

Special article

A systematic review of psychosocial research on psychosocial interventions for people with co-occurring severe mental and substance use disorders

Robert E. Drake, (M.D. Ph.D.)^{a,*}, Erica L. O’Neal, (M.D.)^a, Michael A. Wallach, (Ph.D.)^b

^a*Department of Psychiatry, Dartmouth Medical School, Lebanon, NH, USA*

^b*Department of Psychology and Neuroscience, Duke University, Durham, NC, USA*

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Abstract

This report reviews studies of psychosocial interventions for people with co-occurring substance use disorder and severe mental illness. We identified 45 controlled studies (22 experimental and 23 quasi-experimental) of psychosocial dual diagnosis interventions through several search strategies. Three types of interventions (group counseling, contingency management, and residential dual diagnosis treatment) show consistent positive effects on substance use disorder, whereas other interventions have significant impacts on other areas of adjustment (e.g., case management enhances community tenure and legal interventions increase treatment participation). Current studies are limited by heterogeneity of interventions, participants, methods, outcomes, and measures. Treatment of co-occurring severe mental illness and substance use disorder now has a large but heterogeneous evidence base that nevertheless supports several types of interventions. Future research will need to address methodological standardization, longitudinal perspectives, interventions for subgroups and stages, sequenced interventions, and the changing realities of treatment systems. © 2008 Published by Elsevier Inc.

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1. Introduction

Current intervention research on co-occurring disorders assumes the need to integrate mental health and substance abuse services at the clinical level (McHugo et al., 2006). Integrated treatment as an organizing concept arose in the 1980s when it was observed that clients with co-occurring disorders, at least those in the United States, were highly unlikely to receive treatments for both mental health and substance use problems under the existing circumstances of parallel and independent service systems (Ridgely, Osher, Goldman, & Talbott, 1987). Instead, they would tend to be assigned to one system or the other, which would view them through its own particular lens only. Sometimes each system would try to cede these clients to the other. Even when clients

did receive both treatments, the service interventions were often incompatible or inconsistent. Such problems continue in the fragmented U.S. healthcare system. A recent national household survey found that only 12% of people with coexisting mental health and substance use problems received interventions for both (Epstein, Barker, Vorburger, & Murtha, 2004).

Integrated treatment addresses two fundamental concerns: (a) improving access by ensuring that mental health and substance abuse services are available in the same setting and (b) improving individualization and clinical relevance by combining and modifying the two types of interventions in a coherent fashion (Mueser, Noordsy, Drake, & Fox, 2003). Thus, the burden of addressing both problems and of ensuring compatibility is shouldered by the treatment system rather than by the client. Current interventions, whether they involve individual counseling, group interventions, or other approaches, encompass these two aspects of clinical integration.

* Corresponding author. Dartmouth Psychiatric Research Center, 2 Whipple Place, Lebanon, NH 03766, USA. Tel.: +1 603 448 0263.

E-mail address: robert.e.drake@dartmouth.edu (R.E. Drake).

The barriers to integration are of course legion, including organizational, financing, training, and professional turf issues (Ridgely, Goldman, & Willenbring, 1990). Recent policy and training initiatives attempt to overcome these barriers (Center for Substance Abuse Treatment, 2005; Drake et al., 2001; New Freedom Commission on Mental Health, 2003).

Research on integrated treatments continues to expand, and previous reviews have documented modestly superior outcomes (Brunette, Mueser, & Drake, 2004; Drake, Mueser, Brunette, & McHugo, 2004; Mueser, Drake, Sigmon, & Brunette, 2005). This field evolves so rapidly, however, that reviews published in 2004 and 2005 now warrant updates in several areas, especially research on types of interventions.

Since identification of the problem of co-occurring severe mental illness and substance use disorder in the early 1980s, psychosocial interventions have steadily been developed and tested. In the late 1980s, there were almost no relevant intervention studies (Ridgely et al., 1987); 10 years later, there were many pre–post studies but still only a few controlled trials (Drake, Mercer-McFadden, Mueser, McHugo, & Bond, 1998), but as of 2007, numerous controlled trials have been reported. In this update, we provide a systematic review of the evidence from controlled trials regarding specific types of interventions, a discussion of the methodological problems that limit current research, and suggestions regarding future directions for research. We do not address pharmacological interventions, which have been recently reviewed elsewhere (Brunette, Noordsy, Buckley, & Green, 2005; Petrakis, Nich, & Ralevski, 2006).

2. Methods

We reviewed controlled trials of interventions for adults with co-occurring severe mental illness and substance use disorder. We included both experimental studies that used random assignment and quasi-experimental studies that included nonequivalent comparison groups. Severe mental illness is a service definition defined by states on the basis of diagnosis, disability, and duration (New Freedom Commission on Mental Health, 2003). Although the definition varies somewhat from state to state, nearly all states attempt to provide services for those individuals who have major mental disorders (schizophrenia, schizoaffective disorder, bipolar disorder, or severe depression), are disabled in at least two major areas (work, relationships, or activities of daily living), and have been disabled for 2 years or more. These definitions overlap considerably with Social Security Administration disability definitions (Stobo, McGeary, & Barnes, 2006) because most services are cofunded by Medicaid or Medicare. Nearly all studies follow the definition of substance use disorder provided by the American Psychiatric Association's (1994) *Diagnostic and Statistical Manual of Mental Disorders*: abuse or dependence on alcohol or other drugs of abuse. Because nicotine use disorder is generally not

addressed in current dual diagnosis programs, treatment of nicotine use disorder is excluded from this review. When the exact diagnoses and severities of severe mental illnesses and substance use disorders are provided in studies, we have included these data in tables.

To locate intervention trials related to dual diagnosis, co-occurring disorders, mental illness and chemical addiction, or substance abuse and mental illness, we searched several computerized databases: MEDLINE/PubMed, Cochrane Database of Systematic Reviews, PsycINFO, Project CORK, TRIP Database Plus, Clinical Evidence, the ACP Journal Club, *BMJ* Updates, Bandolier, and Evidence-Based Mental Health. We also searched the indices of several journals that publish community mental health studies: *Psychiatric Services*, *American Journal of Psychiatry*, *Community Mental Health Journal*, *Journal of Nervous and Mental Disease*, and *Journal of Substance Abuse Treatment*. In addition, we queried staff at U.S. federal health care agencies to identify studies.

We excluded studies with fewer than 10 experimental subjects and pre–post studies, unless they involved A–B–A designs. Because almost all of the identified studies are based on adding an intervention for substance use disorder to standard mental health programs, we categorized studies according to the main intervention for substance use disorder, for example, individual or group counseling. A small number of studies included more than one experimental group (Bond, McDonel, Miller & Pensec, 1991; Burnam et al., 1995; Jerrell & Ridgely, 1995) or more than one main intervention (Barrowclough et al., 2001), and we categorized these studies in more than one intervention area. When several interventions were combined within a case management or intensive rehabilitation model, we listed the study according to the case management or intensive rehabilitation model. Because the intervention for substance use disorder defines the experimental manipulation in these studies, substance use or some consequence of substance use logically becomes the primary outcome. Nevertheless, we examined three outcome domains: substance use, mental health, and other outcomes, which included a variety of behaviors and nonclinical outcomes. Two researchers independently reviewed all

Table 1
Summary of results

Intervention	Substance use outcomes	Mental health outcomes	Other outcomes
Individual counseling	3/7	2/4	2/5
Group counseling	7/8	2/6	7/8
Family interventions	1/1	1/1	1/1
Case management	6/10	3/8	9/11
Residential treatment	7/12	3/10	11/12
Intensive outpatient rehabilitation	1/2	0/2	1/2
Contingency management	4/5	0/2	4/4
Legal interventions	1/4	4/4	4/5

Note. Numerator, number of studies with a positive outcomes; denominator, total number of studies that measured the outcome of interest.

studies, and eight reviewers independently checked the final tables for accuracy and omissions.

3. Results

We identified a total of 45 unique studies (22 randomized controlled trials and 23 quasi experiments)

that met inclusion criteria. Types of interventions included individual counseling, group counseling, family intervention, case management, residential treatment, intensive outpatient rehabilitation, contingency management, and legal intervention.

The overall results are summarized as box scores in Table 1. Group counseling, residential treatment, and contingency management show fairly consistent results on

Table 2
Trials of individual counseling interventions for dual diagnosis patients

Author	Design	Participants	Interventions	Substance use outcomes	Mental health outcomes	Other outcomes
Baker et al. (2002a, 2002b)	Experiment; outcomes at 3, 6, and 12 months after discharge	<i>n</i> = 160 inpatients with mental illness (80% Axis I diagnosis) and substance abuse or dependence in Australia	One session of motivational interviewing and cognitive behavioral therapy vs. one psychoeducational session	No group differences in substance use outcomes	No group differences in outcomes	No group differences in crime, social function, or follow-up rate in clinic
Baker et al. (2006)	Experiment; outcomes at 15 weeks and 6 and 12 months posttreatment	<i>n</i> = 130 outpatients with nonacute psychotic disorder and use of alcohol, cannabis, and/or amphetamines in Australia	Ten sessions of motivational interviewing and cognitive behavioral therapy vs. self-help booklet and treatment as usual	No group differences in substance use outcomes	Decreased depressive symptoms at 15 weeks, 6 months and 12 months (with greatest reduction at 6 months)	Improved global function at 12 months
Barrowclough et al. (2001), Haddock et al. (2003)	Experiment; outcomes at 9, 12, and 18 months after starting treatment	<i>n</i> = 36 outpatients with schizophrenia or schizoaffective disorder and substance abuse or dependence and one caregiver in England	Integrated intervention for 9 months (individual cognitive behavioral therapy and motivational interviewing with family intervention and treatment as usual) vs. treatment as usual	Decreased relapse rates at 12 months; decreased abstinence from all substances but not most frequently used substance; no difference in dependence or severity measures	Decreased negative symptoms at 9 and 18 months; decreased positive symptoms at 12 months	Increased global function at all time points; no differences in social functioning or caregiver outcomes
Edwards et al. (2006)	Experiment; outcomes at 3 and 6 months	<i>n</i> =47 outpatients with first-episode psychosis and cannabis use in Australia	3 months of individual therapy (cognitive behavior and harm reduction model)	No group differences in substance use outcomes	No mental health outcomes measured	No differences in outpatient attendance
Graeber et al. (2003)	Experiment; outcomes at 4, 8, and 24 weeks posttreatment	<i>n</i> = 30 inpatient and outpatient veterans with schizophrenia and alcohol use disorder in Albuquerque	Three sessions of motivational interviewing vs. psychoeducation	Increased abstinence; decreased days of drinking but no difference in drinking intensity or consumption	No mental health outcomes measured	No other outcomes measured
Hulse and Tait (2002)	Experiment; outcomes at 6 months after baseline assessment	<i>n</i> = 120 inpatients with acute psychiatric diagnosis and alcohol dependence in Australia	One session of motivational interview vs. information packet	Decreased weekly alcohol consumption; no difference in treatment progress	No mental health outcomes measured	No other outcomes measured
Kavanagh et al. (2004)	Experiment; outcomes at 6 weeks and 3, 6, and 12 months after starting treatment	<i>n</i> = 25 outpatients with early psychosis and substance misuse in Australia	3 hours of individual therapy (motivational interviewing, coping skills, skills training) with treatment as usual vs. treatment as usual	No group differences in substance use outcomes	No group differences in outcomes	No group differences in hospitalization outcomes
Swanson et al. (1999)	Experiment; outcomes at first appointment	<i>n</i> = 93 inpatients with psychiatric disorder and substance use disorder in 75–79% in New York City	One session of motivational interviewing with treatment as usual vs. treatment as usual	No substance use outcomes assessed	No mental health outcomes measured	No other outcomes measured

Note. Barrowclough et al. (2001) and Haddock et al. (2003) are placed on both the individual and family intervention tables.

Table 3
Trials of group counseling interventions for dual diagnosis patients

Author	Design	Participants	Interventions	Substance use outcomes	Mental health outcomes	Other outcomes
Aubrey, Cousins, LaFerriere, and Wexler (2003)	Quasi experiment; outcomes at 9 months after starting therapy	$n = 56$ outpatients with dual diagnosis in Ontario	Group therapy based on staged treatment (monthly sessions for 9 months) vs. treatment as usual	Decreased alcohol consumption per client report at 9 months but not clinician report; no differences in drug use outcomes or treatment progress	No group differences in mental health outcomes	Improvement in quality of life related to daily living and finances; no differences in criminal, hospitalization, community functioning, or work outcomes
Bellack et al. (2006)	Experiment; outcomes weekly 6 months after starting treatment	$n = 175$ outpatients with severe and persistent mental illness and cocaine, heroin, or marijuana dependence in Baltimore	Group behavioral treatment (motivational interviewing and contingency strategies) vs. supportive group therapy for 6 months	Increased total and continuous abstinence; increased proportion of negative urine drug screens; no difference in days with drug problems or number days drugs used	No mental health outcomes	Improved ability to complete activities of daily living
Bond et al. (1991)	Quasi experiment; outcomes at 6, 12, and 18 months after starting treatment	$n = 66$ outpatients with chronic mental illness and substance abuse or dependence at three sites in Indiana	Psychoeducation groups vs. treatment as usual for 18 months	Decreased cannabis use; no differences in alcohol use	No mental health outcomes	Increased engagement at 12 and 18 months; decreased hospitalizations at 6 and 12 months
Hellerstein et al. (1995)	Experiment; outcomes at 4 and 8 months after discharge	$n = 47$ outpatients with schizophrenia-continuum disorder and psychoactive substance abuse or dependence in New York City	Integrated treatment (supportive group therapy and education with medication management) vs. treatment as usual for 8 months	No group differences in substance use outcomes	No group differences in mental health outcomes	Increased engagement in treatment at 4 months; no effect on hospitalization days
James et al. (2004)	Experiment; outcomes at 3 months posttreatment	$n = 63$ outpatients with nonorganic psychotic disorder and harmful substance use or dependence in Australia	Integrated treatment (supportive group therapy and education, medication management) for 6 weeks vs. one psychoeducational session with treatment as usual	Decreased alcohol, drug, marijuana and polysubstance use; decreased severity of dependence	Decreased psychiatric symptoms; decreased medication use	Decreased rate of hospitalization
Jerrell and Ridgely (1995, 1999)	Quasi experiment; outcomes at 6, 12, and 18 months after starting treatment	$n = 87$ outpatients with dual diagnosis in the United States	Integrated behavioral skills training groups vs. 12 step-based groups over 12–18 months	Decreased drug and alcohol use	Decreased psychiatric symptoms and improved psychological functioning	Improved functioning in housing, employment, independent living, and social skills
Weiss et al. (2000)	Quasi experiment; outcomes measured monthly during treatment and monthly for 3 months after treatment	$n = 45$ outpatients with bipolar disorder and substance dependence in Boston	Integrated group therapy for 12–20 sessions vs. no treatment	Decreased drug use; increased total and consecutive days of abstinence; no difference in days of use or alcohol use	No group differences in mental health outcomes	No group differences in medication compliance or hospitalizations
Weiss et al. (2007)	Experiment; outcomes were measured at 3, 5, and 8 months after starting treatment	$n = 62$ with bipolar disorder and substance dependence in Boston	Integrated group therapy vs. group therapy focused on substance abuse (20 sessions)	Decreased alcohol use; decreased total substance use; improved abstinence; no differences in drug use	No group differences in mental health outcomes	Improved group therapy attendance

Note. Bellack et al. (2006) is placed on both the group and contingency tables. Bond et al. (1991) is placed on both the group and case management intervention tables. Jerrell and Ridgely (1995, 1999) is placed on both the group and case management intervention tables.

substance use outcomes. No interventions show consistent results on mental health outcomes, although legal interventions improve treatment attendance. Group counseling, case management, residential treatment, contingency management, and legal intervention show positive results on a variety of other outcomes. The small numbers of studies of contingency management and legal intervention limit conclusions regarding these interventions. For interventions with both experimental and quasi-experimental studies, the results were similar (table available from authors). Overall results for the three outcomes are summarized in a box score (see Table 1); the denominator is the total number of studies that addressed the outcome and the numerator indicates the number of studies demonstrating a favorable result on the outcome of interest.

3.1. Individual counseling

Studies of individual counseling are largely based on the technique of motivational interviewing (Miller & Rollnick, 2002). We identified eight studies (Table 2), all of which were experiments. The studies differed widely in time perspectives and goals, but most focused on substance use outcomes.

Three studies assessed the impact of a single session (Baker et al., 2002a, 2002b; Hulse & Tait, 2002; Swanson, Pantalon, & Cohen, 1999). Findings on substance use, mental health, and other outcomes, including treatment attendance, were inconsistent.

Four studies examined several individual counseling sessions. Graeber, Moyers, Griffiths, Guajardo, and Tonigan (2003) found remarkably positive results on substance use outcomes following three sessions of motivational interviewing. However, three other studies examined several sessions (3–12) of motivational interviewing and/or cognitive behavioral counseling and found no differences on substance use outcomes and few differences on any other outcomes (Baker et al., 2006; Edwards et al., 2006; Kavanagh et al., 2004).

In a single long-term study, which included 9 months of motivational interviewing and cognitive behavioral treatment, Barrowclough et al. (2001) documented some positive

results at 9, 12, and 18 months, but most of the experimental differences on substance use and other outcomes were not sustained at 18 months (Haddock et al., 2003).

Thus, the evidence for individual counseling based on motivational interviewing and/or cognitive behavioral counseling is relatively weak and inconsistent, but further study of long-term interventions is warranted.

3.2. Group counseling

Group counseling interventions varied widely: Most were delivered once or twice a week, they typically lasted 6 months or longer, most used cognitive behavioral techniques, a few combined several techniques, and some were aligned with stage of treatment or recovery. All included education, peer support, and a focus on managing mental and substance use disorders concurrently. We identified eight studies of group counseling approaches (Table 3), half true experiments and half quasi-experimental studies.

The results of these eight studies were remarkably consistent in terms of positive effects on substance use outcomes and a wide range of outcomes other than symptoms of mental illness. The one study without positive findings (Hellerstein, Rosenthal, & Miner, 1995) started with a small study group and experienced such heavy attrition that results could not be analyzed. The most recent studies indicate that group interventions are becoming more specific, standardized, and effective. Bellack, Bennett, Gearon, Brown, and Yang (2006) found positive outcomes in several areas resulting from a highly specified, multi-intervention approach (including cognitive behavioral, skills training, and contingency management) for clients with schizophrenia and drug use disorders, although overall attrition was high. Similarly, Weiss et al. (2000, 2007) showed positive substance use outcomes with a cognitive behavioral intervention for clients with bipolar disorder plus substance use disorder.

Thus, the evidence consistently shows that group counseling interventions have positive impacts on substance use outcomes and on other (non-symptom) outcomes. One caveat is that clients must be willing to attend the group.

Table 4
Trials of family interventions for dual diagnosis patients

Author	Design	Participants	Interventions	Substance use outcomes	Mental health outcomes	Other outcomes
Barrowclough et al. (2001), Haddock et al. (2003)	Experiment; outcomes at 9, 12, and 18 months after starting treatment	<i>n</i> = 36; outpatients with schizophrenia or schizoaffective disorder and substance abuse or dependence and one caregiver in England	Integrated intervention for 9 months (individual cognitive behavioral therapy and motivational interviewing with family intervention and treatment as usual) vs. treatment as usual	Decreased relapse rates at 12 months; decreased abstinence from all substances but not most frequently used substance; no difference in dependence or severity measures	Decreased negative symptoms at 9 and 18 months; decreased positive symptoms at 12 months	Increased global function at all time points; no differences in social functioning or caregiver outcomes

Note. Barrowclough et al. (2001) and Haddock et al. (2003) are placed on both the individual and family intervention tables.

Table 5
Trials of case management for dual diagnosis patients

Author	Design	Participants	Interventions	Substance use outcomes	Mental health outcomes	Other outcomes
Bond et al. (1991)	Quasi experiment; outcomes at 6, 12, and 18 months	$n = 74$ outpatients with dual diagnosis at three sites in Indiana	Assertive community treatment vs. treatment as usual for 18 months	No group differences for substance use outcomes	No mental health outcomes	Increased engagement at 6 and 18 months; decreased hospital days at 6 and 18 months
Calsyn et al. (2005), Morse et al. (2006)	Experiment; outcomes at 6, 12, 18, and 24 months posttreatment	$n = 144$ (Calsyn et al.) and $n = 149$ (Morse et al.) homeless outpatients with serious mental illness and substance abuse or dependence in the United States	Integrated treatment and assertive community treatment vs. assertive community treatment vs. treatment as usual for 24 months	No group differences for substance use outcomes	No group differences in mental health outcomes	Improved client satisfaction and housing outcomes in both intervention groups
Carmichael, Tackett-Gibson, and Dell (1998), Mangrum, Spence, and Lopez (2006)	Quasi experiment; outcomes at 12 months after starting treatment	$n = 208$ (in Carmichael et al.) and $n = 216$ (in Mangrum et al.) outpatients with severe and persistent mental illness and substance abuse or dependence at three sites in Texas	Integrated mental health and substance abuse treatment vs. parallel treatment as usual (12 month duration)	Decreased alcohol intoxication; increased attendance at dual diagnosis groups	Decreased suicidal thoughts; increased mental health service utilization; improved medication compliance	Improved income; decreased rates and days of hospitalization; decreased arrests; increased use of ancillary services
Chandler and Spicer (2006)	Experiment; outcomes over 18 months	$n = 182$ recently released inmates with serious mental illness and substance use disorder in San Francisco	Integrated mental health and substance abuse treatment vs. treatment as usual (treatment for up to 2.5 years)	Unable to assess substance use outcomes	Increased mental health outpatient service use and medication use	No differences in arrests and convictions; decreased hospital days; decreased crisis management use
Drake, Yovetich, Bebout, Harris, and McHugo (1997)	Quasi experiment; outcomes at 6, 12, and 18 months after starting treatment	$n = 217$ homeless clients with severe mental illness and substance abuse or dependence in Washington, DC	Integrated treatment (intensive case management, substance abuse counseling, and housing support) vs. treatment as usual for 18 months	Improved treatment progress; greater reductions in alcohol severity in subjects with alcohol use disorder; no difference in drug use outcomes	No mental health outcomes	Improved stability in housing; decreased institutional days
Drake et al. (1998), McHugo, Drake, Teague, Xie (1999)	Experiment; outcomes every 6 months for 3 years	$n = 223$ outpatients with schizophrenia, schizoaffective disorder, or bipolar disorder and an active substance use disorder in New Hampshire	Assertive community treatment vs. standard case management for 3 years	Decreased alcohol severity; improved treatment progress; decreased drug and alcohol use, improved treatment progress, and increased remission in high-fidelity intervention group	No group differences in mental health outcomes	Improved financial functioning and overall quality of life; increased hospitalization rates in high-fidelity intervention group
Essock et al. (2006)	Experiment; outcomes every 6 months for 3 years	$n = 198$ outpatients with schizophrenia, schizoaffective disorder, or major depression with bipolar features and substance abuse or dependence in Connecticut	Assertive community treatment vs. standard case management for 3 years	No group difference in substance use outcomes	No group differences in mental health outcomes	Decreased rates and days of hospitalization (intervention group had lower rates at baseline); no differences in general life satisfaction or global functioning
Godley, Hoewing-Roberson, and Godley (1994)	Experiment; outcomes at 2 years after starting treatment	$n = 48$ outpatients with major psychiatric diagnosis and substance abuse or dependence in Illinois	Integrated intensive case management and substance abuse counseling vs. treatment as usual for 2 years	Decreased days drug use	No group differences in mental health outcomes	No differences in functioning or vocational measures

Table 5 (continued)

Author	Design	Participants	Interventions	Substance use outcomes	Mental health outcomes	Other outcomes
Ho et al. (1999)	Quasi experiment; outcomes every 6 months for 2 years after starting treatment	<i>n</i> = 179 outpatient veterans with psychotic disorder and substance dependence in Los Angeles	Integrated day treatment plus assertive community treatment and skills training for 6 months (4 groups with increasing amounts of services)	Improved abstinence	No mental health outcomes	Increased engagement; increased days attended; increased retention rate
Jerrell and Ridgely (1995, 1999)	Quasi experiment; outcomes at 6, 12, and 18 months after starting treatment	<i>n</i> = 93 outpatients with dual diagnosis in the United States	Integrated intensive case management vs. 12 step-based groups over 12–18 months	Decreased substance use symptoms in fully implemented case management groups	Decreased psychiatric symptoms and improved psychological functioning	Improved family, social and global functioning
Lehman, Herron, Schwartz, and Myers (1993)	Experiment; outcomes at 12 months after baseline	<i>n</i> = 54 outpatients with schizophrenia, schizoaffective disorder, bipolar disorder, or depression and substance use disorder in the United States	Integrated treatment (case management, substance abuse group therapy) with treatment as usual (including day treatment) vs. treatment as usual for 12 months	No group differences in substance use outcomes	No group differences in mental health outcomes	No differences in satisfaction or hospitalization days

Note. Bond et al. (1991) is placed on both the group and case management intervention tables. Chandler and Spicer (2006) is placed on both the case management and legal intervention tables. Jerrell and Ridgely (1995, 1999) are placed on both group and case management intervention tables.

3.3. Family intervention

Family interventions aim to improve the knowledge, support, and coping skills of family members. We identified only one study that included family psychoeducation as a consistent intervention (Table 4). Barrowclough et al. (2001) combined family intervention with individual counseling (this study is also listed in Table 2). As reviewed above, the results were positive on substance use and other outcomes at various follow-ups, but mostly faded when the intervention ended. Thus, family intervention for persons with co-occurring disorders has not been studied sufficiently, either as a stand-alone or combined intervention.

3.4. Case management

Case management refers to intensive, team-based, multi-disciplinary, outreach-oriented, clinically coordinated services, usually involving the model assertive community treatment (Stein & Test, 1980) or a close variant called intensive case management. The term case management is gradually falling out of favor (clients themselves object to being called “cases” and to being “managed”), but we retain it here because no consensus has yet developed on a new label. We identified 11 studies of case management interventions (Table 5), half experiments and half quasi-experiments. The interventions all incorporated some forms of integrated treatment for co-occurring substance use disorders.

These studies produced inconsistent results on substance use outcomes, with 6 reporting some reductions in

substance use or consequences. In some of the studies, the experimental manipulation was intensity of case management, and weak results on substance use outcomes could be explained by the provision of integrated treatment to clients in both conditions. Results on mental illness symptoms were also inconsistent, but these studies did show positive outcomes in other areas, such as increasing engagement, decreasing hospital use, increasing community tenure, and improving quality of life, which are the traditional outcomes associated with case management.

Thus, intensive, team-based case management may be a vehicle for integrated mental illness and substance use disorder treatments, but its effects on substance use probably depend on the specific interventions within the case management model. At the same time, traditional outcomes of case management, such as increasing community tenure, are consistently obtained with dual diagnosis clients.

3.5. Residential treatment

Residential treatment refers to a package of interventions offered within a full-time, monitored residential program. We identified 12 studies of residential dual diagnosis treatment (Table 6). All studies but one were essentially quasi experiments due to design or nonequivalence resulting from attrition. Nearly all compared a more integrated approach to residential treatment with a less integrated approach. Some of the residential programs were short term (6 months or less) and some long term (1 year or more), and one study (Brunette, Drake, Woods, & Harnett, 2001) compared short-term and

Table 6
Trials of residential treatment interventions for dual diagnosis patients

Author	Design	Participants	Interventions	Substance use outcomes	Mental health outcomes	Other outcomes
Aguilera et al. (1999)	Quasi experiment; outcomes at 1 month after discharge	<i>n</i> = 86 homeless men with Axis I or II diagnosis and substance abuse in Honduras	Low-intensity integrated residential rehabilitation program vs. high-intensity traditional residential program (3-month duration)	No group differences for substance use outcomes	Decreased psychiatric symptoms in traditional program; no differences in rehospitalization rates	Decreased dangerous behaviors and improvement on quality of life measures in traditional program; no differences in AMA or graduation rates or satisfaction with program
Anderson (1999)	Quasi experiment; outcomes at discharge and 3 months after discharge	<i>n</i> = 225 homeless men with Axis I and substance abuse diagnoses and in New York City	Low-intensity integrated residential rehabilitation program vs. high-intensity traditional residential program (3- to 6-month duration)	Decreased relapse rates at 3 months	No group differences in mental health outcomes	Higher rates of placements after discharge; decreased AMA rates; increased satisfaction
Blankertz and Cnaan (1994)	Quasi experiment; outcomes at 3 months after discharge	<i>n</i> = 89 homeless clients with dual diagnosis in Philadelphia	Integrated residential rehabilitation program vs. traditional residential program (1-year duration)	Improved abstinence	No mental health outcomes	Increased “successful” discharge (abstinent, no hospitalizations, stable functioning)
Brunette et al. (2001)	Quasi experiment; outcomes at 6 months after discharge	<i>n</i> = 84 clients with dual diagnosis in New Hampshire	Long-term integrated residential program (average stay 400 days) vs. short-term integrated residential program (average stay 66 days)	Improved abstinence	No group differences in mental health outcomes	Increased engagement in treatment; decreased homelessness; no differences in incarceration rates of number of moves
Burnam et al. (1995)	Experiment; outcomes at 3, 6, and 9 months after baseline assessment	<i>n</i> = 132 homeless clients with schizophrenia or major affective disorder and substance dependence in Los Angeles	Integrated residential treatment vs. treatment at usual (3 month duration)	No group differences for substance use outcomes	No group differences in mental health outcomes	No group differences for housing outcomes
De Leon, Sacks, Staines, and McKendrick (2000)	Quasi experiment; outcomes at 1 and 2 years after baseline assessment	<i>n</i> = 342 homeless clients with Axis I disorder and substance abuse or dependence in Brooklyn, NY	Low-intensity therapeutic community vs. high-intensity therapeutic community vs. treatment as usual (1-year duration)	Decreased alcohol use to intoxication, frequency of drug use and number of different drugs used at 1 and 2 years in low-demand group	Decreased depression and anxiety symptoms at 2 years in low-intensity group	Increase in employment in both therapeutic groups at 1 and 2 years; decrease in number and types of crimes committed in both groups at 2 years
Kaspro, Rosenheck, Frisman, and DiLella (1999)	Quasi experiment; outcomes at discharge	<i>n</i> = 1495 male veterans with dual disorders in the United States (71 sites)	Integrated residential treatment vs. substance abuse focused residential treatment (3-month duration)	No difference in substance use outcomes	No group differences in mental health outcomes	Increased independent housing; decreased AMA rate; decreased discharge to institution; increased follow-up appointments decrease in social/vocational problems
Moggi, Ouimette, Moos, and Finney (1999)	Quasi experiment; outcomes at 1 year	<i>n</i> = 981 male veterans with dual diagnosis in the United States (multi-site)	15 substance abuse inpatient treatment program within the Veterans Administration (1-month duration)	Improved abstinence with more specific dual diagnosis treatment; increased substance use coping	No group differences in mental health outcomes	Improved general coping
Nuttbrock, Rahay, Rivera, Ng-Mak, and Link (1998)	Quasi experiment; outcomes at 1 year after starting treatment	<i>n</i> = 694 homeless men with dual diagnosis in South Bronx, NY	Low-intensity community residence with mental health orientation vs. high-intensity modified therapeutic community (12-month duration)	No differences in substance use outcome; decreased positive urine drug screens in high-intensity group in a smaller subset analysis	Improvement in psychiatric symptoms in high-intensity group	Improvement in functioning

Table 6 (continued)

Author	Design	Participants	Interventions	Substance use outcomes	Mental health outcomes	Other outcomes
Sacks, Sacks, McKendrick, Banks, and Stommel (2004), Sullivan, McKendrick, Sacks, and Banks (submitted)	Quasi experiment; outcomes at 12 months after prison release	<i>n</i> = 185 incarcerated men with dual diagnosis in Colorado	Integrated outpatient mental health and substance abuse treatment unit (12 months) + modified therapeutic community after release (6 months) vs. modified therapeutic community	Decreased substance use, decreased relapse rate, decreased severity of use, and decreased intoxication; decreased substance-related crime in integrated group with aftercare	No mental health outcomes	Decreased incarceration with integrated treatment; further decrease in other criminal activity with addition of aftercare program
Timko and Sempel (2004)	Quasi experiment; outcomes at discharge, 4 months and 1 year after discharge	<i>n</i> = 230 veterans with dual diagnosis in the United States (multi-site)	Seven high-intensity vs. seven low-intensity residential treatment centers (duration unclear)	Decreased alcohol and drug use in both group (low-intensity group did not maintain decrease in alcohol use at 1 year); increased 12-step group attendance during treatment with high-intensity group; increased 12-step attendance after treatment with low-intensity group	Decreased psychiatric symptoms in both groups at discharge and in high-intensity group at 1 year	Improved family and social functioning at discharge in low-intensity group
Timko, Chen, Sempel, and Barnett (2006)	Quasi experiment; outcomes at discharge and 1 year after discharge	<i>n</i> = 230 veterans with dual diagnosis in the United States (multi-site)	Acute hospitalization vs. community residential facility (variable duration)	Decreased drug and alcohol use at 1 year in community group	Decreased mental health outpatient visits in community group	Decreased total outpatient visits, decreased index days and decreased inpatient/residential days in community group

Note. Burnam et al. (1995) is placed on both the residential and intensive outpatient rehabilitation intervention tables. Sacks et al. (2004) and Sullivan et al. (submitted) are located on the residential and legal intervention tables. AMA = against medical advice.

long-term integrated residential treatment. These studies were distinctive because most focused on homeless dual diagnosis clients who had not responded to less intensive outpatient interventions. These are the only studies that specifically selected for treatment nonresponders.

The findings on substance use outcomes were not entirely consistent, with only seven studies showing

significant improvements for the experimental group. However, the longer term studies did consistently find positive outcomes related to substance use, and Brunette et al. (2001) showed that long-term residential treatment was more enduringly effective than short-term residential treatment on substance use outcomes. The long-term studies also consistently showed positive effects on other outcomes.

Table 7

Trials of intensive outpatient rehabilitation interventions for dual diagnosis patients

Author	Design	Participants	Interventions	Substance use outcomes	Mental health outcomes	Outcomes
Brooks and Penn (2003)	Quasi experiment; outcomes at 3, 6, 9, and 12 months after starting treatment; urinalysis at 2 and 9 months	<i>n</i> = 112 outpatients with dual diagnosis in Arizona	Intensive outpatient program/partial hospitalization (12-step focus) vs. intensive outpatient program/partial hospitalization (cognitive behavior therapy focus) for 6 months	Decreased alcohol and marijuana use; no difference in drug use	No group differences in mental health outcomes	Improved social interactions with 12-step group; improved health, employment outcomes, and decreased hospitalizations with cognitive behavior therapy group
Burnam et al. (1995)	Experiment; outcomes at 3, 6 and 9 months after baseline assessment	<i>n</i> = 209 homeless clients with dual diagnosis in Los Angeles	Integrated outpatient program vs. parallel treatment at usual (3-month duration)	No group differences for substance use outcomes	No group differences in mental health outcomes	No group differences for housing outcomes

Note. Burnam et al. (1995) is placed on both the residential and intensive outpatient rehabilitation intervention tables.

Thus, the outcomes of long-term residential dual diagnosis interventions are quite positive, and long-term residential treatment is the only intervention that has been shown to be helpful to nonresponders. The residential studies are limited, however, by the lack of true experimental methods.

3.6. Intensive outpatient rehabilitation

Intensive outpatient rehabilitation refers to comprehensive programs that provide services for several hours on several days per week. Day rehabilitation, day treatment, and evening programs are examples. We identified only two studies of intensive outpatient rehabilitation (Table 7). Brooks and Penn (2003) compared two forms of integrated treatment with mixed results, and Burnam et al. (1995) provided a brief, time-limited intervention that showed high attrition and no effects. Thus, intensive outpatient rehabilitation is another understudied category of interventions.

3.7. Contingency management

Contingency management refers to the systematic provision of incentives and/or disincentives for specific behaviors for the purpose of modifying those behaviors (Petty, 2000). We identified five studies of contingency management (Table 8), four with experimental designs and one quasi-experimental. Although contingency management studies typically involve a short-term intervention with a narrow focus on reducing substance use, these interventions were provided for 4–6 months, and the studies examined additional outcomes. All but one study found significant improvements on substance use outcomes. The exception (Helmus, Saules, Schoener, & Roll, 2003) was a study in which group attendance rather than abstinence was reinforced, and this study did show increased group attendance. Other functional behaviors also improved in the four studies that assessed them. Thus, contingency management appears

Table 8
Trials of contingency management for dual diagnosis patients

Author	Design	Participants	Interventions	Substance use outcomes	Mental health outcomes	Other outcomes
Bellack et al. (2006)	Experiment; outcomes weekly 6 months after starting treatment	$n = 175$ outpatients with severe and persistent mental illness and cocaine, heroin or marijuana dependence in Baltimore	Group behavioral treatment (motivational interviewing and contingency strategies) vs. supportive group therapy for 6 months	Increased total and continuous abstinence; increased proportion of negative urine drug screens; no difference in days with drug problems or number days drugs used	No mental health outcomes	Improved ability to complete activities of daily living
Drebing et al. (2005)	Experiment; outcomes at 16 weeks after starting treatment	$n = 19$ veterans with dual diagnosis in Boston	Compensated work therapy with monetary reinforcement vs. compensated work therapy for 16 weeks	Increased time to first positive urine drug screen	No mental health outcomes	Shorter time to completion of resume and first interview; increased job search intensity; increased total wages; no differences in job retention rate or time to first job
Helmus et al. (2003)	Quasi experiment: outcomes over 20 weeks	$n = 34$ with dual diagnosis in Detroit	4-week baseline, 12-week intervention (three 4-week stages with monetary reinforcement for group attendance and negative breathalyzer), 4-week baseline	No differences in substance use outcomes (no positive urine drug screens at baseline)	No mental health outcomes	Improved attendance at groups during intervention phase
Ries et al. (2004)	Experiment; outcomes at 27 weeks	$n = 41$ outpatients with severe and persistent mental illness and substance use in Seattle	Contingent vs. non-contingent benefit management for 27 weeks	Decreased alcohol use; decreased drug and alcohol use; no decrease in drug use alone	No group differences in mental health outcomes	Improved money management rating; no difference in attendance
Sigmon, Steingard, Badger, Anthony, and Higgins (2000)	Experiment; outcomes over 25 weeks	$n = 10$ male outpatient with psychotic disorder and marijuana use in Vermont	5-week baseline period, 15-week contingency period (increasing monetary incentive every 5 weeks), 5-week baseline period	Decreased marijuana use and increased total and continuous abstinence during intervention period; no difference in other drug use	No group differences in mental health outcomes	No other outcomes measured

Note. Bellack et al. (2006) is placed on both the group and contingency intervention tables.

to be a highly promising intervention for addressing substance use disorder in this population.

3.8. Legal intervention

Legal interventions include jail diversion, jail release, and other forms of mandated treatment or monitoring, but only jail diversion and release programs have been studied to date). We identified five studies of legal intervention (Table 9), all quasi-experimental studies. Besides mandating treatment, these programs varied considerably on the service offerings. Legal interventions resulted in increases in service utilization and some effects on a wide range of other

outcomes. Thus, the field of legal interventions for forensically involved dual diagnosis clients appears to be just emerging and represents another understudied area.

4. Discussion

4.1. Summary of current research findings

Current research indicates that at least three types of integrated interventions for substance use disorder are probably effective for dual diagnosis clients: group counseling, contingency management, and long-term residential

Table 9
Trials of legal interventions for dual diagnosis patients

Author	Design	Participants	Interventions	Substance use outcomes	Mental health outcomes	Other outcomes
Broner, Lattimore, Cowell, and Schlenger (2004)	Quasi experiment; outcomes at 3 and 12 months after baseline assessment	$n = 1996$ adults with psychotic or affective disorder and substance abuse or dependence and arrest or police contact at eight U.S. sites	Diversion (prebooking and postbooking) vs. nondiversion (different programs at different sites with variable durations)	Increase in drug use at 3 months; no other differences (there is significant variability among sites)	Increase in counseling, number of counseling sessions and psychiatric medication at 3 months; increase in psychiatric hospitalization at 3 and 12 months; decrease in mental health symptoms (there is significant variability among sites)	Increase in emergency department visits at 3 and 12 months
Chandler and Spicer (2006)	Experiment; outcomes over 18 months	$n = 182$ recently released inmates with serious mental illness and substance use disorder in San Francisco	Integrated mental health and substance abuse treatment vs. treatment as usual (treatment for up to 2.5 years)	Unable to assess substance use outcomes	Increased mental health outpatient service use and medication use	No differences in arrests and convictions; decreased hospital days; decreased crisis management use
Shafer, Arthur, and Franczak (2004)	Quasi experiment; outcomes at 3 and 12 months after baseline assessment	$n = 248$ adults with psychotic or major affective disorder and substance abuse or dependence and arrest or police contact in Arizona	Postbooking diversion vs. nondiversion (variable durations)	No group differences in substance use outcomes	Increased psychiatric visits in nondiversion group; decreased depression and anxiety in diversion group	Decreased emergency department visits and increased provider visits in nondiversion group; no difference in arrests or criminal behavior
Sacks et al. (2004), Sullivan et al. (submitted)	Quasi experiment; outcomes at 12 months after prison release	$n = 185$ incarcerated men with dual diagnosis in Colorado	Integrated outpatient mental health and substance abuse treatment unit (12 months) + modified therapeutic community after release (6 months) vs. modified therapeutic community	Decreased substance use, decreased relapse rate, decreased severity of use, and decreased intoxication; decreased substance-related crime in integrated group with aftercare	No mental health outcomes	Decreased incarceration with integrated treatment; further decrease in other criminal activity with addition of aftercare program
Steadman and Naples (2005)	Quasi experiment; outcomes at 3 and 12 months after baseline assessment	$n = 1,612$ adults with dual diagnosis and arrest or police contact at six U.S. sites.	Three prebooking vs. three postbooking diversion programs vs. nondiversion (variable durations)	Increased rate of residential treatment for substance use in the nondiversion group	Increased counseling in diversion group	Increased days in community, increased rates of hospitalization, increased medication use and increased emergency department visits in diversion group

Note. Chandler and Spicer (2006) is placed on both the case management and legal intervention tables. Sacks et al. (2004) and Sullivan et al. (submitted) are placed on both the residential and legal intervention tables. Shafer et al. (2004) and Steadman and Naples (2005) are a part of a larger SAMHSA study (Broner et al., 2004).

treatment. Group counseling effects are consistent across several types of groups, suggesting a nonspecific effect based on common elements such as education, skills building, and peer support. Standardization, fidelity, replications, and comparative studies would be helpful. Contingency management interventions tend to be narrowly focused on substance use, but results appear to generalize to other outcomes. Improvements related to contingency management are probably unrelated to motivation and other cognitive factors (Ledgerwood & Petry, 2006), which may be an advantage for dual diagnosis clients. Contingency management studies in the dual diagnosis population are just beginning, but further studies are clearly warranted. Long-term residential treatment appears to be an effective intervention for dual diagnosis clients who have failed other outpatient interventions. Residential treatment needs standardization and more experimental study. The effectiveness of these interventions on substance use and on other outcomes is fairly consistent, suggesting that the interventions have broader goals or that the effects generalize.

Interventions other than group counseling, contingency management, and long-term residential treatment do not show effects on substance use outcomes but often lead to improvements in other areas of adjustment that are consistent with their effects in the general population of individuals with severe mental disorders. For example, case management often results in increased community tenure and legal interventions usually increase participation in treatment.

4.2. Limits of the review

This review is limited by the lack of standardization, absence of fidelity assessment, diversity of participants, varying lengths of intervention, diversity of outcomes, and inconsistency of measures in current research. The resulting heterogeneity limits comparability of studies, the potential for meta-analysis, and the strength of inferential validity. Thus, there is a great need to standardize interventions, lengths of treatment, outcome measures, fidelity measures, staffing patterns, training approaches, adherence measures, and other critical parameters.

The problem of heterogeneity may concern more than just the newness of the field. The co-occurrence of substance use disorder with severe mental illness is at least in part not an issue of medical diagnosis but a sociological phenomenon reflecting the society's extrusion of people with severe mental illness from safe neighborhoods and protected living arrangements that limit access to substances of abuse. For example, housing programs and hospitalization are increasingly unavailable to people with the most severe disorders. As a result, they have to reside in settings rife with drugs and alcohol. The goal of clinical specificity implies achieving clear diagnostic distinctions. This solution may be inherently problematic if the present field remains divorced from a serious study of where and how clients live.

4.3. Future research directions

4.3.1. Methodological standards

Research on co-occurring disorders needs greater methodological consistency to insure comparability and progress. A recent National Institutes of Health conference (National Institute on Alcohol Abuse and Alcoholism, National Institute on Drug Abuse, & National Institute on Mental Health, 2006) highlighted the need for separate approaches for patients with severe mental disorders such as schizophrenia versus those with nonsevere disorders such as anxiety and depression, and also for separate standards related to efficacy and effectiveness studies, which by definition have different goals, clients, methods, and outcomes (Wells, 1999). The same may apply for substance use disorder severity subgroups. McHugo et al. (2006) have also argued for greater ecological validity, in terms of studies that reflect the real-world context of decision making by clients and practitioners. This returns us to the sociological point from before.

4.3.2. Longitudinal research

Severe mental and substance use disorders are clearly long-term problems, meaning that outcomes need to be studied over years and decades rather than months to understand the course of recovery (Drake et al., 2006; McLellan, Lewis, O'Brien, & Kleber, 2000; Vaillant, 1995). Because few studies have followed these clients for longer than 1 year, the need for long-term research is paramount.

4.3.3. Challenging ideology

Ideology limits research in insidious as well as blatant ways. Consider several examples. First, people with severe mental illness are often viewed as cognitively incompetent, which reduces attention in psychiatry to the individual client's views, values, and preferences. When research on the client's perspective is conducted (e.g., Drake & Wallach, 1988), it often suggests client values at variance with such psychiatric axioms as the assumption that mental hospitals are for treatment more than for protected living. Concerns regarding cognitive competence were strongly contradicted by the findings of the Clinical Antipsychotic Trials of Intervention Effectiveness study, in which nearly all patients with schizophrenia were assessed as competent to understand the study and to give informed consent to participate (Stroup et al., 2005). Nevertheless, such concerns continue to inhibit approaches to shared decision making (Adams & Drake, 2006; Deegan & Drake, 2006).

Second, American culture tends to value personal autonomy and independence at the expense of community, which may interfere with studies of housing arrangements other than supported housing, even though some clients clearly express a preference for living with others who are pursuing recovery and clearly do better in such settings (Drake, Wallach, & McGovern, 2005). Ironically, the opposite ideology prevails in the substance abuse field, where living in recovery communities is highly valued.

Third, the current psychiatric emphasis on neurobiology is apparent in clinical approaches, journal articles, and research institutes. Nevertheless, substance abuse and dependence, particularly among dual diagnosis clients, are strongly influenced by socioenvironmental factors (Drake, Wallach, Alverson, & Mueser, 2002). It has been clear for years that many of these individuals are able to be abstinent in some settings but not in others (Bartels & Drake, 1996). Thus, research needs to attend to social and environmental context—the sociological point again.

Finally, the separate professional practice role ideologies of mental health or substance abuse specialists also are in play here, interfering with the role definition required if integrated treatment is to be provided. There is currently greater emphasis on redefining programs as dual diagnosis and issuing credentials for dual diagnosis treatment than on defining and assessing clinical competence.

4.3.4. Interventions for different stages of recovery

The few existing long-term studies show that most people with severe mental disorders recover from substance use disorders gradually, over months and years, and in stages (Drake et al., 2006; Drake, Xie, McHugo, & Shumway, 2004; McHugo, Drake, Burton, & Ackerson, 1995; Xie, McHugo, Helmstetter, & Drake, 2005; Xie, Drake, & McHugo, 2006). Models identifying stages of treatment and stages of change are clinically relevant because different interventions are effective at different stages of the recovery process (Carey, 1996; Osher & Kofod, 1989; McGovern, Wrisley, & Drake 2005; Ziedonis & Trudeau, 1997). According to Osher and Kofod (1989), clients first must be engaged in treatment through techniques such as outreach and practical assistance; they next may need assistance to develop motivation to overcome substance use disorder and mental illness, typically by individual and group counseling; once motivated, they can be helped to develop skills and support for managing their illnesses via a variety of skill-building interventions and support groups; and, finally, when they are doing well at managing illnesses, they may need skills and support to maintain progress, such as relapse prevention techniques.

Thus, heterogeneity within intervention studies might be reduced by studying interventions, process, and outcomes in relation to specific stages of treatment. In the general field of substance abuse treatment, considerable work has been done in these areas to elucidate the process of treatment and recovery (Simpson, 2001; Simpson, Joe, & Rowan-Szal, 1997). The dual diagnosis field needs similar theoretical and empirical studies to define processes.

4.3.5. Interventions for subgroups

In all intervention studies, dual diagnosis clients respond variably to a particular intervention or program. If diagnosis is not a strong predictor of treatment response, perhaps we should search for other ways of identifying subgroups for future intervention studies (Mueser et al., 1999). Our group

has recently used latent class trajectory analysis to identify four subgroups: one group of rapid and stable responders, a second group of rapid but unstable responders, a third group of slow but steady responders, and a fourth group of complete nonresponders (Xie et al., 2006). These groups are characterized in part by severity of substance use disorder.

4.3.6. Interventions for specific settings

Clients who appear in specific types of settings often have special needs and require special interventions. The sociological point made earlier would suggest this is an important consideration. For example, the “critical time intervention” for homeless mentally ill clients (Susser et al., 1997) exemplifies an engagement stage intervention for clients who are identified in homeless shelters. As another example, dual diagnosis clients that are identified in forensic settings have special needs and respond poorly to services that do not account for their special needs (Chandler & Spicer, 2006; Drake, Morrissey, & Mueser, 2006).

4.3.7. Sequenced interventions and algorithms

Although some clients with co-occurring disorders respond rapidly to integrated dual disorders counseling, others respond slowly or not at all. The field needs to develop guidelines for sequenced or stepped-care approaches, with less intensive and expensive interventions offered first, and more intensive and expensive interventions contingent on earlier response (Carey, 1996; McHugo et al., 2006; Kay-Lambkin, Baker, & Lewin, 2004; Ziedonis et al., 2005). Developing such algorithmic sequences of intervention and identifying pathways to recovery will require new forms of decision analysis (Murphy, 2005).

4.3.8. Implementation guidelines

As we develop guidelines and algorithms for dual diagnosis interventions, we also need evidence-based approaches to changing systems of care and implementing integrated treatments (Drake et al., 2001). Large-scale implementation studies such as the National Evidence-based Practices Project (Mueser, Torrey, Lynde, Singer, & Drake, 2003) will continue to inform guidelines, although some findings regarding starting with early adopters, the roles of different stakeholder groups, and the length and timing of clinical training are relatively clear.

4.3.9. Electronic decision support systems

Evidence-based medicine requires that both clients and practitioners have access to up-to-date information on treatments, effectiveness, side effects, and individualized risks (Drake, Rosenberg, Teague, Bartels, & Torrey 2003). The World Wide Web provides efficient, available, and continuously modifiable ways to convey current information, but research is just beginning on how to incorporate such information into decision support within electronic medical records, decision aids, patient portals, and procedures for shared decision making (Adams & Drake, 2006).

Research is also needed on the communicability of different ways of presenting such information.

5. Conclusions

Driven by clinical urgency, interventions for people with dual disorders have been developed rapidly over the past 20 years. Despite serious methodological limitations, current research studies show consistent positive outcomes related to several types of interventions.

That the clinical urgency for dual diagnosis interventions stems at least partly from societal causes needs to be understood or we will fail to consider the enactment restraints impinging on effective interventions that are identified. As effective interventions continue to develop, research needs to move to a new phase that attends to standardization, ecological validity, algorithmic care, and high-quality implementation. It also needs to confront ideological barriers to change.

Notwithstanding the clinical realities, dual diagnosis of severe mental illness and substance use disorder is a designation that social circumstances helped to create. If it takes on a life of its own, we risk missing the environmental, cultural, and professional conditions that may exacerbate the problem.

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