for persons with a mental disorder (Meissen, Powell, Wituk, Girrens, & Arteaga, 1999).

Currently researchers are focusing on a range of strategies including family intervention (Barrowclough et al., 2001; Kavanagh, White, Young, & Jenner, 2000; Mueser & Fox, 2002), problem solving, cognitive therapy (Graham et al., 1998), social skills training (Bellack & DiClemente, 1999), residential rehabilitation programs provided in integrated community settings (Brunette, Drake, Woods, & Hartnett, 2001), and variations on community reinforcement strategies (Hunt & Azrin, 1973) to assist in development of lifestyle changes. Controlled research on most of these interventions is currently underway. Given the complexity of co-occurring disorders, it is likely that combinations of strategies will offer synergistic effects, and that different combinations will prove useful with different patients.

Our current opinion — as yet awaiting substantial research support — is that psychological treatment should be titrated according to the patients' needs, so that at least some intervention can be widely available. At least three groups may be distinguished: those with mild substance-related problems who will achieve positive outcomes after a brief, motivational intervention, those who require more extensive skills training and social support for success, and others (often with severe cognitive deficits) who may require environmental structure (e.g., supported housing, financial guardianship and/or programmed activities) (Kavanagh et al., 1998).

Multi-component studies on severe mental disorders

Even when combinations of psychological strategies are applied within an integrated framework and a substantial treatment dose is provided, outcomes are often relatively modest. For example, a six-month treatment by Bellack and colleagues (Bellack & DiClemente, 1999) that includes social skills training (including drug refusal skills), problem solving, education, motivational interviewing and goal setting, and training in relapse prevention, was pilot tested in 42 people with schizophrenia and SUD. At the date of publication, 14 had dropped out and 14 had completed the program. Of these, only five (36%) had more than 67% of drug urines clean of drugs over a six-month period (Bennett, Bellack, & Gearon, 2001).

A large randomised controlled trial of assertive community treatment (ACT, n=105) versus routine case management (n=98) had similar results (Drake et al; 1998). Despite a high level of time investment, significantly different results were found on only some outcome variables. ACT was associated with a higher level of engagement in a substance control attempt and with less severe alcohol misuse, but not with differentially improved use of other drugs or days in the community. Greater reductions in days of alcohol use were seen in the ACT sub-sample who actually received the treatment. Across the full sample, remissions of the alcohol or drug use disorder did not differ between the treatment groups, although the remission rates were substantial (e.g., for ACT, 43% were remitted at three years following treatment initiation).

A recent study (Barrowclough et al., 2001) provides an example of a methodologically sound randomised controlled trial on the addition of an integrated treatment to routine care. Sixty-six adults with a non-affective psychosis and a substance use disorder who had at least 10 hours contact per week with a caregiver and who did not have either an organic brain disorder, a learning disability or a current medical illness were invited to participate in the study. Thirty-six patient/caregiver pairs (55%) consented and were randomly allocated to routine care or routine care plus integrated intervention. Routine care comprised case management, medication, monitoring and access to rehabilitation services. The additional intervention was substantial, totalling a median of 22 individual sessions and a median of 11 integrated family sessions over nine months, plus practical assistance and advice from a family support worker. Individual sessions comprised up to five weekly individual sessions to assess and enhance motivation for change, followed by individual cognitive-behaviour therapy for psychotic symptoms. The conjoint family sessions addressed shared goals and attempted to build a response that was consistent with motivational interviewing (Miller & Rollnick, 2002). Assessments were blind to condition. At 12 months, 33% of the integrated treatment group had relapsed, compared with 67% in routine care, but the integrated

treatment group did not have consistently better symptom scores at all time points. The integrated group had higher Global Assessment of Functioning scores at nine and 12 months, but did not have superior social functioning. The mean percentage of change in days abstinent from all substances over the three, six, nine and 12 month assessments was greater in integrated than the routine care group, although the effect on the most frequently used substance and the effects at each time point were not significantly different. Some further weakening of substance use effects occurred by the 18-month follow-up assessment (Haddock et al., 2002). This study illustrates the difficulty in obtaining strong effects on substance use even in the context of substantial interventions.

Inconsistent, weak or non-significant results litter the field. For example, in George et al; (2000), no significant difference in smoking outcomes was obtained in a sample of 45 people with schizophrenia or schizoaffective disorder who were randomised to nicotine patches and ten weekly one-hour group sessions of either a standard program for smoking cessation (American Lung Association) or to a specialised group program for people with schizophrenia. Both groups showed 35–36% abstinence rates. Those who received atypical antipsychotic medication (56%) were less likely to smoke than those who had conventional antipsychotics (22%), but this variable was not manipulated in the study.

As can be seen from the above review, it is too early to be prescriptive about the specific elements that should be included in a multi-component intervention, after the engagement of the person in a substance control attempt. Assertive follow-up probably is important for many people in this group (Drake et al., 1998), as is drug refusal training (Bellack & DiClemente, 1999). Psychological strategies to deal with symptoms without substance use may also be important (Barrowclough et al., 2001). Three other aspects are receiving increased attention. These are interventions for families, for social network enhancement, and for employment.

Several factors have converged to focus recent attention on family intervention for co-occurring disorders. First, the presence of a co-occurring disorder in the family can lead to high levels of stress and burden on relatives (Dixon, McNary, & Lehman, 1995; Salyers & Mueser, 2001), which can weaken family support leading to housing instability and homelessness (1995; Caton, Shrout, Eagle, Opler, & Felix, 1994). Second, high levels of stress in the family have been associated with a worse course of severe mental illness (Butzlaff & Hooley, 1998) and substance abuse (Fichter, Glynn, Weyerer, Liberman, & Frick, 1997). Third, extensive research documents that family intervention is effective for improving the outcomes of both severe mental illness (Dixon et al., 2001) and substance abuse (Stanton & Shadish, 1997), but no controlled trials of family intervention for co-occurring disorders have been reported.

To address this problem, two family intervention programs for co-occurring disorders have recently been developed (Barrowclough et al., 2001; Mueser & Fox, 2002). While the programs differ somewhat in structure and content, they share much in common. Both programs include psychoeducation about severe mental illness and substance abuse, strive to reduce tension in the family by promoting improved communication skills, and help families solve problems related to substance abuse by taking a motivational interviewing approach with the family. The Barrowclough family intervention was evaluated in a controlled trial that

included individual therapy sessions based on motivational interviewing and cognitive behaviour therapy, with positive results reported for substance abuse and psychiatric relapse outcomes reported (Barrowclough et al., 2001, described earlier in this section). The intervention developed by Mueser & Fox, (2002) was evaluated in a series of six cases, all of whom showed significant improvements in substance abuse outcomes. This intervention is currently being evaluated in a controlled trial.

Psychological management of non-psychotic disorders with substance use disorders

There are two controlled trials on the psychological management of co-existing depressive symptoms and alcohol misuse (Brown, Evans, Miller, Burgess, & Mueller, 1997; Turner & Wehl, 1984). Neither trial examined integrated treatment; instead, the addition of a parallel treatment to a standard treatment for alcohol misuse was evaluated. Both studies included people who may not have met criteria for major depressive disorder. Brown et al., (1997) compared the effects of an eight-session cognitive-behavioural therapy (CBT) for depression versus relaxation training. CBT for depression had a greater impact on depressive symptoms during treatment. The group receiving CBT for depression had a greater percentage of days abstinent at the three- and six-month follow-ups, and by six months it also had more abstinent participants and a lower daily alcohol intake. In Turner and Wehl (1984), an individual CBT plus alcohol treatment was reported as having a greater impact on alcohol use and depression than did alcohol treatment alone, but group-based CBT did not.

A study comparing relaxation training with anxiety management training for anxiety symptoms of people attending for alcohol treatment (Omrod & Budd, 1991) found that anxiety management was more effective than relaxation training at relieving anxiety symptoms, but that there were no differences in alcohol consumption. However the sample did not necessarily meet diagnostic criteria for an anxiety disorder, and the intervention was not a full integrated treatment for both disorders. The study by Randall et al., (2001), reviewed earlier under "Integration of treatment", found no significant effects from adding a social phobia treatment to CBT for alcohol abuse, but that also represented a trial of parallel treatment, and the social phobia treatment as being a relatively weak version of the procedure.

Multiple case series on the integrated treatment of PTSD and substance abuse problems (Kuhne, Nohner, & Baraga, 1986; Najavits, Weiss, Shaw, & Muenz, 1998) suggest that a combined approach is most effective. For example, Back et al., (2001) described a treatment program for patients with PTSD and co-occurring cocaine dependence that included imaginal and in vivo exposure for PTSD and cognitive-behavioural treatment for cocaine dependence. A pilot study of 39 clients indicated excellent outcomes for both PTSD and cocaine dependence for clients who completed the program, but the dropout rate from the program was high (61.5%) (Brady, Dansky, Back, Foa, & Carroll, 2001). A similar program has been described by Triffleman, Carroll, and Kellogg (1999). Similarly, a series of three case studies by Lehman, Brown, and Barlow (1998) suggest that standard cognitive-behavioural treatment of panic disorder may sometimes result in improvements of not only the panic symptoms, but of secondary alcohol misuse as well.

The psychological treatment of comorbid anxiety and depression can be guided by the evidence base on treatment of these disorders in the absence of substance use disorders. Treatment of anxiety disorders is likely to emphasise cognitive-behavioural procedures such as exposure plus relevant cognitive therapy (Brown & Barlow, 1992). Treatment of depression is likely to include cognitive therapy (Beck, Rush, Shaw, & Emery, 1979) or interpersonal therapy (Klerman, Weissman, Rounsaville, & Chevron, 1984), with modifications in content and style to deal with the comorbid substance use disorder (e.g., Beck, Wright, Newman, & Liese, 1993; Scott et al., 1998).

Pharmacological management for the mental disorder

Antipsychotic medication

There are few controlled trials on the use of specific antipsychotics on people with psychoses and SUD, although it appears that clozapine (Buckley, Thompson, Way, & Meltzer, 1994) and olanzapine (Conley, Kelly, & Gale, 1998) have approximately equal effectiveness in treatment-resistant patients with and without substance abuse. While not directly relevant to comorbidity, it is interesting to note that a recent Cochrane review on the management of amphetamine psychosis found that there were no studies meeting criteria for consideration (Srisurapanont, Jarusuraisin, & Kittirattanapaiboon, 2001). A randomised trial on cannabis-induced psychosis found equivalent antipsychotic effects from olanzapine as for haloperidol, but with lower side-effects for the former.

There is now considerable evidence from treatment trials in psychosis that the more recently released "atypical" antipsychotics have fewer extrapyramidal side-effects (e.g., parkinsonism, akathesia and acute dystonia) and a lower risk of tardive dyskinesia than traditional antipsychotics (Casey, 1999). Since people taking standard antipsychotic medication have an increased risk of tardive dyskinesia if they misuse alcohol, cannabis (Olivera, Kiefer, & Manley, 1990; Salyers & Mueser, 2001; Zaretsky et al., 1993) and perhaps nicotine (Yassa, Lal, Korpassy, & Ally, 1987), it may be especially important for these patients to be given medications with a lower risk of this side-effect. It is plausible that a reduction in medication side-effects including medication-induced dysphoria may also increase adherence in people with comorbid SUD (Voruganti, Heslegrave, & Awad, 1997), but it is not yet established that this does in fact occur.

There is growing evidence that changing to an atypical medication may reduce smoking (George & Krystal, 2000; George, Sernyak, Ziedonis, & Woods, 1995; McEvoy & Brown, 1999), alcohol, marijuana and cocaine use (Drake, Xie, McHugo, & Green, 2000; Zimmet, Strous, Burgess, Kohnstamm, & Green, 2000) in people with schizophrenia. Most of the studies have used clozapine (Drake et al., 2000; George et al., 1995; McEvoy & Brown, 1999), although open trial studies also support some other drugs such as olanzapine (Littrell, Petty, Hilligoss, Peabody, & Johnson, 2001). While appropriately sized randomised controlled trials are needed, the current data suggests that management of schizophrenia comorbid with substance misuse should include atypical medication such as clozapine as one of its components.

Atypical antipsychotic medications also provide a small average improvement on neurocognitive functioning in comparison to the standard neuroleptics (Green et al., 1997; Hagger et al., 1993). In principle, people with increased cognitive functioning may be more able to plan effective strategies to prevent substance misuse (Marcus &

Snyder, 1995) and benefit more from psychological interventions (George et al., 2000; Rosenheck et al., 1998), although it is not clear that the cognitive effects of atypical medications are of sufficient size to allow these benefits.

The disorganised lives of many people with psychosis and substance use disorders has in the past led to concerns over adherence to oral medications. Hopefully the advent of depot forms of these medications will address this problem. In the case of clozapine, the need for regular blood monitoring to address the risk of agranulocytosis (McGrath & Emmerson, 1999) increases the importance of assertive contact strategies and multiple tracing methods for comorbid patients being treated with that medication.

There may be one exception to the preferred management of comorbid groups by atypical medication. There has been speculation that flupenthixol may be an effective treatment of both schizophrenia and cocaine abuse in people with these comorbid disorders (Levin et al., 1998). However there is no published controlled trial on this as yet, and the proposal needs to be assessed in the light of uncontrolled data that switching to atypical medications may assist cocaine abusers as well as other substance users (Drake et al., 2000; Zimmet et al., 2000).

Pharmacotherapy for depression

While antidepressants may not be as effective in people with comorbid alcohol use as in populations without comorbidity (Worthington et al., 1996), there is evidence that both tricyclic antidepressants (Mason et al., 1996; McGrath et al., 1996) and SSRIs (Cornelius et al., 1997; Kranzler et al., 1995; Roy, 1998; Schmitz et al., 2001) are more effective than placebo at addressing depression in comorbid populations. Their impact on the concurrent substance misuse is less clear. Most of the research has been undertaken with alcohol disorders. In a double-blind placebo controlled trial by Roy-Byrne et al., (2000), nefazadone plus weekly group treatment for alcoholism did not differentially impact on alcohol outcomes compared with placebo plus group treatment. Both groups showed significant reductions in alcohol use. Similarly, McGrath et al., (1996) found that imipramine plus weekly sessions on relapse prevention did not have a greater effect than placebo plus weekly therapy on the alcohol outcomes of people being treated for major depression. On the other hand, a study of patients with alcohol dependence by Mason et al., (1996) found that desipramine did reduce alcohol relapse more than placebo. The effect appeared predominantly due to the depressed participants.

A double-blind, placebo-controlled trial of fluoxetine plus supportive psychotherapy and encouragement of AA attendance illustrates the complexity of the issues (Cornelius et al., 1997). Participants were 51 in-patients admitted with major depressive disorder and concurrent alcohol dependence. Fluoxetine (average 45 mg daily) resulted in a significantly greater improvement in both disorders, although the drop in depression was modest, and did not reach statistical significance on the Beck Depression Inventory (Beck, Ward, & Mendelson, 1961). In the placebo group, falls in depression were strongly associated with reductions in alcohol intake. However this was not the case in the fluoxetine group, suggesting that the differential effect on alcohol measures probably did not occur via the differential change in depression. Nor does a direct impact of fluoxetine on alcohol outcomes appear to occur in an unselected sample of people with alcohol dependence (Kranzler et al., 1995),

although it is possible that different processes may underlie the alcohol misuse in comorbid populations. Fluoxetine did not add to the effectiveness of an integrated cognitive-behavioural treatment of cocaine use and depression in Schmitz et al. (2001). Early reductions in cocaine positive urines were actually found in the placebo group. In addition, sertraline did not improve the outcomes achieved by CBT in a study of depressed adolescents with alcohol misuse (Deas, Randall, Roberts, & Anton, 2000), nor did fluoxetine improve heroin outcomes compared to placebo in a sample of methadone-maintained patients with depression (Petrakis et al., 1998). As in some other studies (e.g., McGrath et al., 1996; Roy-Byrne et al., 2000), the results of both these trials are consistent with a floor effect produced by an effective and relevant intervention in the control condition.

Mood stabilisers may not be indicated for comorbid alcohol use and unipolar depression. The current evidence on lithium for depression in alcohol dependence suggests that it is not significantly better than placebo in terms of either alcohol or depression outcomes (Dorus et al., 1989).

Pharmacotherapy for anxiety

In people with both anxiety and alcohol disorders, buspirone has shown better outcomes on both disorders in three out of four controlled trials that have been published to date (Kranzler et al., 1994; Malcolm, Anton, Randall, & Johnston, 1992; Tollefson, Lancaster, & Montague-Clouse, 1991; Tollefson, Montague-Clouse, & Tollefson, 1992). A case series found that sertraline produced effects on both alcohol use and symptoms of post-traumatic stress disorder (Brady, Sonne, & Roberts, 1995). A single case has been reported where further relief from anxiety symptoms was obtained by adding buspirone to sertraline in people with alcohol dependence and anxiety (Sprenger, 1997).

Adjunctive medication for substance misuse

Nicotine replacement

Nicotine replacement may be of particular importance in those with mental disorders, because of the higher severity of subjective withdrawal symptoms that is reported by people with anxiety or depression (Breslau, Kilbey, & Andreski, 1992). Our search of the literature did not locate any randomised controlled trials of nicotine replacement therapy in comorbid individuals. However there is some evidence from case series and multi-component trials that it may be of benefit, even in schizophrenia (Addington, 1998; George et al., 2000; Ziedonis & George, 1997). While there have been reports of some cases where psychosis developed during a quit attempt when patients were on nicotine patches (Scurlock & Lucas, 1996), studies have not reported increased positive symptoms (Addington, 1998; Dalack, Becks, Hill, Pomerleau, & Meador-Woodruff, 1999; George et al., 2000).

Buproprion

The very high rates of smoking in psychosis (Kavanagh et al., 2002, in submission) have triggered interest in buproprion as a treatment. There are no reported randomised controlled trials in schizophrenia as yet, but there are case studies and open-label trials that suggest it may be of benefit (Evins & Tisdale, 1999; Weiner, Ball, Summerfelt, Gold, & Buchanan, 2001). However buproprion can trigger an exacerbation of positive symptoms or mania (Howard & Warnock, 1999). It can also

cause seizures, especially in people who are also taking antipsychotic medications, misuse alcohol or have other predisposing factors such as unstable diabetes, head trauma or CNS tumour, eating disorders, or a history of previous seizures (Steele, 2000).

Disulfiram

There is case study evidence that disulfiram may assist with alcohol dependence in schizophrenia (Brenner, Karper, & Krystal, 1994; Mueser, Noordsy, Fox, & Wolfe, in press) and many people may take it without an increase in positive symptoms (Mueser et al., in press). The parameters for its use are similar to those for alcohol dependence alone (Wetzler & Sanderson, 1997). There are reports that disulfiram may sometimes exacerbate or trigger psychotic symptoms at high doses (Poulsen, Loft, Andersen, & Andersen, 1992). However 250 mg daily does not appear to induce psychosis in people with alcohol dependence and psychiatric disorders (Larson, Olincy, Rummans, & Morse, 1992).

Naltrexone and acamprosate for alcohol misuse

There are no published studies reporting randomised controlled trials on the use of naltrexone and acamprosate for comorbid alcohol disorders and mental disorders. However the high rates of depressive symptoms in alcohol disorders would suggest that existing data on their use in people with alcohol abuse or dependence would also support their use in comorbid depression and anxiety (Kranzler & Van Kirk, 2001). Open label data on naltrexone also supports its use in comorbid depression (Salloum et al., 1998). A case series by Maxwell and Shinderman (2000) of people with comorbid alcohol use disorders and serious mental disorders (primarily major depression or schizophrenia spectrum) showed high retention in naltrexone treatment over eight weeks and 82% reduced their consumption by at least three-quarters. Contrary to early concerns (Malcolm, O'Neil, Von, & Dickerson, 1987), current evidence does not suggest that naltrexone produces significant dysphoria either in the general population (Miotto, McCann, Basch, Rawson, & Ling, 2002) or in comorbid sub-populations (Salloum et al., 1998), although further evidence is needed on the latter.

Medications for opiate dependence

Depressive and anxiety disorders are common in people with narcotic dependence who are treated with methadone maintenance (Mason et al., 1998). Woody and colleagues (1987; 1984) randomly assigned 110 male war veterans enrolled in a low dose methadone maintenance program to one of three conditions: supportive-expressive psychotherapy (SE) plus drug counselling (DC); CBT plus DC; and DC alone. Therapy sessions were scheduled weekly for six months. Significant improvements were found at seven months for low psychiatric severity (as measured by the ASI) patients in all three groups and the addition of SE or CBT offered no advantage. However, in the patients with medium and high psychiatric severity, there were clear benefits of psychotherapy on numerous measures. Woody and colleagues recommended that psychotherapy can be beneficial to patients enrolled in methadone maintenance programs with severe psychiatric symptoms. Some cases of psychotic episodes during methadone tapering have been reported (Levinson, Galynker, & Rosenthal, 1995), suggesting increased monitoring for exacerbations may be required in comorbid schizophrenia or other psychoses during withdrawal.

Methadone may also alter neuroleptic requirements in schizophrenia (McKenna, 1982; Verebey, Volavka, & Clouet, 1978).

Conclusions

We can expect no single assessment or treatment process will be effective for all types of comorbidity, because of the substantial degree of heterogeneity in those disorders. For the large numbers of people with anxiety or depression and alcohol misuse, brief interventions may prove to be both effective and practicable, especially if they can be delivered within a primary care setting. Brief interventions may even prove effective in people with psychosis who have low levels of cognitive deficit and low dependence, but further data needs to be obtained before we can be confident of this conclusion. For people with high levels of substance dependence or deficits in critical skills, more intensive interventions may be required, and in the case of people with chronic cognitive deficits, these may need to take the form of harm reduction interventions within the context of long-term supportive care. Some of the key current areas of knowledge may be summarised as follows:

- Screening measures for SUD need to be able to detect problems that may emerge in MD at low levels of substance intake and dependence. Some measures that are used in the general population such as the AUDIT or SDS can be confidently applied, and some measures such as the DALI and DrugCheck that are designed specifically for comorbid populations show promise. Self-reports of substance intake can be reliable and valid, even in people with psychoses, as long as rapport has been developed and incentives for accuracy are present. Biochemical assays and collateral data do not substantially add to accuracy, but data in the general population suggests that awareness that such measures are being collected may add to accuracy of self-report. Measures of readiness to change substance use, readiness for treatment and insight into mental disorders are also available.
- Screening measures for mental disorders appear to be applicable to those presenting with substance use disorders, although there are few specific data on the issue.
- Engagement and motivational enhancement appear to be effective in comorbid substance use and mental disorders in increasing rates of engagement in treatment and substance control attempts; although multiple engagement attempts may be required for many people, and a substantial proportion may remain unmotivated to change. While an abstinence goal may often be the option most likely to result in a positive outcome, intermediate goals will initially be selected by many consumers.
- An intervention that integrates management of the substance use and mental disorders is indicated in severe mental illness, and is also likely to be most effective in other contexts where there are strong mutual influences between the disorders.
- Standard pharmacotherapy for depression is effective in people with comorbid depression and alcohol misuse. Atypical antipsychotics are preferred to typical drugs in people with psychosis and substance use disorders, and clozapine in particular has shown beneficial effects on the substance misuse as well as the psychotic symptoms. Nicotine replacement appears safe in those with comorbid mental disorders including psychosis.

However, the literature on assessment and management of comorbid substance use and mental disorders is sparse, and many questions remain unanswered. Some examples are:

- Is integrated treatment superior to parallel or sequential management in anxiety and depression?
- What are the critical effective elements of interventions for comorbidity?
- Are acamprosate and naltrexone effective treatments for alcohol dependence in psychosis?
- What are the effective treatments for opiate dependence in mental disorders?
- Can effective management of substance use and mental disorders in primary care be demonstrated, and what will that comprise of?
- How can treatments for such comorbidity be successfully disseminated in existing services, and across rural and remote areas?

Answering these questions will be critical to the outcomes of people with comorbidity of substance misuse and mental disorders.

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Chapter 6

Comorbidity and delivery of services

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Introduction

How to deliver treatment to people who have both a substance use disorder and mental disorder is a problem for all health services. Research on service delivery is scarce, turf wars are common, and people with comorbid mental disorders and substance use disorders often fall through the cracks in the separate service systems. Discussion papers from countries with health service structures as diverse as the United Kingdom, the United States of America, Australia, and The Netherlands all indicate that persons with co-occurring drug and alcohol and mental disorders are failing to access treatment or are being poorly treated by the current systems.

How does the service system respond? There is ill-defined literature regarding the implications of comorbidity on treatment and service provision. Very few studies have systematically and empirically reviewed treatment or service delivery options, although there is an increasing number of discussion papers (e.g., Bellack & Gearon, 1998; Gournay, Sandford, Johnson, & Thornicroft, 1997; Jerrell, Wilson, & Hiller, 2000; Kavanagh, 1995; Kessler, 1995; Mueser, Bellack, & Blanchard, 1992; Mueser, Drake, & Miles, 1997; Ries, 1992; Smith & Hucker, 1994).

These discussions of service delivery often focus on people with psychoses and substance use, usually cannabis use; those whose disorders cause obvious need for treatment, and those who the community cannot help but notice. Individuals with the more common depressive, anxiety and alcohol use disorders are often overlooked. Yet these disorders comprise some of the most prevalent mental disorders in our community and they cause considerable disability (see Chapter 3 by Andrews et al; and Burns & Teesson, 2002).

This chapter reviews the evidence for effective service delivery to people with comorbid disorders. It argues that if the burden of comorbidity is to be addressed, it is essential that research on service delivery is conducted and that services are delivered to those with the more common disorders, as well as those with the more affronting yet less common disorders. These disorders have different prevalence rates, treatment responses and require different service delivery responses. We first outline the impact of comorbidity on the course of illness and use of services.

Impact of comorbidity on the course of illness and use of services

Comorbidity is a common problem in the general community, but it is even more common in patients presenting in primary care settings and most common in specialist services (Callaly, Trauer, Munro, & Whelan, 2001; Wittchen, 1996). Estimates of the prevalence of comorbidity in these samples are variable due to differences in such factors as diagnostic criteria (eg DSM-III-R versus DSM-IV)

and time frames used. However, they all highlight the needs of comorbid groups and concomitant demands placed upon treatment provision. There is ample evidence from epidemiological surveys that treatment seeking is significantly increased where comorbidity is involved (e.g., Bijl & Ravelli, 2000; R. C. Kessler et al., 2001; Proudfoot & Teesson, 2002).

Common mental disorders

In reviewing the evidence from the National Comorbidity Survey in the United States, Kessler et al (1996) examined how the common mental disorders related to the course of comorbid substance disorder. They found that the presence of either a primary anxiety disorder or childhood conduct disorder and adult antisocial behaviour was associated with persistence of substance use disorders. In terms of exacerbation of symptoms, much of the literature is muddied by the lack of evidence regarding primacy of disorders as well as focusing on clinical samples which tend to not be representative of the relationship between comorbidity, illness course and service use.

A study carried out by Westermeyer et al; (1998) demonstrates the effects that having comorbid dysthymia has on substance abuse service usage. They identified those within a substance abuse treatment service who satisfied the criteria for an independent diagnosis of dysthymia and those who had a single substance use disorder. Of the 642 patients considered, only 39 were diagnosed with comorbid dysthymia. These were compared with those identified as having only a substance use disorder (N=308) in terms of their lifetime service use and the related costs. They found that those with comorbid dysthymia accessed psychiatric services no more than those with substance use disorders alone. Instead, the comorbid group accessed substance use treatment services more frequently and stayed in such treatment for longer periods than those with a substance use disorder alone. They estimated that, based on 1996 costs for treatment, those with comorbid dysthymia cost 4.7 times those with a substance use disorder only, in terms of substance use treatment dollars. Thus early detection and successful treatment of this disorder in individuals presenting at substance use services is likely to impact on future service usage and costs.

Recent evidence supporting the notion that the presence of substance use disorders makes the prognosis for other mental disorders worse comes from a study by Grant et al; (1996) based on the US Longitudinal Alcohol Epidemiologic Survey (NLAES). They found that those with comorbid alcohol and depression compared with those with lifetime major depressive disorder had a significantly earlier onset of major depression and were more likely to have more severe episodes of depression as measured by number of symptoms during their worst episode. They were also more likely to have a lifetime diagnosis of a drug use disorder.

Another study, by Hasin et al; (1996), also demonstrates the exacerbating effects of comorbid substance use disorders on affective disorders. They followed up 127 patients comorbid for alcohol dependence and major depression over five years and traced the patterns of remissions in both disorders. They found that irrespective of primary or secondary status, the risk of remission for depression was increased when alcohol dependence was also in remission. They did not find the converse, ie., remission of depression did not affect remission of alcohol symptoms. This suggests that the substance use disorder serves to maintain depression where remission is

otherwise likely. The authors conclude that even where the depression exists independently of the substance abuse, it is likely that immediate treatment of the substance abuse can reduce depressive symptoms. They argue that future trials of interventions for depression and/or alcohol dependence should include comorbid patients and attempt to take aspects of both disorders into account.

Although the research is clear that there is an increased risk imposed by substance abuse on depression treatment outcomes, the evidence regarding the effects of depression on substance use treatment outcomes is equivocal (Lynskey, 1998). In his review of the literature, Lynskey states that comorbid females in alcohol abuse treatment have an increased risk of treatment failure, but the evidence regarding males is not conclusive. The Hasin (1996) study described above also suggests that there is no effect of the co-occurrence of a substance use disorder on remission for depression.

Thus the research suggests that treating substance use disorders in individuals with the more common mental disorders may improve their outcome and remission rates. However, treating these comorbid psychiatric disorders has not been shown to impact on substance use outcomes.

Psychoses

The psychoses include schizophrenia, schizo-affective disorder, bipolar disorder and depression with psychotic features. Individuals with substance use disorders who are suffering from these psychotic disorders are considered to have special needs due to the severity of their symptoms and the general disorganisation, both psychologically and socially, that these symptoms can cause.

For people with schizophrenia, substance use disorders are particularly problematic as they are generally directly associated with a range of negative outcomes. Much US research has found that, compared with people who suffer from mental illness alone, those with concurrent substance use show increased levels of medication non-compliance, psychosocial problems, depression, suicidal behaviour, rehospitalisation, homelessness, have poorer mental health and place a higher burden on their families (see Bartels, Drake, & McHugo, 1992; Clark, 1994; Drake & Wallach, 1989; Drake et al., 1990; Osher et al., 1994; Pristach & Smith, 1990). Persons with both types of disorders have also been recognised as being more difficult to treat than those with mental disorders alone (Drake, Mueser, Clark, & Wallach, 1996; Lehman, Herron, Schwartz, & Myers, 1993).

Because much of this data is from studies conducted in the United States it is important to consider the impact of comorbidity in countries with different health care systems. A study conducted in the United Kingdom by Menezes et al., (1996) on a geographic sample of patients with psychotic illness found the average number of admissions to psychiatric hospitals was similar for both those with illness alone and those who also abused substances. However, those who abused substances attended the psychiatric emergency service 1.3 times as often, and spent 1.8 times as many days in hospital, as those with mental illness alone.

In a recent Australian study, Hunt and co-workers (2002) analysed the effects of substance abuse on medication compliance and four year survival outcomes. They found that those who abused drugs over the period were significantly more likely to

be re-admitted to hospital (median time to readmission 10 months) compared with those who did not abuse drugs (median 37 months). Even when patients were medication compliant, drug abuse tended to offset any advantages of this compliance. In another Australian study, Fowler et al., (1998) found that, for patients with schizophrenia identified in one geographical area, those with comorbid substance use problems tended to have increased rates of criminal behaviour, increased symptomatology and earlier age of onset of mental illness. However, they did not find the increased hospitalisation rates, suicide attempts and antipsychotic medication dosage reported elsewhere in the literature for this group. The disparity in findings regarding hospitalisation rates for these two Australian studies may be explained by the fact that the Fowler study had mobile teams available for extended hours to treat acute psychotic episodes in the home, which would have affected their hospitalisation rates. This model of treatment is based on the assertive community treatment approach to psychotic disorders which has been found to be superior to other models such as intensive case management (Issakidis, Sanderson, Teesson, Johnston, & Buhrich, 1999; Marshall & Lockwood, 2002; Rosen & Teesson, 2001). Even in a group as comorbid as the homeless, psychiatric outreach services based on assertive case management have been found to be effective in Australia (Buhrich & Teesson, 1996).

Type of drug

Findings from clinical studies and population surveys suggest that alcohol and cannabis are the most common substances of abuse for people with psychotic disorders (e.g., Cuffel, Heithoff, & Lawson, 1993; Drake et al., 1990; Lehman, Myers, Dixon, & Johnson, 1994; Menezes et al., 1996). The study by Fowler and colleagues (1998) discussed above, found similar results in a sample of patients with schizophrenia attending a community mental health service in Australia. Apart from tobacco and caffeine, alcohol, cannabis and amphetamines were the most commonly abused substances. This contrasts with the contribution made by high rates of abuse of cocaine found in the US (Shaner et al., 1995).

Internationally, high use of stimulants such as amphetamines and cocaine has been implicated in increases in positive psychotic symptoms and earlier onset of symptoms in comorbid patients (Fowler et al., 1998; Shaner et al., 1995). In a review of the evidence regarding the relationship between cannabis and psychosis, Degenhardt and Hall (2002) conclude that there is little evidence that cannabis use per se causes psychosis. However, they state that it is likely that it exacerbates the illness and that it may precipitate it in vulnerable individuals. They point to the confounding effect of stimulant use amongst cannabis users in the various studies cited. The elevated levels of amphetamine use amongst cannabis users in Australia may explain increased psychotic symptoms in this group. The even higher prevalence of cocaine use in the US may also explain different findings regarding hospitalisations and suicidality between the US and Australia.

However, the literature is sparse and more research is needed to explain just how substance use affects the course of psychotic disorders and related service usage. Similarly, more research is required on the effects of the common mental disorders on substance abuse history. In one of the rare studies in this area, Westermeyer et al; (1998) found no significant effect for type of drug when investigating the effects of comorbid dysthymia on service use for those with substance use disorders.

Because comorbidity of mental disorders and substance abuse is common and has significant impact within the health care system and society, one important issue to consider is service delivery which may affect the incidence of these problems. The next section discusses the importance of prevention and early intervention.

Preventive programs

Common mental disorders

In a review and analysis of multinational epidemiological surveys, Kessler (2001) found that overall approximately 50% of current drug dependence could be attributed to pre-existing mental disorders. The figure was slightly higher for men (54.7%) compared with women (47.8%). The contributing pre-existing disorders differed for the sexes with conduct or antisocial personality (ASPD) disorders being most salient for men (51.2% of risk) ahead of anxiety (17.5%) and mood disorders (9.6%). For women there was a more even spread of risk across conduct or ASPD (34.8%), anxiety (25.9%) and mood disorders (27.0%). As pointed out by Kessler, there are limitations to the findings from epidemiological surveys, but the finding that common mental disorders tend to precede substance abuse disorders is also corroborated in clinical studies (see also Chapter 4).

Although the results from the epidemiological studies do not prove causation, they point to the likelihood that early intervention for common psychiatric disorders may have an impact on drug dependence rates at a later stage. The analysis by Kessler (2001) showed that only active, not remitted, disorders related to onset of drug use — a strong argument for early intervention for mental disorders. Much effort directed at preventing drug use in schools has met with little success (Ennett et al., 1994); yet studies have shown that large-scale interventions in childhood can affect the course of such common disorders as anxiety (Chapter 4) and depression (Cicchetti & Rogosch, 1999). There is also a tendency to focus on the more disruptive conduct disorders in school populations with much less interest in the internalising, anxiety and mood, disorders. This has particular relevance for females for whom the anxiety and mood disorders are much more likely to precede drug dependence. Furthermore, research suggests that treatment outcomes may be worse for women compared with men with common mental disorders and substance abuse (Lynskey, 1998), so that it may be particularly important that steps are taken to prevent the common disorders amongst women.

These data argue strongly for greater emphasis on screening and treatment of the common mental disorders in childhood with likely benefits to be found in the long-term reduction of numbers presenting as adults with single and comorbid substance use and mental disorders.

Psychoses

In a recent review Schaffner and McGorry (2001) explored developments regarding early detection and interventions for psychotic disorders. They concluded that there are promising treatments awaiting ethical approval which may significantly and positively change the prognosis for people suffering from psychotic disorders. Early interventions can be introduced at the prodromal or first psychotic episode phase; the former attracting considerable ethical debate as it requires antipsychotic treatment (and the stigmatisation associated with identification of such illnesses)

before onset of the illness. However, there is evidence of both biological and psychosocial damage resulting from the symptoms of the prodrome and first episode psychosis which provides a compelling argument for their prevention. Research on early interventions at first psychotic episode is less problematic ethically and such interventions have generally been regarded as beneficial (Wyatt & Henter, 2001).

In contrast to the continuing medicalisation of services, the work done on psychosocial interventions suggests that these can also improve outcomes and there needs to be a re-orientation of services so that staff are trained in the effective psychotherapeutic interventions now available for serious mental illness (Thornicroft & Susser, 2001). Psychotherapeutic interventions are far less controversial in this area because they do not pose the risks that antipsychotic medications do in terms of medical side-effects. Thus it is important that staff in psychiatric and substance abuse services are trained and funded to implement evidence-based practices for early intervention. Such practices need to be implemented across the board in psychiatric and drug and alcohol services in the form of standardised procedures, rather then waiting for individual service providers to decide to take up these effective practices.

The role of primary care

Another aspect of prevention emphasised in a recent review by Garraldo (2001), is that of GP identification of mental illness in children. The review found that although GPs did identify more of those seriously in need and refer them appropriately, they nevertheless identified very few children overall. Garraldo advocates greater training for GPs to assist them to recognise and treat mental illness in children. To assist with this she suggests development of standardised procedures for GPs to follow, to help identify and appropriately treat or refer mental illnesses in children.

Treatment services

People with severe mental disorders tend to present to psychiatric services whilst those with less severe but more common disorders are more likely to be found in substance-abuse treatment services (Kessler et al., 1996; Primm et al., 2000). Currently the needs of comorbid clients are not being met by either of these services. In most western health care systems there is an artificial separation of treatments for substance abuse and mental health disorders. There is pressure to place patients in one system or the other, by determining which disorder is primary for them. This can result in no treatment for the disorders not considered primary. Distribution of funding from the government level can ensure that the separation is jealously guarded by either service, the outcome being poor or no services for people with comorbid disorders (Kessler et al., 1996).

A first step towards appropriate service provision for persons with comorbid disorders is to ensure that, wherever they are present, be it in primary care, substance abuse services or psychiatric services, careful assessment of their presenting conditions is carried out.

Assessment

Well-documented deficiencies in assessment by treatment services are compounded in the treatment of those with comorbidity. Some common difficulties are that clinicians may fail to obtain a full history of substance use in people with a mental illness. Alternatively, people with a mental illness may deny, distort, or minimise their self-reported use of substances, particularly illicit drug use (Bryant, Rounsaville, Spitzer, & Williams, 1992; Drake & Mercer-McFadden, 1995; Mueser et al., 1997). So, despite high rates of substance misuse amongst those with mental disorders, it is under-reported in this population.

In substance treatment services the clinical picture is often unclear, because many patients seek help in a distressed condition and complain of a multiplicity of psychological symptoms. Reviewers have described the commonest of these symptoms which include anxiety, irritability, and feelings of sadness as transient, disappearing within seven days of abstinence both in young, healthy problem drinkers and in primary alcoholics (Schuckit & Monteiro, 1988). Thus assessment within this time period may produce spuriously elevated scores.

In their broad-ranging review of comorbidity of anxiety and depression with substance abuse, Scott and co-workers (1998) argue that there is a need for increased awareness by GPs as well as psychiatric and addiction service staff of the likely presence of comorbidity. They propose mandatory use of brief screening instruments for drug and alcohol abuse and for anxiety and depression as well as probes regarding self-harm. This will require increased training of staff in order that they can detect and treat comorbid disorders. In fact there is a need to incorporate into all services that deal with comorbid individuals effective assessment tools and procedures which take into account the special needs of these patients. As discussed in the following section, at the level of primary care, simple screening tools are available to assess both mental disorders and substance use disorders. Their use has been the exception rather than the rule in Australia and elsewhere (Drake, Rosenberg, & Mueser, 1996; Hickie, Koschera, Davenport, Naismith, & Scott, 2001).

The role of primary care

A major problem with service delivery for comorbid disorders is that most people do not seek help. In the recent Australian NSMHWB, only one-third of people with a mental disorder consulted any health care provider (Teesson, Hall, Lynskey, & Degenhardt, 2000). However, most people do see a GP for any disorder and this could provide an opportunity for moving comorbid patients towards treatment. However, as demonstrated below, currently GPs resist screening for either the common or psychotic disorders or drug use disorders.

In a series of articles appearing in the Medical Journal of Australia, Hickie and co-workers present findings from a survey of general practices in Australia involving 386 GPs who screened 46,515 patients in 1998 and 1999. In one of these articles they addressed the issue of comorbidity (Hickie, Koschera et al., 2001) and, of particular relevance, the likelihood that comorbidity will be identified in general practice. They found possible comorbidity in 12% of patients attending the surgeries, although diagnoses were based on a simplified classification system (ie., not DSM-IV or ICD-10), (Hickie, Davenport, Naismith, & Scott, 2001). Those classified as having comorbid mental and substance use disorders by this system

were also found to be more likely to be assessed by GPs as having a psychological diagnosis and having greater health risk, and GPs were more likely to treat them or refer them on to a mental health service. However, only half of this group was actually diagnosed with any psychological disorder which reflects a missed opportunity for treatment for this vulnerable group. Although not a random sample of the population of practices and patients, the outcomes are likely to be indicative of the trend in GP practices across Australia.

Hickie argues that those with substance use disorders are more readily identified by GPs and GPs should be encouraged to proceed from such diagnoses to screen for comorbid psychiatric conditions. However, he points to the problem that GPs may be unable to treat all patients identified by screening because high prevalence rates would present too great a workload.

These sorts of concerns have also been addressed by Andrews (2001) who has argued that a strategy similar to that in the breast cancer field may be appropriate. This involves use of four concurrent strategies: identifying risk factors, using targeted population screening, producing widespread public understanding, and profession-wide acceptance of management guidelines. Such an approach should result in the number consulting being reduced by prevention and self-help strategies, and the number becoming chronic and needing continual help being reduced by effective treatment — so that overall the number needing to consult would be reduced. These suggestions tie in well with the discussion of prevention above.

It has also been argued that the workload of GPs may actually be reduced if patients with mental health problems were identified and treated; as this group tends to significantly overuse primary care services for physical health problems. Bebbington and colleagues (2000) reported that, in a recent household survey in the UK, patients identified as having a neurotic disorder were 40% more likely to consult a GP for any physical disorder than those with no neurotic disorder.

Assessment in Substance Abuse Services

Where assessment does take place, there exists the likelihood of misdiagnosis because of common symptoms amongst the various disorders. Under-diagnosis can result by assigning symptoms to one disorder to the exclusion of the other, whilst over-diagnosis can occur when symptoms are assigned to a second disorder when they can be fully accounted for by a single disorder. For example, many more people with substance use disorders present with depressive and anxiety symptoms than would be given a specific diagnosis of anxiety or depression. These symptoms are due to over-use and withdrawal from drugs and alcohol. Thus, further probing is necessary once the possibility of a particular diagnosis is identified through screening. This is a specialised procedure requiring trained treatment staff and should be regarded as the starting point for the positive therapeutic relationship needed for successful treatment (Drake, Rosenberg et al., 1996).

Where true comorbidity exists, it is important that it is recognised and treated appropriately. This is demonstrated in the study by Westermeyer et al, (1998) described above, where the presence of dysthymia correlated with much higher substance abuse service usage. Although it is difficult to identify dysthymia in those presenting at substance use disorder facilities, it is still feasible and supported by research evidence to date, to treat depressive symptoms at the same time as treating

the substance abuse. It is less clear whether comorbid anxiety disorders should be treated at the same time as treatment for substance use disorders.

Assessment in Psychiatric Services

A study by Drake et al. (1990) on alcohol use in schizophrenia indicated that, as a group, people with schizophrenia were particularly vulnerable to the psychiatric and social complications of drinking. The authors suggest almost any alcohol consumption at all by people with schizophrenia should be identified as problem drinking. Consequently, applying standard definitions and diagnostic criteria in assessing those with psychotic illness may substantially underestimate the problem (Smith & Hucker, 1994).

The identification of substance abuse in the psychiatric services for those with psychotic disorders has been the subject of recent reviews (Carey & Correia, 1998; Drake, Rosenberg et al., 1996). These reviews focus on psychiatric services, as it is rare that patients with psychotic disorders are accepted into treatment in substance abuse treatment facilities (Primm et al., 2000). They highlight the fact that identification of comorbidity is made more difficult for those with psychotic disorders because many of the signs and symptoms of severe drug and alcohol abuse may be masked by symptoms of psychotic disorders, e.g., social isolation or dysfunction and cognitive dysfunction such as confusion, depression, anxiety and positive psychotic symptoms due to substance abuse (Carey & Correia, 1998). Non-detection of concomitant substance abuse can lead to inappropriate treatments such as over-medication, and subsequent poor outcomes (Carey & Correia, 1998; Drake, Rosenberg et al., 1996).

As pointed out by Drake (1996), the assessment serves to inform and involve the patient in the treatment process. Diagnosis of comorbid disorders is but one aspect of the assessment process; but nevertheless essential if treatment is to proceed effectively. Assessment should reveal the severity of substance-related problems where they exist, the patient's motivation to be involved in treatment for such problems, identification of the psychosocial variables encouraging ongoing use and explication of where best to direct treatments.

Detection of drug and alcohol use can be facilitated through use of screening tools such as urine analysis, self and collateral reports and expert detection of the biological signs and symptoms of substance abuse. This would identify those who need to be subjected to more thorough-going diagnosis. When reviewed by Carey and Correia (1998), self-report measures such as the DAST, MAST and CAGE were found to be reliable in this population, although screeners which take into account the presence of a psychotic disorder are preferable. Carey and Correia refer to the DALI which was developed specially for this group and has shown promise. Also, where self-report is considered less reliable, such as during an acute psychotic episode, clinician rating scales have been developed which have been found to provide reliable information regarding substance use disorders of patients (Alcohol Use Scale — AUS and Drug Use Scale — DUS, (Drake, Rosenberg et al., 1996)).

Just as with the common mental disorders, an important factor affecting the non-detection of comorbid substance abuse in those with severe disorders is the lack of training of staff in the specialist mental health services so that they can identify comorbid substance use (Carey & Correia, 1998). Fowler et al., (1998, p 450), in a

study of substance abuse by people with schizophrenia in Newcastle, Australia commented that:

> "…although there was reasonable agreement between case managers' assessments and the research diagnoses, this did not reach the levels found in other studies (Drake et al., 1990; Carey et al., 1996), possibly because in the current study the case managers were not trained. Thus, efforts to train case managers and to heighten their awareness of substance use problems in their schizophrenic patients may be timely."

Thus it is of paramount importance, before the process of treating comorbid patients can begin, to identify the presence of comorbid disorders in those presenting to the specialist services. Appropriate procedures include use of valid and reliable screening instruments as well as training of staff to be able to identify likely comorbid disorders.

Treatment

Common Mental Disorders Comorbid with Substance Use Disorders

(a) Anxiety

There is a common belief that the high rate of comorbidity between anxiety disorders and alcohol use is because the alcohol is used to reduce stress (the stress reduction hypothesis). But as Allan (1995) argues, evidence does not support the stress reduction hypothesis that alcohol users become more anxious with extended use; and that drinkers with many problems are realistically anxious. Thus in most patients, anxiety disappears when the alcohol use disappears. A small proportion of patients, perhaps as low as 10% (Brown, Irwin, & Schuckit, 1991), are then left with more persistent symptoms which may be an independent clinical disorder.

Recent reviews have argued that psychological interventions such as cognitive-behavioural therapy (CBT) are preferable to medication for comorbid anxiety and substance use disorders because of the potential misuse of anxiolytic medication, especially benzodiazepines (Allan, 1995; Scott et al., 1998). However a behavioural approach depends on the use of exposure as the main agent of therapeutic change, and, from a theoretical point of view, the regular use of a central nervous system suppressant such as alcohol would potentially reduce the effectiveness of this process. In fact, there is evidence that the use of alcohol acts to retard the process of desensitisation among clinically anxious patients (Cameron, Liepman, Curtis, & Thyer, 1987; Thyer & Curtis, 1984). So treatment for an anxiety disorder is likely to be ineffective if the person does not stop drinking.

This suggests that an attempt should be made to reduce or stop drinking before commencing treatment for anxiety and that simply integrating treatment might not be the best solution. This is illustrated in a recent study by Randall et al, (2001) who conducted a randomised controlled trial comparing CBT for alcohol alone with CBT for both alcohol and social phobia. While both groups improved on alcohol and social phobia measures after treatment, the group treated for both alcohol and social phobia had worse outcomes on three of the four alcohol use indices.

A further problem arises in that patients in psychiatric services tend to have a preference for having their anxiety and depression treated and are generally not interested in tackling their drug and alcohol use problems (Allan, 1995; Scott et al.,

1998). This poses a difficulty for the therapist where it is clear that treatment of a substance use disorder may be sufficient to remove anxiety and depression symptoms. However such problems can be overcome with the establishment of a positive therapeutic relationship and the use of psychotherapeutic techniques such as motivational enhancement which have been found to be effective in moving patients towards recognition of the need for substance abuse treatment (Scott et al., 1998 and Kavanagh et al., Chapter 5).

(b) Depression

The confounding effects of multiple common symptoms of comorbid disorders makes decisions about treatment difficult. However, there is evidence that the comorbid disorders exacerbate each other, e.g., depression increases substance use, harm and poor treatment compliance. So the need to identify and treat a 'primary' disorder may be less important than removing the exacerbating effects of either disorder. As with anxiety disorders, many depressive symptoms are removed by abstinence from alcohol and other drugs (Grant, 1996; Hasin et al., 1996). Again, appropriate motivational counselling techniques can be used to encourage patients to have treatment for their substance use disorders (Lynskey, 1998; Scott et al., 1998).

Although it is unclear how severely the presence of depression affects outcomes in substance abuse treatment, there is a growing body of evidence which indicates that treating depression in comorbid individuals will improve outcomes for both disorders (Carroll, Nich, & Rounsaville, 1995; Lynskey, 1998). It should be noted that this is contrary to the evidence to date for treating comorbid anxiety and substance use disorders (see section on *Anxiety* above). In his review, Lynskey (1998) argues that the advent of SSRIs makes medical interventions for comorbid individuals more practicable. These tend to have fewer side-effects and are less toxic than the older tricyclic antidepressants. Research has found that use of the SSRIs reduces both depressive and alcohol dependence symptoms in those who are comorbid. (On the contrary, they appear not to be effective for those with alcohol dependence alone, i.e., where there are no depressive symptoms.) However, Lynskey warns that treatment with antidepressants should be accompanied by appropriate psychosocial support and that more research is needed to determine the safety of these medications when patients keep drinking. He points to the promising parallel developments in the use of cognitive-behavioural interventions for depression in alcohol dependent individuals and concludes that inclusion of efficacious treatments for depression can significantly improve the outcomes for both disorders.

Thus there are strong arguments for introducing drug abuse treatment into the treatment programs for those suffering from comorbid affective and substance use disorders in psychiatric services, and for introducing treatments for depression for those with comorbid disorders in substance abuse treatment services. In their informative review and discussion of the management of comorbidity, Scott et al., (Scott et al., 1998) conclude that staff in addiction treatment need to appropriate and implement the evidence-based skills used to treat psychiatric disorders, whilst those in psychiatric services should extend their use of such procedures to treat comorbid substance use disorders. However, in concert with most reviewers, they point to the dearth of research on treatment for comorbidity. Much research carried out to date tends to exclude people with comorbid disorders so that little is known about their specific requirements.

(c) Conclusions regarding treatment for those with comorbid substance use disorders and the common mental disorders

The evidence suggests that treating any comorbid substance use disorder prior to treatment for anxiety or depression is more likely to lead to positive outcomes for anxiety and depression. Motivational enhancement techniques, which have been demonstrated to be effective, are needed to re-orient the patient towards controlling their substance abuse, prior to management of the comorbid disorder.

For those with both an affective disorder and a substance use disorder, there is an additional benefit on outcomes for both disorders, conferred by treatment for the affective disorder alone. This provides good support for the introduction of efficacious treatments for depression into substance abuse treatment facilities where both disorders can be treated at the same time. However, attempts to treat both anxiety and substance abuse contemporaneously have to date, proven counter-productive. Further research is needed on this issue.

Treatment for psychotic disorders and substance abuse

Comorbidity of psychotic disorders and substance abuse is common and has consistently been found to be more prevalent in treatment than non-treatment samples (Helzer & Pryzbeck, 1988; Kessler et al., 1996; Ross, Glaser, & Germanson, 1988). For people with a serious mental illness, the risk of developing a substance use disorder is of particular importance as they are especially vulnerable compared to people with other psychiatric disorders (Mueser et al., 1997).

Models of Service Provision

Because outcomes for comorbid patients tend to be poor within the systems designed to treat single disorders, there is increasing literature discussing possible interaction between the services (Kessler et al., 1996; Ries, 1993). Three models of treatment for those with serious mental illness and substance abuse have been widely discussed in the literature, and these are described below.

Serial treatment involves treating one disorder before treating the other. The tendency has been to treat acute presentations as primary and then refer to the alternative treatment system for treatment of the other disorder. Thus acute presentations of psychotic disorders tend to be treated before referral for treatment for co-occurring substance use disorders; and severe intoxication is treated before any consideration of co-occurring mental health problems. In non-acute cases, having two independent systems treating serially in this way means that many people with comorbid disorders "fall between the cracks", being treated by neither system as neither sees it as their responsibility (Ries, 1993).

Although there are variations between international systems, there are elements of psychiatric services in most western nations which are common and which contrast with those of addiction treatment services. These include more academically qualified (especially medical) staff, use of diagnostic classification, eg, DSM-IV, and emphasis on medication to treat the core disorder. Substance abuse services differ from psychiatric services in providing more non-professional staff, often themselves with lifetime dependency problems, emphasis on confrontational interventions and self-help through 12-step programs, and an anti-drug preference. Thus the conflicting philosophies of the traditional drug and alcohol treatment services and

the mental health services mean that patients receive diverse and incompatible messages from this type of serial treatment provision, with little or no opportunity to reconcile the different messages.

Parallel treatment involves being treated for one disorder at the same time as receiving treatment for another. This is likely to be less confusing for the patient as it requires some direct interaction between the services and allows more opportunity to reconcile the different messages. It also permits a better understanding of both systems by treatment service staff who have to reconcile concurrent treatments to those they are administering — which should cause better integration of treatments (Ries, 1993). An example of parallel treatment is where a patient housed in a psychiatric unit is sent for treatment to a substance abuse facility on a regular basis. This does present the risk of putting considerable stress on the patient who is already in a vulnerable state and consequently may prove counter-productive. The stress may be in the form of upsetting a routine established in in-patient care, forcing them to travel unaccompanied, or merely trying to accommodate a doubled treatment regime.

Although parallel treatment may be useful for a particular sub-sample of comorbid patients, those with psychotic disorders in particular are unlikely to be satisfactorily treated using this model because of the criticisms listed above.

The treatment response to drug and alcohol and mental disorders in many developed countries has been dominated by parallel systems. That is, drug and alcohol disorders have been treated by one co-ordinated, funded, and planned service whilst mental disorders have been treated in parallel by a separate, unconnected service. A wide range of problems have been noted with using this method to treat comorbid substance use and psychiatric disorders (Bellack & Gearon, 1998; Ridgely, Goldman, & Willenbring, 1990). There is a wealth of evidence documenting the fact that the traditional methods for treating substance use do not work for clients with psychiatric disorders (McLellan, Woody, Luborsky, O'Brien, & Druley, 1983; Rounsaville, Dolinsky, Babor, & Meyer, 1987; Woody, McLellan, & O'Brien, 1990). It is likely that this lack of success has resulted partly from the mental health and substance use services offering only separate, parallel treatment programs (Ridgely et al., 1990). However it is also likely due to traditional treatments for substance abuse not being particularly effective in themselves (Proudfoot & Teesson, 2000).

Integrated treatment has been proposed as the likely solution to some of the problems presented by the older models of parallel and serial treatment. Integrated treatment in various forms has been the subject of study and review and the definition of such treatment has been refined over time (Bellack & Gearon, 1998; Carey, 1996; Drake, Bartels, Teague, Noordsby, & Clark, 1993; Minkoff, 1989). A range of integrated treatment models has been developed which abide by the following principles (Mueser et al., 1997):

1. The same individual, team, or service, provides both mental health and substance abuse treatments simultaneously.
2. Behavioural strategies are utilised to help clients resist social pressures and urges to use substances.
3. Close involvement is maintained with the patient's family.
4. Treatment is approached in stages to ensure optimal timing of clinical interventions.

Research Findings

Much of the research has been carried out in the United States where substance abuse treatment programs tend to be rigidly abstinence-oriented and there is considerable emphasis on AA-oriented self-help groups. The authoritarian and often anti-medication stance of such programs tend to clash with the regimens in place in the mental health areas dedicated to treating severe psychotic illness. As a consequence, maintaining these separate services to treat both illnesses is considered to be particularly counter-productive for comorbid patients (Bellack & Gearon, 1998).

Various research institutions and hospitals have proposed and instituted integrated models of treatment for this particularly disabled group. Research on their effectiveness is now becoming available with the completion of several randomised controlled trials. However, as the discussion below indicates, much more needs to be done to clarify best practice in service provision. In particular, broad-based implementation of 'ideal' but costly integrated programs where there is a high level of staff training and involvement and high staff-patient ratios, may not be justified if benefits are only minimal or limited to sub-groups of the patient population (Hall & Farrell, 1997).

In their review of integrated treatments, Drake et al., (1998) summarised the historical development of integrated approaches from simply adding an outpatient substance abuse treatment group to usual care, to approaches which involved 'multiple interventions daily, for several hours each day, over a period of weeks or months' (Drake et al., 1998 p 593). These could be in an outpatient, in-patient or residential setting. Currently understood best practice for interventions for patients with comorbid substance use and psychotic disorders has been summarised by Drake et al., in their review. This approach includes elements of assertive case management as well as evidence-based interventions for substance abuse treatment. Table 1 opposite, reproduced from this review (Table 1, p 591), provides a broad description of their approach. This review also summarised the research on integrated services until 1998 and concluded that although many of the studies have been poorly executed, there is some evidence that their comprehensive integrated outpatient treatment programs are effective. However, the conclusions drawn may be considered somewhat optimistic considering the quality of the studies reviewed and a later review carried out for the Cochrane Collaboration (Ley, Jeffery, McLaren, & Siegfried, 2000.

Bellack & Gearon (1998) provide a thoughtful discussion of the particular needs of those with schizophrenia and substance use disorders and conclude that there is little firm empirical support for integrated treatment programs to date. The meaning of 'comprehensive, integrated treatment' has varied across studies and Bellack and Gearon ask the important question: Which aspects of the treatments reviewed by Drake et al., really add substance to treatment? For example, they point out that the most important influence on substance abuse, found in the only study that compared specific interventions (Jerrell & Ridgely, 1995), was the behavioural program which was non-specific and not particularly intensive (one session per week).

The study by Ho et al., (1999) also raises questions about exactly which aspects of integrated programs work. This team performed a sequential analysis on consecutive intakes to a treatment facility for those with psychosis and substance use disorders.

Table 1: Drake et al., model of integrated treatment for dual disorders

- The patient participates in one program that provides treatment for two disorders — psychotic disorder and substance use disorder.
- The patient's mental and substance use disorders are treated by the same clinicians.
- The clinicians are trained in psychopathology, assessment, and treatment strategies for both mental disorders and for substance use disorders.
- The clinicians offer substance abuse treatments tailored for patients with severe mental illness. These tailored treatments differ from traditional substance abuse treatment.
  - — Focus on preventing increased anxiety rather than on breaking through denial.
  - — Emphasis on trust, understanding, and learning rather than on confrontation, criticism, and expression.
  - — Emphasis on reduction of harm from substance use rather than on immediate abstinence.
  - — Slow pace and long-term perspective rather than rapid withdrawal and short-term treatment.
  - — Provision of stage-wise and motivational counselling rather than confrontation and front-loaded treatment.
  - — Supportive clinicians readily available in familiar settings rather than being available only during office hours and at clinics.
  - — 12-step groups available to those who choose and can benefit rather than being mandated for all patients.
  - — Neuroleptics and other pharmacotherapies indicated according to patients' psychiatric and medical needs rather than being contraindicated for all patients in substance abuse treatment.
- Some program components specifically address substance use reduction as a central focus of programming. Components focus especially on integrated treatment.
  - — Substance abuse group intervention.
  - — Specialised substance abuse treatment.
  - — Case management.
  - — Individual counselling.
  - — Housing supports.
  - — Medications and medication management.
  - — Family psychoeducation.
  - — Psychosocial rehabilitation.

The facility practised 'integrated' treatment which was evolving, with the quality and intensity of treatment increasing over the years of the study (1994 to 1996). They found significant improvements over time in engagement and retention rates, hospitalisation rates and level of abstinence from abused substances. There were several factors which the authors identified that may have led to these improvements. These include more case managers, addition of a special substance abuse module in relapse prevention, addition of a community re-entry module, a lunch program and a relaxation group.

Bellack and Gearon (1998) suggest that because of the cognitive deficits commonly associated with schizophrenia, treatments for this group must be designed to minimise demand on cognitive capacity. To this end they point to the promise of contingency management. They also highlight the tendency of this group to be unmotivated to change and agree that a more realistic goal is reduction in drinking rather than abstinence, and that treatment needs to be directed at raising the levels of motivation of this group. One further area that they suggest should be emphasised is social skills to assist them to develop relationships with people who do not abuse drugs.

Improving motivation to change has been investigated for this group. Addington and colleagues (1999) found that persons with schizophrenia in the later stages of Prochaska and DiClemente's (1986) stages of change, had better substance abuse and treatment outcomes. Another study suggests that the effect seems to be on adherence. A brief motivational interview at hospital discharge from an in-patient unit led to enhanced treatment attendance rates during the first three months after hospital discharge, and lower rehospitalisation rates (Swanson, Pantalon, & Cohen, 1999).

The effectiveness of integrated treatment for those with comorbid substance misuse and psychotic disorder has been the topic of an ongoing review on the Cochrane Collaboration database. Included studies had to meet minimum standards of methodological rigour with systematic cross-checking amongst reviewers. The most recent review (Ley et al., 2000) found six studies that met criteria for inclusion but concluded on the basis of various outcome criteria that there was no evidence that programs which incorporated substance abuse treatment were superior to standard psychiatric care provided for the psychotic illness. The studies were not considered of particularly high quality and the reviewer suggested that better research needs to be carried out in this area.

Although the review took some trouble to establish methodological standards, it was not made clear whether efficacious treatments for substance misuse were used (Proudfoot & Teesson, 2000). In fact it appears that no standard or manualised interventions were used across the studies. Thus it is not likely that standard care will be improved upon if interventions are added which have no evidence of effectiveness. We must agree with the reviewers who consider that simple, well-designed controlled trials are feasible and indeed necessary if we are going to progress in treating this severely ill group.

The preceding discussion emphasises the need for clear definition of treatments used and faithful implementation of treatment programs. These are significant issues when it comes to drawing conclusions from the research literature and from reviews of the literature. For example, in a recent Cochrane Collaboration report Marshall et al., (2002) conclude that there is a need to define treatment approaches in a much more rigorous fashion in order that they can be better assessed. In addition, Jerrell and Ridgely (1999) highlight the importance of implementation of treatment programs when comparing outcomes from 'robustly' and 'non-robustly' implemented interventions.

Two further studies serve to demonstrate that clearly specified (manualised) and implemented interventions based on cognitive-behavioural therapy can have positive outcomes for both substance abuse and psychological symptoms. Both could be

considered as integrated programs, with one using group treatment for comorbid substance abuse and personality disorder (Fisher & Bentley, 1996), and the other integrated motivational interviewing, CBT and family intervention for comorbid substance abuse and schizophrenia (Barrowclough et al., 2001). Subject numbers in the studies were small, but both found significant improvements in outcomes for those receiving the manualised CBT-based intervention compared with usual care. Although in need of further replication, such studies increase confidence that more reliable estimates of the effectiveness of interventions are possible, and importantly that some integrated treatments for comorbid disorders are effective.

Conclusions which can be drawn from the above review of the literature are that:

1. persons with a dual problem of schizophrenia and substance use disorders are a particularly vulnerable subgroup with complex service needs;
2. at present comorbid schizophrenia and substance use disorders are less than optimally recognised and managed; and
3. the evidence for effective treatment options for this group is less than compelling. However, with improved definition and implementation of effective components, integrated treatments warrant further investigation.

Areas of future research have been highlighted by the preceding discussion. These include consideration of the effect on outcome of adding or removing aspects of integrated treatment as well as ensuring fidelity of implementation of interventions. Aspects warranting further research include: assertive community treatment, motivational enhancement, manualised interventions to assist with compliance with treatments and to ensure standard treatments for substance abuse, psychosocial support variables and contingency management.

Conclusions

The above review has several important points to make with regard to the provision of services to prevent and treat comorbid drug and alcohol and psychiatric disorders. Firstly, the evidence suggests that it is feasible to prevent the onset of both psychiatric and substance abuse disorders if early intervention and prevention strategies are implemented during childhood and adolescence. It suggests that large-scale screening and brief interventions for young people may offset some of the costs that individual and comorbid disorders later impose on our health care system.

Another fact emphasised by this review is that this highly disabled group is not served particularly well within current service systems. Because the drug and alcohol and psychiatric services are administered and funded separately, there is generally little incentive for each to assess and treat comorbid conditions. Furthermore comorbidity is often used as an excluding factor in research carried out in either area. Thus not only are these people poorly served, but there is little research pushing for improvements in services provided to them. Yet the evidence, from epidemiology as well as clinical research, is clear that comorbidity contributes an inordinate amount to the work of the services. Those with comorbidity are over-represented in both primary and secondary treatment centres suggesting the additional disability that having both types of disorder confers, as well as suggesting that implementation of assessment and appropriate evidence-based interventions to deal with comorbid disorders may alleviate the pressure on services overall.

Yet, there are many barriers to effective change in service provision and one is the lack of sufficient well-designed research needed to specify best practice for the treatment of comorbidity. However, data is emerging which provides some general guidelines which ultimately would lead to improvements in service provision. Services which receive Government funding should be required to screen for comorbid disorders and to ensure best practice is implemented for both unitary and comorbid conditions. This requires ongoing training for service staff in order to update their knowledge and skills to ensure best practice and to help them commit to best practice. It also requires provision of standardised and manualised intervention packages at both primary care and within specialist services to assist implementation of best practice.

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Chapter 7

Comorbidity: why does it matter?

(A consumer perspective)

Leonie Manns

Only about one in three people with a mental disorder or drug and alcohol problem are seen by a specialist service or general practitioner in any year (Andrews, Hall, Teesson, & Henderson, 1999). Mental disorders and drug and alcohol problems are highly stigmatised; there is a public perception that effective treatments are not available, service providers are often overworked and the health care system itself is under-funded.

When an individual has both a mental disorder and a drug and alcohol problem, the under-funded health system simply can't respond. This chapter will firstly discuss how comorbidity affects the individual, and then how the mental health and drug and alcohol systems meet the challenge of comorbidity.

The two big drug and alcohol issues for consumers and carers in mental health are:

- the impact of cannabis; and
- the impact of alcohol.

The big mental health issues for consumers in drug and alcohol services are:

- depression; and
- anxiety

There is a small proportion of the population that has problems with heroin and amphetamines and other illicit drugs, but the ongoing and everyday problems are caused by the lack of understanding about the effects of the continued use of cannabis and alcohol on mental health and the impact of anxiety and depression in those with drug and alcohol problems.

The most important issue is how the services address this problem and how the users of the services and their carers perceive how well the services address it. Some services do okay, but there is a pervasive feeling in the area that no-one addresses the issue of comorbidity at all. Certainly proactive and assertive interventions are infrequent.

We would argue that the problems fall into four main areas:

1. Drug and alcohol services have a focus on providing treatments to individuals with problems with heroin.
2. There is a societal acceptance that people think it is a basic human right to get stoned and drunk.
3. Case managers in the mental health field are so overloaded with providing care for those with psychoses that they don't feel they have time to do the drug and alcohol interventions or provide interventions for anxiety or depression.
4. Mental health services often do not have a good relationship with the drug and alcohol services.

Access to services for people with problems with alcohol and cannabis is becoming increasingly difficult. The Clients of treatment service agencies census findings (Shand & Mattick, 2001) demonstrated that drug and alcohol services were increasingly focusing on the treatment of individuals with heroin dependence and that treatment services for alcohol and cannabis were less available.

There are four options:

- The creation of treatment "Super Centres" for cannabis and mental health. There is little evidence such super centres are sustainable in the long term and effective in the short or long term (Hall & Farrell, 1997).
- Mental health services to identify drug and alcohol use as a problem and to work closely with researchers to develop interventions for such problems.
- Drug and alcohol services to provide treatment interventions for cannabis and alcohol comorbid with mental disorders.
- We do nothing.

However, we have a limited knowledge on how to intervene for cannabis and alcohol disorders comorbid with mental disorders (see Chapter 5). Even if the diligent case manager from drug and alcohol or mental health seeks the latest treatment then they still only have a limited chance of making a difference to the person's cannabis use.

There is no easy solution to the complex challenge of comorbidity. However, some principles may help in developing the way forward.

Nothing about us without us — responses that don't include consumers and carers will fail

If we identify comorbidity as a problem we need to involve carers and consumers in the solution. Crawford et al., (2002) conducted a review of the impact of involving consumers in the planning and development of health care. They found that the evidence supports the involvement of consumers with such involvement contributing to changes in the provision of services across a range of different settings. However, to date an evidence base for the effects on use of services, quality of care and satisfaction of health of consumers does not exist.

While little evidence exists on the involvement of consumers in the delivery and evaluation of mental health and drug and alcohol services, a number of trials have been conducted. These trials have found that consumers can be involved as employees, trainers or researchers without detrimental effects. Involving consumers with severe mental disorders is also feasible although to date little evidence exists on the effectiveness of such programs and more formal evaluations are needed. O'Donnell (1999) undertook a study of client focused case management and consumer advocacy in Sydney and found that family burden was lower for client focused case management as compared to standard case management, although there were no other differences in terms of satisfaction, quality of life, functioning or time in hospital.

Outcome is not just about a reduction in symptoms

> "People with mental disorders have symptoms and behaviours which can impair their ability to work and love, and that can impair access to physical health care, income maintenance, education, housing, transport, legal advice, and leisure opportunities. While each citizen, mentally ill or not, has the right to have these

commodities, citizens with mental disorders will often find access reduced, specifically because the symptoms and behaviours associated with the mental disorder impair their ability to compete for access." (Andrews, Peters, & Teesson, 1994).

Any health system must encompass interventions which not only change the symptoms of the disorders but also impact on the disabilities in the above areas. Change in disability is often termed rehabilitation or recovery. The terms are confusing and the language is often clumsy but overall it is about going the next step after aggressive treatment interventions to ensure that consumers get better or at least that their lives improve sufficiently for them to move more easily back into community life.

There is however growing agreement that the interventions that are used need to be meaningful and have some measurable outcomes. There is also agreement that the steps towards recovery are systematic and program based. A four step program may look like this:

1. **Skills Training:** This needs to be very basic and should involve development or improvement of cognitive skills — such as clearer thinking, improved concentration and motor skill development.
2. **Peer Support:** This may include coffee meetings, support groups, social outings, work crews and advocacy development. They need to focus on the concept of 'normalisation' and empowerment of consumers with severe and persistent symptoms of mental illness.
3. **Vocational Services:** Involves supported employment and education, transitional employment, consumer run job clubs and specific training. It is imperative that consumers set their vocational goals as this is the strongest motivation towards recovery.
4. **Consumer Resource Development:** This includes direct services such as education, advocacy services, speakers' bureaux, drop-in centres and consumer-run businesses. The important concept here is that there is very little input from professionals and it is important because it creates an infrastructure of community support.

Equity in access to care

"…people with mental health problems or mental health disorders should have access to services and opportunities available in Australian society for people of a similar age with equity and justice" (Commonwealth Government of Australia, 1992).

People with drug and alcohol and mental health problems are vulnerable. People with mental illness alone are already vulnerable, and because of this they are at a greater risk of having comorbid disorders. This is often due to the perceived efficacy of alcohol and other substances as a form of medication; referred to as self-medication.

The pathway to treatment and recovery is further compromised because of the confusion around service delivery. This is not necessarily due to a lack of will to recover; people want to behave appropriately but are confused and unclear about the way to proceed.

The vulnerabilities often faced by people with comorbid disorders also differ. As Andrews et al., point out in Chapter 3, psychosis comorbidities nearly always result

in a crisis and chaos in the person's life. On the other hand the "quieter problems" of drug and alcohol abuse in those people with anxiety and depression don't usually result in a full blown emergency or crisis. The need to respond has therefore not been seen as so important. If we are to respond to the individual and community burden resulting from comorbid drug and alcohol and mental disorders then it is important for services to not discount the disability of those with anxiety and depression. The system or service solutions to these problems will not necessarily be the same, but must be met.

Thinking innovatively about prevention

Drug and alcohol use disorders are a substantial health and community problem and traditional prevention strategies about the dangers of drug and alcohol misuse have to date, been unsuccessful (see Chapter 4).

The mental health and drug and alcohol field have been slow to take up prevention opportunities. Firstly, traditional strategies in prevention don't work and secondly, the mental health field has very effective medicine-based interventions so there has been less of a desire to develop other interventions which would potentially be more effective on a broader societal level. There is too big a comfort zone around the medications and we have to break out of the traditional mould.

Conclusions

There are many barriers to effective change; the first step is to identify them. More research on identifying the needs of people with comorbid substance use and mental disorders is essential. Treatment at the crisis level is not efficient; true recovery involves both psychological and social wellbeing. The involvement of consumers and carers in our response to comorbidity is both feasible and crucial to the achievement of good outcomes.

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Chapter 8

Conclusion

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Although the term 'comorbidity' can be applied to any co-occurring illnesses and can be considered as a lifetime or concurrent condition, the emphasis in this book has been on concurrent comorbid substance use and psychiatric disorders.

Those who have comorbid conditions see themselves as much more disabled than those with a single substance use or psychiatric disorder; hence their over-representation in health services. However, as the preceding chapters have illustrated, they are usually in treatment for a single disorder, and the services are not enabled to tackle comorbidity. A frequent message throughout has been that comorbidity is common, yet insufficient research and funding have been directed towards explicating and alleviating the serious problems associated with comorbidity. A telling figure is that presented in the introductory chapter, where it was highlighted that the percentage of the health dollar allocated to mental health services in Australia is currently 5% while the burden of disease due to the mental disorders is rated world-wide at 20%. Add to this the fact that this funding is allocated in general to treatment services for single disorders, with scant regard for individuals suffering comorbid conditions, then it is clear that such individuals tend to be seriously neglected within the present health system.

As highlighted by Andrews et al., (Chapter 3), comorbidity appears to be concentrated in certain individuals over their lifetime. This argues strongly for the implementation of early intervention or prevention programs which have been found to be efficacious in reducing later onset of single psychiatric disorders. Much of the evidence suggests that appropriately directed prevention strategies could reduce the overall incidence of single adult disorders and thus the levels of comorbidity. Similarly, implementation of best practice in treatment of single disorders, and fine-tuning for particular comorbidities, will have a significant impact on the lives of those people with comorbid disorders who are currently being poorly served in treatment.

Although less disabling alone, substance use disorders seem to exacerbate and prolong symptoms of comorbid psychiatric disorders. They also impede and complicate treatment for comorbid disorders. Studies have found that treating substance use can moderate symptoms of other psychiatric disorders. Hence treatment for substance disorders has an important part to play with comorbid individuals — even if those with a single disorder do not see themselves as in need of intervention.

Although the research is scant, we have managed to draw together what there is, to derive cautious conclusions regarding causality and best practice for interventions for comorbidity. Firstly, though, there is a need to address broad problems and limitations associated with the research.

Limitations and caveats

Broad conclusions cannot be drawn about the comorbidity of substance use disorders with other psychiatric disorders overall, largely due to the differing aetiology and presentation of the psychotic disorders and the more common mental disorders. There tends not to be one summary statement to encompass conclusions about comorbidity in the psychotic and non-psychotic disorders. Instead much of the discussion has tended to focus on these two types of disorder separately and conclusions have been drawn accordingly.

Within substance abuse, research on the more common drugs, especially alcohol, is far more extensive than that on the illicits. However, because tobacco smoking is not seen as debilitating in terms of mental health, interventions for comorbidities with this disorder are not given the consideration they probably deserve in the literature discussed throughout the book. An exception to this is Chapter 5, where the emphasis is on the management of psychotic disorders which show extraordinary comorbidities with nicotine addiction and where nicotine use interacts with pharmacological management of these disorders.

Although highly prevalent, comorbidity of personality disorders with substance use disorders does not feature in the reviews of available treatments nor in service delivery. This is because personality disorders are seen as highly intractable conditions, with currently few findings regarding effective interventions — let alone in research on their comorbidities. Although currently neglected, it is imperative that research on personality disorders is increased, as it features considerably in the prevalence data and contributes greatly to disability associated with drug and alcohol use.

In the introduction, three questions were posed:

How common is comorbidity? Which are the most common and most disabling comorbidities from both an individual and public health perspective using the epidemiological evidence?

Chapters 2 and 3 have outlined the extent of the research knowledge on prevalence and impact of comorbid substance use and psychiatric disorders. Epidemiological data has been particularly useful in elucidating types and prevalence of particular comorbidities within mental health and the various community surveys conducted around the world have shown relative agreement. Explanations of comorbidity on the other hand tend to be more elusive. Evidence from both epidemiology and twin studies suggests that at least some comorbidities are best explained by the sharing of common risk factors rather than simple causal relationships (i.e., one disorder preceding and therefore 'causing' the other — Chapter 2).

Comorbidity of psychotic disorders with substance abuse is high, but so too is comorbidity arising from anxiety and depression. And given the much higher prevalence of these disorders, their contribution to burden of disease is considerable.

Drawing on data from the Australian NSMHWB, Andrews et al., (Chapter 3) have illustrated just how serious a burden comorbidity is, associated with the more common disorders. They have argued strongly for greater attention to be paid to the 'quieter' disorders of anxiety and depression. They have also pointed to the inequity

in spending in our health budget where mental disorders are under-funded and where within the mental disorders the common disorders tend to be overlooked in favour of the more confronting psychotic and substance abuse disorders.

How would you prevent and treat comorbidity? What is the research evidence on the prevention and treatment of the most common and most disabling comorbidities?

We have argued that if the prevalence of mental disorders can be reduced by early intervention, then there would be a concomitant decrease in comorbidity of these disorders in adulthood. Furthermore, where particular disorders can be shown to be risk factors for other disorders, then intervening for these prior disorders will result in decreased incidence of the later ones and decreased comorbidity in adulthood. Dadds and Atkinson in Chapter 4 highlight the lack of positive findings regarding psychoeduction and resistance training to reduce drug and alcohol abuse and present cogent arguments for addressing risk factors in young people in order to reduce or prevent comorbidities in adulthood. There is considerable evidence that treating childhood risk factors such as conduct disorders and childhood anxiety and depression can lead to the reduction of associated disorders in adulthood. There is still a need for more definitive longitudinal studies to confirm the link between effective intervention for the childhood disorders and later substance abuse, but evidence to date is certainly suggestive that this is the case.

The chapters on service delivery and intervention agree that the available literature supports screening and assessment, training of staff in comorbidity and, to a lesser degree, integrated treatments for severe mental disorders comorbid with substance abuse. Screening needs to be carried out carefully, from the perspective that it is a first step in establishing the therapeutic alliance of client and caseworker. Care should be taken not to screen whilst the individual is in an acute state of distress due to either disorder. It may be an extended process carried out over a week or so in order to ascertain which symptoms are likely due to which of the multiple disorders that the client has. In all of this, standard screeners and careful training of specialist staff and general practitioners is essential. The impact of comorbidity on the course of treatment is far too significant to be left undiagnosed and unattended.

Many of the traditional, confrontational styles of treatment for drug and alcohol disorders have been shown to be ineffective in individuals with a single disorder. So, it is unlikely that treatments that are ineffective for one disorder will be effective for that disorder comorbid with another. Much of the earlier research on interventions for comorbidity, however, incorporated these interventions with poor outcomes. Hence it is important to attend to the recent research which specifically addresses comorbidity and uses effective treatments for substance abuse. In particular, psychosocial interventions have an important role to play and these should be implemented using evidence-based principles. Both motivational interviewing and CBT have shown promise as has community-based support such as housing, family support and assistance with medication management for those with the more severe psychiatric illnesses.

Lastly, GPs have an important role to play in prevention and treatment of comorbid disorders. In prevention, it is important that they are able to identify and refer as appropriate, mental disorders in childhood. The use of standardised screeners with both children and adults should be encouraged. As discussed in Chapter 6, this may

not prove to be the increased workload they anticipate. Referring and/or treating the common mental disorders such as conduct, anxiety and depressive disorders, may in fact lighten their workload in the long run. In the short term they should be assisted to become more mental health friendly with training and support from mental health specialists.

What are the implications of comorbidity for service delivery? How do we improve our response to comorbidity and what is current good practice in treatment and service system models?

Current best practice in prevention and intervention has been dealt with in detail in Chapters 4, 5 and 6. Clearly the issue of service provision is the most difficult one to answer. Not enough research has preceded this to allow definitive answers as to how best to set up the services to take full account of comorbidity. However, enough research has been carried out to nudge us in the direction most likely to produce best outcomes. It starts with community screening and treatment for disorders in childhood and proceeds to well-trained service providers at both general practice and specialist levels, screening, referring and/or implementing evidence-based treatments.