Effective Health Care Program

Comparative Effectiveness Review
Number 121

Interventions for Adult Offenders With Serious Mental Illness

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Comparative Effectiveness Review

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Interventions for Adult Offenders With Serious Mental Illness

Prepared for:
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This report is based on research conducted by the ECRI Institute Evidence-based Practice Center (EPC) under contract to the Agency for Healthcare Research and Quality (AHRQ), Rockville, MD (Contract No. 290-2007-10063-I). The findings and conclusions in this document are those of the authors, who are responsible for its contents; the findings and conclusions do not necessarily represent the views of AHRQ. Therefore, no statement in this report should be construed as an official position of AHRQ or of the U.S. Department of Health and Human Services.

The information in this report is intended to help health care decisionmakers—patients and clinicians, health system leaders, and policymakers, among others—make well informed decisions and thereby improve the quality of health care services. This report is not intended to be a substitute for the application of clinical judgment. Anyone who makes decisions concerning the provision of clinical care should consider this report in the same way as any medical reference and in conjunction with all other pertinent information, i.e., in the context of available resources and circumstances presented by individual patients.

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None of the investigators have any affiliations or financial involvement that conflicts with the material presented in this report.

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Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Evidence-based Practice Centers (EPCs), sponsors the development of systematic reviews to assist public- and private-sector organizations in their efforts to improve the quality of health care in the United States. These reviews provide comprehensive, science-based information on common, costly medical conditions, and new health care technologies and strategies.

Systematic reviews are the building blocks underlying evidence-based practice; they focus attention on the strength and limits of evidence from research studies about the effectiveness and safety of a clinical intervention. In the context of developing recommendations for practice, systematic reviews can help clarify whether assertions about the value of the intervention are based on strong evidence from clinical studies. For more information about AHRQ EPC systematic reviews, see www.effectivehealthcare.ahrq.gov/reference/purpose.cfm.

AHRQ expects that these systematic reviews will be helpful to health plans, providers, purchasers, government programs, and the health care system as a whole. Transparency and stakeholder input are essential to the Effective Health Care Program. Please visit the Web site (www.effectivehealthcare.ahrq.gov) to see draft research questions and reports or to join an email list to learn about new program products and opportunities for input.

We welcome comments on this systematic review. They may be sent by mail to the Task Order Officer named below at: Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850, or by email to epc@ahrq.hhs.gov.

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The authors gratefully acknowledge the following individuals for their contributions to this project: Pam Lattimore, Ph.D., of RTI International–University of North Carolina at Chapel Hill for providing background on how this topic was identified as a research area requiring a comparative effectiveness review; our AHRQ Task Order Officer, Kim Wittenberg, M.A.; and our EPC Associate Editor, Kathleen Lohr, Ph.D. We extend our appreciation to our Key Informants for providing guidance on Key Question development and members of the Technical Expert Panel (listed below), who assisted in the protocol development process. We are grateful for their valuable contribution to this report. The EPC would also like to thank Michelle Datko, M.S.L.I.S., and Helen Dunn for providing literature retrieval and documentation management support; Lydia Dharia for her assistance with the final preparation of the report; and Gina Giradi, M.S., for her oversight and coordination of all project-related activities.

Key Informants

In designing the study questions, the EPC consulted several Key Informants who represent the end-users of research. The EPC sought the Key Informant input on the priority areas for research and synthesis. Key Informants are not involved in the analysis of the evidence or the writing of the report. Therefore, in the end, study questions, design, methodological approaches, and/or conclusions do not necessarily represent the views of individual Key Informants.

Key Informants must disclose any financial conflicts of interest greater than $10,000 and any other relevant business or professional conflicts of interest. Because of their role as end-users, individuals with potential conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any conflicts of interest.

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Technical Expert Panel

In designing the study questions and methodology at the outset of this report, the EPC consulted several technical and content experts. Broad expertise and perspectives were sought. Divergent and conflicted opinions are common and perceived as healthy scientific discourse that results in a thoughtful, relevant systematic review. Therefore, in the end, study questions, design, methodologic approaches, and/or conclusions do not necessarily represent the views of individual technical and content experts.

Technical Experts must disclose any financial conflicts of interest greater than $10,000 and any other relevant business or professional conflicts of interest. Because of their unique clinical or content expertise, individuals with potential conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any potential conflicts of interest identified.

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Peer Reviewers

Prior to publication of the final evidence report, EPCs sought input from independent Peer Reviewers without financial conflicts of interest. However, the conclusions and synthesis of the scientific literature presented in this report does not necessarily represent the views of individual reviewers.

Peer Reviewers must disclose any financial conflicts of interest greater than $10,000 and any other relevant business or professional conflicts of interest. Because of their unique clinical or content expertise, individuals with potential nonfinancial conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

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Interventions for Adult Offenders With Serious Mental Illness

Structured Abstract

Objective. To comprehensively review the evidence for treatments for offenders with serious mental illness (i.e., schizophrenia, schizoaffective disorder, bipolar disorder, or major depression) in jail, prison, or forensic hospital, or transitioning from any of these settings to the community (e.g., home, halfway house).

Data sources. We searched 12 internal and external databases including MEDLINE®, PreMEDLINE®, and Embase® for the time period January 1, 1990, through August 20, 2012.

Review methods. We refined the topic, Key Questions, and protocol with experts in the field and determined the study inclusion criteria and risk-of-bias items a priori. Abstract and full-text review and the risk-of-bias assessment were done in duplicate. A second reviewer verified data extraction. Extracted study information included study design, patient enrollment and baseline characteristics, risk-of-bias items, and outcome data. Because of the nature of the available evidence, we chose to perform a qualitative synthesis rather than meta-analysis. We graded the strength of evidence for each treatment comparison and outcome based on the size, risk of bias, and results of the evidence base. We discussed applicability by focusing on the populations, interventions, and settings of the studies.

Results. We included 19 publications describing 16 comparative trials. The studies were conducted in the United States, Canada, United Kingdom, New Zealand, and Australia. The risk of bias for all reported outcomes was medium for 15 trials and low for 1 trial.

For incarceration-based interventions, evidence of low strength favored antipsychotics other than clozapine over treatment with clozapine for improving psychiatric symptoms. For all other incarceration-based interventions assessed—other pharmacologic therapies, cognitive therapy, and modified therapeutic community—evidence was insufficient to draw any conclusions.

For individuals transitioning from the incarceration setting to the community, evidence of low strength supported discharge planning with benefit-application assistance and integrated dual disorder treatment compared with standard of care for increasing mental health service use and/or reducing psychiatric hospitalizations. Evidence was insufficient for comparing interventions administered by a forensic specialist with interventions administered by mental health professionals and for comparing interpersonal therapy with psychoeducation for offenders transitioning from incarceration to the community.

More comparative trials are needed to increase our confidence in the findings for which the strength of evidence is low and to address the questions for which the evidence was insufficient.

Conclusions. We identified some promising treatments for individuals with serious mental illness during incarceration or during transition from incarceration to community settings. Treatment with antipsychotics other than clozapine appears to improve psychiatric symptoms more than clozapine in an incarceration setting. Two interventions, discharge planning with Medicaid-application assistance and integrated dual disorder treatment programs, appear to be effective interventions for seriously mentally ill offenders transitioning back to the community. The applicability of our findings may be limited to the populations and settings in the included studies.

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Executive Summary

Background

Numerous reports indicate that individuals with serious mental illness (SMI) are overrepresented in the criminal justice system. This review focuses on offenders with schizophrenia, schizoaffective disorder, bipolar disorder, or major depression. Prevalence estimates of SMI among incarcerated adults range from 15 percent to 25 percent.[1-3] These estimates are three to five times as high as in the general population, in which the prevalence of SMI ranges from 5 percent to 8 percent.[4] In its report on prisons and offenders with mental illness, the organization Human Rights Watch indicated that up to 19 percent of adults in State prisons have significant psychiatric or functional disabilities.[5] The National Commission on Correctional Health Care reported the following prevalence estimates of mental illness within State prisons:[5]

- Major depression, 13.1 percent to 18.6 percent
- Schizophrenia or another psychotic disorder, 2.3 percent to 3.9 percent
- Bipolar disorder, 2.1 percent to 4.3 percent

Research conducted in the United States found that between 28 percent and 52 percent of those with SMI have been arrested at least once.[6]

Jails and prisons have a constitutional obligation to provide treatment to inmates with serious medical and psychiatric conditions.[7] The case of *Ruiz* v. *Estelle* set forth minimum requirements for providing mental health services in the U.S. correctional system.[8] To receive accreditation from the American Correctional Association and the National Commission on Correctional Health Care, an adult correctional facility must provide all inmates with standard mental health screening and crisis and suicide intervention. More specialized mental health treatment generally varies depending on type of facility (e.g., jail vs. prison) and level of security (e.g., minimum vs. maximum). However, experts in the field recommend that all correctional facilities offer standard outpatient or inpatient mental health treatment, such as individual or group psychotherapy, psychotropic medication, and discharge planning.[8,9]

A 1997 study by Steadman and Veysey, however, indicated that few jails provide a range of services, with most providing only intake screening, mental health evaluations, and suicide prevention services (83%, 60%, and 73%, respectively, of 1,013 jails surveyed).[10] Because prisons hold inmates for long periods of time (more than 1 year), they generally provide a greater range of services than jails do. However, the type and extent of treatment provided varies from prison to prison depending on factors that include regional location and funding. A survey of mental health services provided in U.S. prisons indicated that 77 percent provide access to inpatient care and 36 percent have specialized housing.[11] According to Baillargeon and colleagues, the primary barrier to improving mental health treatment in adult correctional facilities is inadequate State funding.[8]

Overall, offenders with serious mental illness have slightly higher rates of recidivism than do offenders without mental illness. One study reported that 64 percent of offenders who were mentally ill were rearrested within 18 months of release; in offenders without mental illness, the rate was 60 percent.[12] Another study that observed offenders who were mentally ill for an average of 39 months after release into the community found that "renewed involvement in the criminal justice system was the norm," with 41 percent being convicted of felonies, 61 percent

being convicted of any crime, and 70 percent being convicted of new offenses or supervision violations.[13]

The literature suggests that recidivism among offenders with mental illness may be associated with poor coordination of services and treatment on release into the community.[13] Most offenders with SMI are eligible for Medicaid or Medicare through Supplemental Security Income or Social Security Disability Insurance (during periods when they are not institutionalized).[14] Some advocacy groups are concerned that terminating benefits during incarceration and waiting up to 90 days for benefits to be reinstated after release may contribute to treatment nonadherence and recidivism.[14]

High rates of incarceration and recidivism along with insufficient treatment options have led to considerable interest in improving the outcomes of offenders with SMI. A systematic review of the evidence on the comparative effectiveness of interventions intended to improve mental health and other outcomes of offenders with SMI could help individuals with SMI, family members, treatment providers, criminal justice administrators and staff, and possibly State and Federal policymakers make decisions about available treatment options.

This review is about interventions provided to offenders with SMI who are detained in a jail, prison, or forensic hospital or who are transitioning from one of these settings back to the community. This is an especially vulnerable population because "jails and prisons have cultures that often lead to maladaptive behaviors in offenders with SMI that subsequently undermine treatment" both in and out of incarceration settings.[15]

Scope of This Review and Key Questions

This report focuses on the comparative effectiveness of interventions provided to offenders with SMI (schizophrenia, schizoaffective disorder, bipolar disorder, or major depression), with or without a co-occurring substance use disorder, during incarceration in jail, prison, or forensic hospital or during transition from incarceration in these settings to the community.

Jails house inmates who are awaiting adjudication of their cases or who are serving short-term sentences (less than 1 year) for minor offenses, prisons house inmates convicted of more serious crimes for longer durations, and forensic hospitals house offenders for varying lengths of time. Forensic hospitals are often specialized units within State-run psychiatric hospitals. Transitional interventions are usually initiated within 3 months of an inmate's release date and continue once he or she is back in the community (e.g., home/family, halfway house).

Programs designed to prevent or minimize incarceration, such as mobile crisis intervention teams or other interventions delivered at the point of contact with the police, are beyond the scope of this report. Also beyond the scope of this report are court-ordered, involuntary treatments intended to restore competency to stand trial and other postbooking strategies, such as mental health courts, designed to divert offenders with SMI to a treatment environment in lieu of incarceration.

An important goal of this comparative effectiveness review (CER) is to describe incarceration-based and incarceration-to-community transitional interventions in a manner that will allow treatment providers to replicate effective treatments and to identify gaps in the scientific literature for future research in the field.

This report has a broad target audience. The Evidence-based Practice Center reports and translation products produced for the Agency for Healthcare Research and Quality (AHRQ) are intended for use by patients, providers, administrators, researchers, and sometimes policymakers.

This report addresses the following Key Questions (KQs):

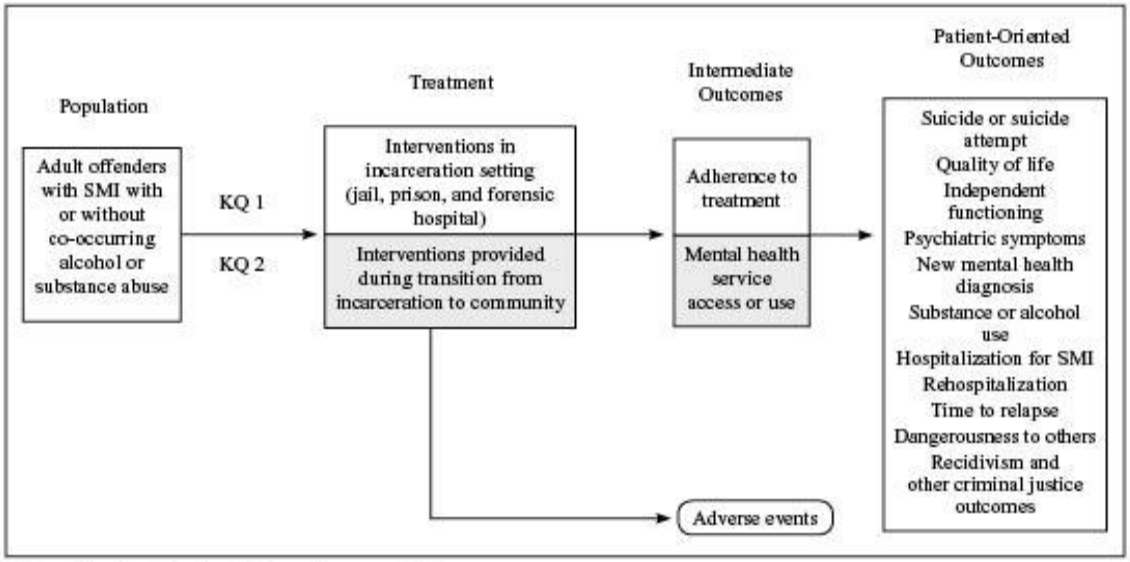
Key Question 1. What is the comparative effectiveness of interventions applied within a jail, prison, or forensic hospital setting for adults with SMI (schizophrenia, schizoaffective disorder, bipolar disorder, or major depression) with or without a co-occurring alcohol/substance abuse diagnosis? Is there a difference in the comparative effectiveness of interventions based on the setting (jail, prison, forensic hospital) in which the interventions are provided?

Key Question 2. What is the comparative effectiveness of incarceration-to-community transitional interventions for adults with SMI (schizophrenia, schizoaffective disorder, bipolar disorder, or major depression) with or without a co-occurring alcohol/substance abuse diagnosis? Is there a difference in the comparative effectiveness of interventions based on the setting (jail to community, prison to community, forensic hospital to community) in which the interventions are provided?

Analytic Framework

Figure A depicts the population, treatment, and intermediate- and patient-oriented outcomes that are assessed in this report. On the left side of the figure we list the populations of interest: adults with SMI with or without a co-occurring alcohol or substance abuse diagnosis who are involved in one of the criminal justice system settings of interest. KQ1 compares interventions within an incarceration setting (i.e., jail, prison, or forensic hospital) or the same intervention applied across incarceration settings. KQ2 compares interventions provided during the transition from incarceration (i.e., jail, prison, forensic hospital) to the community (e.g., home/family, halfway house). For KQ2, the comparisons are different interventions applied within an incarceration-to-community transitional setting, the same intervention applied across settings, or an incarceration intervention compared with an incarceration-to-community transitional intervention. We gathered information on any treatment-related adverse events. “Intermediate outcomes,” which may lead to improved patient-oriented outcomes, include adherence to treatment recommendations and mental health service access or use.

Figure A. Analytic framework for interventions for adult offenders with serious mental illness



Note: KQ = Key Question; SMI = serious mental illness

To the far right of the diagram we list the patient-oriented outcomes assessed: suicide and suicide attempts, quality of life, independent functioning, psychiatric symptoms, new mental health diagnosis, substance or alcohol use, hospitalization for SMI, time to rehospitalization, time to relapse, dangerousness to others, and recidivism and other criminal justice outcomes.

Population

This report focuses on a population of adults (18 years of age or older) with a diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, or major depression with or without a co-occurring substance abuse disorder who had been found guilty of a crime or found not guilty by reason of insanity or its equivalent and who had been incarcerated for a minimum of 24 hours in one of the settings of interest. Diagnosis must have been made based on clinical assessment or a validated instrument administered by a trained professional. For this report, self-report alone does not qualify an individual as having an SMI.

Interventions

A variety of interventions that appeared in the literature were considered for inclusion in this report, provided they were directed toward the population of interest, intended to improve mental health outcomes, and delivered within the treatment settings of interest to this report. Ultimately, this review assessed the following incarceration-based interventions:

- Pharmacologic therapy with clozapine, risperidone, or chlorpromazine
- Psychological therapies, including cognitive skills training in the form of Reasoning and Rehabilitation and group cognitive therapy
- Comprehensive interventions for individuals with a dual diagnosis, including modified therapeutic community (MTC) with or without an aftercare component and MTC tailored to the needs of female offenders

For offenders transitioning from incarceration to community, this review assessed the following interventions:

- High-fidelity integrated dual disorder treatment (IDDT)
- The Mentally Ill Offender Community Transition Program
- Discharge planning interventions that included assistance applying for mental health benefits
- Interventions coordinated and/or administered by specially trained forensic providers
- Interpersonal therapy (IPT)

Comparators

For KQ1, the comparators were usual care or any one of the interventions identified in the literature applied within a jail, prison, or forensic hospital setting or the same intervention applied across settings. For KQ2, the comparators were usual care or any interventions identified in the literature applied in an incarceration-to-community transitional setting, the same intervention applied across settings, or an incarceration intervention compared with an incarceration-to-community transitional intervention.

Outcomes

For both incarceration-based and incarceration-to-community transitioning interventions, the outcomes of interest to this report are suicide and suicide attempts, quality of life, independent functioning, psychiatric symptoms, new mental health diagnosis, substance or alcohol use, hospitalization for SMI, time to rehospitalization, time to relapse, dangerousness to others, and recidivism and other criminal justice outcomes.

Time Point

We required a minimum followup of 3 months for studies included in this report.

Settings

For KQ1, the intervention settings were jail, prison, and forensic hospital. For KQ2, the settings were jail to community, prison to community, and forensic hospital to community. Release to the community includes direct release to home or family and release to a transitional setting (e.g., halfway house, work release program).[16]

Methods

Review Team

A three-person team conducted the systematic review. Although each member of the team has a background in behavioral health and has worked with individuals with SMI and co-occurring substance use disorders, none of the members is currently working with or within the criminal justice system or any other organization that may have an interest in this report. Each member of the team has experience performing systematic reviews of behavioral health and health care evidence.

Mental health clinicians, representatives from the criminal justice system, and policymakers from both the behavioral health and criminal justice fields were involved as Key Informants

and/or members of the Technical Expert Panel (TEP). These groups provided input on the KQs, reviewed the protocol, answered specific questions during the review process, and reviewed the document.

Topic Development and Refinement

In November 2010, a patient advocacy group and a national organization for psychiatry nominated this topic. Topic triage and refinement occurred between February 2011 and April 2011. We enlisted five Key Informants to help refine the KQs and determine the scope of the report. AHRQ posted the KQs for public comment for a 4-week period ending February 15, 2012.

Following the public posting period, the authors further refined the protocol based on feedback from the TEP. The TEP comprised an associate director of a forensic fellowship program; a former mental health director for a State department of corrections; three Ph.D.-level professors teaching in the areas of social policy and correctional mental health; a State health services director; two methodologists; and a professor of psychiatry, of medicine, and of law. The protocol was put in final form in April 2012.

Experts in the systematic review process, and criminal justice and psychiatry fields, as well as individuals representing stakeholder and user communities, including manufacturers of the medications assessed in this report, were invited to provide peer review of this CER. AHRQ and an associate editor also provided comments. AHRQ posted the draft report on its Web site for 4 weeks to elicit public and manufacturer comments. We addressed all reviewer comments, revising the text as appropriate, and documented everything in a "disposition of comments report" that will be made available 3 months after the Agency posts the final CER on the AHRQ Web site.

Search Strategy

We searched 12 external and internal resources, including MEDLINE®, PreMEDLINE®, Embase, the Cochrane Library (including the Central Register of Controlled Trials, the Cochrane Database of Methodology Reviews, and the Cochrane Database of Systematic Reviews), the Database of Abstracts of Reviews of Effects, the Health Technology Assessment Database, the United Kingdom National Health Service Economic Evaluation Database, PsycINFO®, National Criminal Justice Reference Service Abstracts Service, and ProQuest Criminal Justice for controlled studies on interventions for adults with SMI who are involved in the criminal justice system. We also examined the bibliographies of included studies, scanned the content of new issues of selected journals, and reviewed gray literature for additional relevant articles.

Our searches covered the time period January 1, 1990, through April 1, 2012. We updated the literature searches through August 20, 2012, during the public posting period. In total, we identified 4,587 titles and reviewed 3,776 abstracts for possible inclusion in the report. Library staff used search terms that represented populations, settings, and interventions of interest and included concepts such as SMI, major depressive disorder, schizophrenia, dual diagnoses, jails, prisons, community reentry, assertive community treatment (ACT), case management, cognitive behavior therapy (CBT), IDDT, and MTC. See Appendix A, Literature Search Methods, in the full report for a complete list of terms and resources searched.

Study Selection

The main criteria for study selection were randomized trials or nonrandomized comparative trials that employed a matching procedure to ensure baseline comparability of treatment groups. The trials must have assessed either two or more of the interventions of interest or an intervention of interest versus standard of care; have enrolled a minimum of 75 percent of subjects with SMI (schizophrenia, schizoaffective disorder, major depression, or bipolar disorder); been published in English and conducted in the United States, Canada, United Kingdom, New Zealand or Australia; reported at least one mental health outcome; and included a minimum followup period of 3 months.

Data Extraction and Management

Two members of the review team reviewed all abstracts of identified articles. We obtained for full review any articles that met the inclusion criteria for at least one KQ. We also retrieved full articles in cases in which there was a disagreement between the two abstract reviewers. Two people screened each full article. We used DistillerSR® Web-based systematic review software for abstract screening and full-article screening. Each team member's data extraction was reviewed by one other team member.

Individual Study Risk-of-Bias Assessment

We assessed the risk of bias (i.e., internal validity) separately for each outcome for each study. Our risk-of-bias assessment included the following: randomization, blinding of outcome assessors, concurrently administered treatments, objective or subjective outcome measurement, and funding source. Two reviewers independently performed the risk-of-bias assessment. Disagreements were resolved by consensus and/or by a third reviewer.

We categorized each study as "low," "medium," or "high" risk of bias. To be considered low risk of bias, the study must have been a randomized trial that either assessed an objective outcome or had a blinded outcome assessor, maintained treatment fidelity (which indicates how well an intervention reproduces a model or protocol), had a similar followup period for both treatment arms, and had a low rate of attrition in all treatment arms. High risk-of-bias trials used patient or clinician preference to determine group membership and had an unblinded outcome assessor assessing a subjective outcome. All other trials were graded as medium risk of bias. For this report, 15 of the 16 included trials received a medium risk-of-bias rating and 1 received a low risk-of-bias grade for all reported outcomes.

Data Synthesis

From each included study, we extracted all important information about study design, patients, and reported data. Because the populations, interventions, and outcome measures were heterogeneous, they did not lend themselves to a pooled analysis, so we chose to explore the data using a narrative, qualitative analysis. One team member qualitatively synthesized the data, and a second team member reviewed the synthesis. Disagreements were resolved through consensus or by a third team member.

If data from a study permitted, we calculated individual study effect-size estimates. The choice of effect-size metric depended on whether reported outcomes were continuous or dichotomous. Pre-post treatment differences and posttreatment differences in outcomes measured using continuous data (e.g., scores on psychological tests) were calculated as the standardized

mean difference. We computed baseline adjusted values using a pre-post correlation of 0.5. For dichotomous outcomes, we used the odds ratio as the measure of effect size; values greater than 1 favored the experimental group, and values less than 1 favored the control group. For all effect-size metrics, we computed 95-percent confidence intervals (CIs) using standard methods.

We report the results of our analysis along with additional analysis reported by the authors of the studies in the Results section under each KQ. We used calculated effect-size estimates to help determine the overall strength of the evidence. See the next section for further details about our strength-of-evidence assessment.

For each outcome in the review, an important consideration is the smallest difference between groups that can still be considered clinically significant (minimum important difference). This definition aids interpretation in two main ways: (1) to determine whether a statistically significant difference is clearly clinically significant and (2) to determine whether a statistically nonsignificant difference is small enough to exclude the possibility of a clinically significant difference.

For the quality-of-life parameter, we used established values for a clinically significant difference (e.g., Short Form-36, mental health subscale—5 points).[17] For all other outcomes assessed on a scale in this report, we defined the minimum important difference as an odds ratio of 1.39, which corresponds to a Hedges' g of 0.2, using the formula recommended by Sánchez-Meca and colleagues .[18] For the suicide outcome, we considered any statistically significant difference to meet the standard of a clinically significant difference.

Grading the Evidence for Each Key Question

We assessed the strength of evidence by following the guidelines from the AHRQ "Methods Guide for Effectiveness and Comparative Effectiveness Reviews."[19] We judged the evidence for each major mental health outcome according to four core domains: risk of bias, consistency, directness, and precision. Our methods for judging risk of bias of individual studies are described above; we took the median risk of bias of the relevant studies to assign an overall risk of bias.

Consistency is the similarity in effect sizes or direction of an effect of different studies in an evidence base. An inconsistent evidence base is one in which the studies report conflicting results. Consistency cannot be assessed when a body of evidence has only a single study (consistency is unknown). Directness refers to whether there is a direct link between the intervention and the ultimate health outcome. Precision is a measure of the degree of certainty around a single outcome's effect size. In this report, we define a "precise" result as one in which the data were informative (the CI around the effect size clearly indicated there was a difference between groups) and an "imprecise" result as one in which the data were not informative (the CI was too wide to determine that the groups differed).

The various domains were considered together, along with the size of the evidence base, to grade the evidence for the outcome as "high," "medium," or "low." To receive a grade of low or better, at least two studies must have reported consistent results for the same outcome.

Applicability Assessment

Applicability assessment refers to how generalizable findings are to other populations and settings. To assess applicability, we abstracted data from each included study on factors that could affect its applicability. Using the PICOTS (populations, interventions, comparators, outcomes, timing, and setting) approach as a guide, we primarily focused on the following three most relevant categories:

- Population—demographic characteristics, comorbidity of substance abuse diagnosis, criminal history
- Intervention and comparators—pharmacologic intervention, psychological intervention, dual diagnoses, discharge planning with benefit assistance, and generalist- versus specialist-provided treatments; the comparator was usually standard of care
- Setting—place of incarceration, rural versus urban

Based on a review of the data abstracted, we narratively summarized any patterns reflected from these factors that might affect the applicability of the evidence. Our narrative summaries are intended to draw stakeholders' attention to potential limitations in the applicability of the evidence.

Results

Our searches of the literature identified 4,587 potentially relevant articles, and we excluded 811 of these at the title level. We excluded another 3,214 articles at the abstract level and 543 articles at the level of full-length article review, typically because they were irrelevant to our KQs; were background, review, commentary, or protocol articles; were not comparative trials; were not conducted within a country of interest to this report; or had populations that were not primarily SMI. The remaining 19 publications describing 16 unique studies made up the evidence base for this review. We present results by KQ.

KQ1. Interventions Applied Within Jail, Prison, or Forensic Hospital Settings

Nine studies with medium risk of bias addressed KQ1. See Table A for a summary of our main findings. Low strength of evidence favored treatment with antipsychotics other than clozapine over treatment with clozapine. For all other interventions assessed in KQ1, the evidence was insufficient to conclude that there was any difference in effectiveness.

Four trials tested the efficacy of pharmacologic therapies. Two trials compared clozapine with other antipsychotics. In both of these trials, the non–clozapine-treated subjects did better than the clozapine-treated subjects, but the difference did not reach statistical significance. One of the two trials reported that clozapine was associated with neutropenia and seizures. One trial each assessed risperidone and chlorpromazine.

Investigators compared cognitive therapy with other psychological treatment in three trials. Two trials found an improvement in some measures of psychiatric symptoms among those who received cognitive therapy compared with those measures in subjects who received other psychological treatment. The other study did not find a difference by treatment group.

Comparing MTC with standard treatment, two trials found no between-group differences in psychiatric symptoms. Results were mixed regarding MTC's ability to reduce substance use and recidivism.

KQ2. Incarceration-to-Community Transitional Interventions

Six trials with medium risk of bias and one trial with low risk of bias assessed the comparative effectiveness of treatments in the incarceration-to-community transitional setting. One of these trials was categorized as both a discharge planning and IDDT trial. See Table B for a summary of our main findings.

We assigned a low strength-of-evidence grade for the following findings. Two trials found that providing assistance with the medical-benefit application as part of the discharge planning process, whether alone or in combination with other interventions, was an effective method for increasing service use in the first 90 days after release. In two trials comparing IDDT with other non–dual-diagnosis treatments, psychiatric hospitalizations were lower and service use greater, both during incarceration and on release, among clients who received IDDT.

Evidence was insufficient to draw a conclusion about the comparative effectiveness of treatments administered by forensic specialists versus treatment by non–forensic specialists for psychiatric symptomology, psychiatric hospitalization, substance abuse, quality of life, and completed suicide because only one trial reported these outcomes. We also found the evidence to be insufficient to draw a conclusion about the comparative effectiveness of IPT versus psychoeducation for psychiatric symptomatology and substance abuse because only one trial assessed these interventions.

Discussion

Key Findings and Strength of Evidence

For KQ1, the incarceration setting, evidence of low strength favored antipsychotic treatment with an antipsychotic medication other than clozapine for improving psychiatric symptoms. Evidence was insufficient that any of the other treatments assessed (other pharmacologic therapies, cognitive therapy, and MTC) differed in effectiveness from their comparators. More research is needed to better assess the efficacy of these treatments.

Three ongoing trials are examining three of the treatments assessed in this review. One trial is testing the efficacy of paliperidone palmitate compared with the efficacy of oral antipsychotic treatments in delaying time to treatment failure for individuals with schizophrenia who have been incarcerated. The second trial is comparing the efficacy of MTC reentry compared with the efficacy of case management and parole supervision. The third trial is assessing the effectiveness of IPT for male and female prisoners with a diagnosis of major depressive disorder.

For KQ2, the incarceration-to-community transition setting, limited evidence showed that discharge planning with benefit-application assistance increased the use of mental health services on release from incarceration. Limited evidence also demonstrated that IDDTs were more effective than standard treatments in reducing psychiatric hospitalizations and increasing mental health service use both during and on release from incarceration.

Two studies assessed the efficacy of treatments provided by forensic specialists versus mental health generalists. However, because only one trial reported any outcome of interest, we found the evidence insufficient to draw a conclusion. More research is needed to better assess the impact of provider type on treatment outcomes. However, one ongoing trial is testing the efficacy of forensic assertive community treatment (FACT) with enhanced outpatient treatment for individuals with a psychotic disorder who are facing criminal charges but who have not yet been sentenced. This trial was scheduled to be completed in May 2013.

A single trial assessed the effectiveness of IPT versus psychoeducation for KQ2. Because only one trial assessed this treatment comparison, we found the evidence insufficient to draw a conclusion.

Our searches identified 10 previous systematic reviews and 3 guidelines relevant to this report. (See Table G1 in Appendix G and Table H1 in Appendix H.) Two comprehensive systematic reviews have been conducted on interventions for offenders with SMI; however,

neither review described the interventions assessed in their included studies and both conducted meta-analyses based on a single treatment component (e.g., presence or absence of a homework component).[20,21]

Two systematic reviews examined the effectiveness of pharmacologic therapy for treating offenders with mental illness. Griffiths and colleagues found that using more than one psychotropic medication simultaneously was a common practice in prison, as was prescribing medication at doses above the recommended maximum daily amount.[22] Huband and colleagues examined the effectiveness of antiepileptic pharmacotherapy among prisoners with personality disorders and in other individuals requiring treatment for recurrent aggression. These researchers identified one study demonstrating that high-dose diphenylhydantoin (phenytoin) was superior to low-dose phenytoin at reducing the intensity and frequency of aggressive outbursts.[23] In our review, the one study that assessed chlorpromazine at either high or standard dosages found more side effects among patients on the higher dosage.

Another systematic review examined the effectiveness of psychological interventions on reoffending behavior in male offender populations. Nagi and Davies performed a qualitative synthesis of the evidence and concluded that CBT was the most effective treatment and the most commonly offered treatment in low-security forensic settings.[24] Our review did not find cognitive therapy to be more effective than other standard psychological treatment. Nagi and Davies excluded studies assessing the effectiveness of these interventions in women and reported only criminal justice outcomes, which may explain why their conclusions differed from ours.

A final systematic review examined the effectiveness of MTC compared with standard of care. However, the review by S. Sacks and colleagues included only studies conducted by themselves. They reported that, based on a qualitative synthesis, MTC was superior to standard of care in improving both mental health and criminal justice outcomes.[25] Our review identified too much heterogeneity in the study populations included in the S. Sacks and colleagues systematic review to comfortably combine them in an analysis.

In the incarceration setting, one guideline each addressed pharmacologic therapy for offenders with schizophrenia and with major depressive disorder. In 2009, the National Commission on Correctional Health Care and Applied Clinical Education recommended that drug selection for incarcerated schizophrenics mirror drug selection for nonoffending schizophrenics living in the community.[26] Also in 2009, the Federal Bureau of Prisons recommended pharmacotherapy as first-line treatment for patients with major depressive disorder and stated that psychotherapy should be considered only an adjunctive treatment in this population.[27] The third guideline related to treating individuals with SMI living in community correctional settings. Six interventions were identified as being likely to benefit this population. They are ACT, Self-Management and Recovery, integrated dual-diagnosis services, supported employment, psychopharmacology, and family psychoeducation.[28]

The main findings of this review are presented below for all interventions assessed in this report. In most cases, the evidence was insufficient to draw a conclusion.

Table A. Summary of findings for incarceration-based interventions

Comparison	Outcome	Risk of Bias	Consistency	Precision	Directness	SOE Grade
Clozapine vs. other antipsychotics	Psychiatric symptoms	Medium (2 trials, N = 171)	Consistent	Imprecise	Direct	Low in favor of the nonclozapine group
Clozapine vs. other antipsychotics	Independent functioning	Medium (1 trial, N = 98)	Unknown	Precise	Direct	Insufficient
Risperidone vs. other antipsychotics	Psychiatric symptoms; institutional infractions	Medium (1 trial, N = 20)	Unknown	Imprecise	Direct	Insufficient
High-dose chlorpromazine vs. standard dose	Psychiatric symptoms	Medium (1 trial, N = 64)	Unknown	Precise for BPRS, subscales of NOSIE, general and peak SDAS, and adverse events	Direct	Insufficient
Cognitive problem-solving group (R&R) vs. treatment as usual	Psychiatric symptoms	Medium (2 trials, N = 205)	Unknown (different measures used)	Precise for impulsive/ carelessness and avoidant subscales of the SPSI and MVQ	Direct	Insufficient
Cognitive group therapy vs. individual supportive therapy	Psychiatric symptoms	Medium (1 trial, N = 10)	Unknown	Imprecise	Direct	Insufficient
Modified therapeutic community vs. intensive outpatient	Psychiatric symptoms	Medium (1 trial, N = 468)	Unknown	Imprecise	Direct	Insufficient
Modified therapeutic community vs. intensive outpatient	Substance use or abuse	Medium (1 trial, N = 468)	Unknown	Imprecise	Direct	Insufficient
Modified therapeutic community vs. intensive outpatient	Criminal justice outcomes	Medium (1 trial, N = 468)	Unknown	Precise for reduction in arrests for crimes other than parole violations at 6-month followup	Direct	Insufficient

Table A. Summary of findings for incarceration-based interventions (continued)

Comparison	Outcome	Risk of Bias	Consistency	Precision	Directness	SOE Grade
Modified therapeutic community vs. standard mental health treatment	Psychiatric symptoms; criminal justice outcomes	Medium (1 trial, N = 139)	Unknown	Imprecise	Direct	Insufficient
Modified therapeutic community vs. standard mental health treatment	Substance use or abuse	Medium (1 trial, N = 139)	Unknown	Precise for all measures of substance use/abuse including reduction in use, severity of use, and time to relapse	Direct	Insufficient

Note: Consistency is rated "unknown" when only 1 study is available.

BPRS = Brief Psychiatric Rating Scale; MVQ = Maudsley Violence Questionnaire; N = number of subjects; NOSIE = Nurses' Observational Scale for Inpatient Evaluation; R&R = Reasoning and Rehabilitation; SDAS = Social Dysfunction and Aggression Scale; SOE = strength of evidence; SPSI = Social Problem Solving Inventory.

Table B. Summary of findings for incarceration-to-community transitional interventions

Comparison	Outcome	Risk of Bias	Consistency	Precision	Directness	SOE Grade
Discharge planning with benefit-application assistance vs. no application assistance	Mental health service use on release[a]	Medium (2 trials, N = 814)	Consistent	Imprecise	Indirect	Low in favor of discharge planning with benefit-application assistance
Intensive jail treatment followed by high-fidelity integrated dual disorder treatment vs. intensive jail treatment followed by treatment as usual	Psychiatric symptoms	Medium (1 trial, N = 182)	Unknown	Precise	Direct	Insufficient
Integrated dual disorder treatment vs. treatment as usual in the community	Psychiatric hospitalization	Medium (2 trials, N = 460)	Consistent	Precise	Direct	Low in favor of integrated dual disorder treatment
Mentally ill chemical abuser treatment vs. treatment as usual	Function	Medium (1 trial, N = 278)	Unknown	Imprecise	Direct	Insufficient
Mentally ill chemical abuser treatment vs. treatment as usual	Medication adherence[a]	Medium (1 trial, N = 278)	Unknown	Precise	Indirect	Insufficient
Mentally ill chemical abuser treatment vs. treatment as usual	Substance use	Medium (1 trial, N = 278)	Unknown	Imprecise	Direct	Insufficient
Integrated dual disorder treatment vs. treatment as usual in the community	Mental health service use on release[a]	Medium (2 trials, N = 310)	Consistent	Imprecise	Indirect	Low in favor of integrated dual disorder treatment
Integrated dual disorder treatment vs. treatment as usual	Mental health service use during incarceration[a]	Medium (2 trials, N = 406)	Consistent	Imprecise	Indirect	Low in favor of integrated dual disorder treatment
Mentally ill chemical abuser treatment vs. treatment as usual	Institutional infractions	Medium (1 trial, N = 278)	Unknown	Imprecise	Direct	Insufficient

Table B. Summary of findings for incarceration-to-community transitional interventions (continued)

Comparison	Outcome	Risk of Bias	Consistency	Precision	Directness	SOE Grade
Assertive community treatment vs. forensic specialist vs. treatment as usual	Psychiatric symptoms; substance use/abuse; quality of life	Medium (1 trial, N = 176)	Unknown	Imprecise	Direct	Insufficient
Forensic specialist vs. general mental health services	Psychiatric hospitalization; completed suicide	Medium (1 trial, N = 1,061)	Unknown	Imprecise	Direct	Insufficient
Interpersonal therapy vs. psychoeducation	Psychiatric symptoms; substance abuse	Low (1 trial, N = 38)	Unknown	Imprecise	Direct	Insufficient

[a] Intermediate outcome.

Note: Consistency is rated "unknown" when only 1 study is available.
N = number of subjects; SOE = strength of evidence.

Applicability

Findings may be applicable only to inmates with similar characteristics to those studied. In all of the pharmacologic therapy studies, the patients had a psychotic disorder, and most had a history of violence and aggression. Further, these studies took place in forensic hospitals or specialized units in which patients may have been more carefully observed for adverse events. This is important because clozapine and high-dose chlorpromazine are associated with serious adverse events, and patients on these medications need to undergo periodic blood tests and be closely monitored. Such attention may not be available in larger jails or prisons.

In the three studies testing the effectiveness of cognitive therapy on male offenders, one study enrolled only offenders with a diagnosis of schizophrenia, a history of violence, and no cognitive deficits. The second study enrolled offenders with a diagnosis of depression who were not receiving any other treatment, including antidepressant medication. The third study enrolled patients with either schizophrenia or bipolar disorder, more than half of whom had a history of violence. The findings of these studies may not be applicable to female inmates.

Of the two studies that evaluated MTC, one included only men and the other included only women in a women's correctional facility. The women-only MTC treatment was tailored to meet the additional needs of its participants, including issues of trauma and abuse, parenting, and relationships. The findings of each study indicated differences in how men and women responded to this treatment.

In both of the studies of discharge planning with benefit-application assistance, the population was made up of young men with SMI, about half of whom were white. About one-third had an earlier or current conviction for violent crime. These are the only participant characteristics that were reported by both trials. The findings presented here may be applicable only to this subset of inmates. Almost 90 percent of subjects in one of these trials had a co-occurring chemical dependence or abuse diagnosis and just over half had a co-occurring personality disorder.

The three studies that tested the efficacy of IDDT for inmates reentering the community enrolled middle-aged men, between 36 and 50 years of age, of mixed ethnic backgrounds. In two of the three trials, about 40 percent had a current or earlier conviction for violent crime. In the third trial, participants had less criminal justice involvement. The rate of co-occurring personality disorders varied from study to study.

Two trials compared results of treatment provided by a specialist with results of treatment by a mental health generalist. These trials enrolled mostly males with SMI in their early to mid-30s and with a significant criminal history. Twenty-five percent to 50 percent of enrollees in these trials had a substance abuse disorder.

The single study that assessed IPT versus psychoeducation enrolled 38 female prisoners who were preparing to reenter the community. The women were in their mid-30s and had both a major depressive disorder and a substance abuse diagnosis. No other patient characteristics were reported.

Research Gaps

Overall, we identified few comparative trials that assessed treatments for offenders with SMI. Below we outline research gaps based on the PICOS (population, intervention, comparator, outcome, and setting) framework.

Female and Mood-Disordered Incarcerated Research Participants

For treatments administered in the incarceration setting, all but one of the included trials enrolled only male offenders. The exception was an MTC intervention tailored to female offenders. It was one of only two trials to enroll offenders with bipolar disorder; we found that most of the included trials, including all of the pharmacologic therapy trials, enrolled patients with schizophrenia and/or schizoaffective disorder. Offenders with depression were also underrepresented in the included studies for KQ1. About 60 percent of the participants in the MTC intervention for women had a diagnosis of depression; 100 percent of those in the study assessing group cognitive therapy were depressed. Additional studies of MTC interventions, pharmacologic therapy, and cognitive therapy would be useful for guiding treatment of female offenders and those with primary mood disorders.

For treatments administered in the incarceration-to-community transitional setting, the studies were fairly representative of offenders regardless of their sex, ethnicity, or SMI diagnosis. However, very few treatments were studied in this setting. For example, we found no trials of medication initiated during incarceration and continued in the community.

None of the trials that addressed KQ1 was conducted in a jail setting. More research is needed on the effectiveness of MTC interventions, pharmacologic therapy, and cognitive therapy for offenders with SMI who have longer stays (several months) in a jail setting.

Comparative Trials of Other Commonly Used Interventions

Studies of videoconferencing versus face-to-face psychiatric care would be helpful for guiding treatment of offenders with SMI. For example, one systematic review by Khalifa and colleagues reported that videoconferencing appears to be an effective treatment in incarceration settings.[29] However, no comparative trials of videoconferencing were identified in our searches.

Balanced Reporting of All Interventions Assessed

The trials that addressed KQ1 described the treatment of interest in detail but provided very little information about the comparator treatment. In one of the clozapine trials, the study author did not provide any more detail than that clozapine was being compared with other antipsychotics. The clozapine trials did not report the dosage of the antipsychotic comparators. More detailed information about comparators is needed to permit replication of existing studies and to ensure that studies use the best comparator available. These trials also failed to report how patients who did not respond to treatment were handled during the enrollment phase.

The trials that addressed KQ2 described the treatment of interest in detail but provided very little information about the comparator treatment, the educational level or training of the providers, and whether ancillary treatments were also received by study participants. Research that provides a more balanced description of both trial arms would facilitate greater understanding of treatment choices.

Standardization of Assessment Tools and Patient-Oriented Outcome Reporting

Investigators used different assessment tools for measuring the same outcome. More standardization, including the use of validated assessment instruments, is needed. Patient-centered outcomes would be highly relevant to patients and clinicians; unfortunately, such outcomes were not reported. Some of our main findings for KQ2 relate to treatments that improve mental health service use. However, based on the available evidence, we cannot determine whether increased service use led to improved patient outcomes, such as a decrease in psychiatric symptoms.

Ongoing Trials

We identified six ongoing comparative trials—five randomized controlled trials and one retrospective comparison—of the following interventions:

- Critical time intervention versus enhanced reentry services for men with mental illness leaving prison
- Massachusetts Department of Mental Health Forensic Transition Team versus treatment as usual for offenders with SMI
- FACT versus enhanced outpatient followup without judicial monitoring in psychotic offenders
- IPT plus treatment as usual versus treatment as usual alone for male and female offenders with major depressive disorder
- Monthly paliperidone palmitate injection versus oral antipsychotic treatments in delaying time to treatment failure for incarcerated individuals with schizophrenia
- MTC versus standard case management and parole supervision for prisoners with dual diagnoses

Once published, additional evidence from these trials may permit more robust conclusions regarding these interventions. See Table I-1 in Appendix I for more detail.

Conclusions

We identified only a few comparative trials assessing interventions for offenders with SMI in an incarceration or incarceration-to-community transitional setting. The trials lacked consistency in treatment comparisons and varied in how they applied the same treatment, in how they combined treatments, and in the outcomes they reported. Therefore, for most outcomes, we graded the strength of evidence as insufficient for both the incarceration and incarceration-to-community transitional settings.

In summary, in an incarceration setting, treatment with antipsychotics other than clozapine appears to improve psychiatric symptoms more than treatment with clozapine. However, this conclusion is based on two trials that poorly described both the treatment and its comparator. Likewise, discharge planning with benefit-application assistance appears to increase mental health service use for incarcerated individuals with SMI preparing to reenter the community. Again, this conclusion is based on only two trials, and whether increased service use will lead to improved patient outcomes remains unclear. IDDT also appears to be a promising intervention for reducing psychiatric hospitalization in offenders returning to the community, but replication of this research could increase our confidence in the finding.

References

1. Torrey EF, Kennard AD, Eslinger D, et al. More Mentally Ill Persons Are in Jails and Prisons than Hospitals: A Survey of the States. Alexandria, VA: National Sheriffs' Association, Treatment Advocacy Center; 2010 May. www.treatmentadvocacycenter.org/storage/documents/final_jails_v_hospitals_study.pdf.
2. Dickson KK, Sigurdson C, Miller PS. Improving Psychiatric Care in the Minnesota Corrections System: The Minnesota Psychiatric Society and the Minnesota Department of Corrections Engage in Ongoing Dialogue. St. Paul (MN): Minnesota Psychiatric Society; 2006.
3. James DJ, Glaze LE. Mental Health Problems of Prison and Jail Inmates. Bureau of Justice Statistics Special Report. Washington: U.S. Department of Justice; Sept. 2006. http://bjs.ojp.usdoj.gov/content/pub/pdf/mhppji.pdf.
4. State estimates of adult mental illness. In: National Survey on Drug Use and Health Report. Rockville (MD): Substance Abuse and Mental Health Services Administration; Oct. 2011. Accessed October 7, 2011. http://oas.samhsa.gov/2k11/078/WEB_SR_078_HTML.pdf.
5. Abramsky S, Fellner J. Ill-Equipped: U.S. Prisons and Offenders With Mental Illness. New York: Human Rights Watch; 2003. www.hrw.org/en/reports/2003/10/21/ill-equipped.
6. Sirotich F. The criminal justice outcomes of jail diversion programs for persons with mental illness: a review of the evidence. J Am Acad Psychiatry Law. 2009;37(4):461-72. PMID: 20018995.
7. Veysey BM, Bichler-Robertson G. Providing psychiatric services in correctional settings. In: Health Status of Soon-to-Be Released Inmates, vol. 2, Report to Congress. Chicago: National Commission on Correctional Health Care; 2002:1-9.
8. Baillargeon J, Hoge SK, Penn JV. Addressing the challenge of community reentry among released inmates with serious mental illness. Am J Community Psychol. 2010 Dec;46(3-4):361-75. PMID: 20865315.
9. Standards for Health Services in Jails. Chicago: National Commission on Correctional Health Care; 2008.
10. Steadman HJ, Veysey BM. Providing Services for Jail Inmates With Mental Disorders. National Institute of Justice Research in Brief; Jan. 1997. www.ncjrs.gov/pdffiles/162207.pdf.

11. Prevalence of Serious Mental Illness Among U.S. Adults by Age, Sex, and Race. National Institute of Mental Health. Bethesda, MD: National Institutes of Health. Accessed Nov. 7, 2011. www.nimh.nih.gov/statistics/SMI_AASR.shtml.

12. Lovell D, Gagliardi GJ, Peterson PD. Recidivism and use of services among persons with mental illness after release from prison. Psychiatr Serv. 2002 Oct;53(10):1290-6. PMID: 12364677.

13. Cloyes KG, Wong B, Latimer S, et al. Time to prison return for offenders with serious mental illness released from prison. A survival analysis. Crim Justice Behav. 2010 Feb;37(2):175-87. http://cjb.sagepub.com/content/37/2/175.abstract.

14. Morrissey JP, Dalton KM, Steadman HJ, et al. Assessing gaps between policy and practice in Medicaid disenrollment of jail detainees with severe mental illness. Psychiatr Serv. 2006 Jun;57(6):803-8. PMID: 16754756.

15. Hoge SK, Buchanan AW, Kovasznay BM, et al. Outpatient Services for the Mentally Ill Involved in the Criminal Justice System. A Report of the Task Force on Outpatient Forensic Services. Arlington, VA: American Psychiatric Association; Oct. 15, 2009. www.law.uchicago.edu/files/file/outpatient-crimjustice.pdf

16. Edens JF, Peters RH, Hills HA. Treating prison inmates with co-occurring disorders: an integrative review of existing programs. Behav Sci Law. 1997 Autumn;15(4):439-57. PMID: 9433747.

17. O'Reilly R, Bishop J, Maddox K, et al. Is telepsychiatry equivalent to face-to-face psychiatry? Results from a randomized controlled equivalence trial. Psychiatr Serv. 2007 Jun;58(6):836-43. PMID: 17535945.

18. Sanchez-Meca J, Marin-Martinez F, Chacon-Moscoso S. Effect-size indices for dichotomized outcomes in meta-analysis. Psychol Methods. 2003 Dec;8(4):448-67. PMID: 14664682.

19. Methods Guide for Effectiveness and Comparative Effectiveness Reviews. AHRQ Publication No. 10(11)-EHC063-EF. Rockville (MD): Agency for Healthcare Research and Quality; March 2011. Chapters available at www.effectivehealthcare.ahrq.gov.

20. Morgan RD, Flora DB, Kroner DG, et al. Treating offenders with mental illness: a research synthesis. Law Hum Behav. 2012 Feb;36(1):37-50.

21. Martin MS, Dorken SK, Wamboldt AD, et al. Stopping the revolving door: a meta-analysis on the effectiveness of interventions for criminally involved individuals with major mental disorders. Law Hum Behav. 2011 Mar 5; Epub ahead of print. PMID: 21380580.

22. Griffiths EV, Willis J, Spark MJ. A systematic review of psychotropic drug prescribing for prisoners. Aust N Z J Psychiatry. 2012 May;46(5):407-21. PMID: 22535291.

23. Huband N, Ferriter M, Nathan R, et al. Antiepileptics for aggression and associated impulsivity. Cochrane Database Syst Rev 2010;(2):CD003499. PMID: 20166067.

24. Nagi C, Davies J. Addressing offending risk in low secure mental health services for men: a descriptive review of available evidence. Br J Forensic Pract. 2010 Feb;12(1):38-47.

25. Sacks S, McKendrick K, Sacks JY, et al. Modified therapeutic community for co-occurring disorders: single investigator meta analysis. Subst Abuse. 2010 Jul;31(3):146-61. PMID: 20687003.

26. Caring for Individuals With Schizophrenia in Correctional Settings and Beyond. Chicago: National Commission on Correctional Health Care; 2009.

27. Federal Bureau of Prisons. Management of Major Depressive Disorder. Federal Bureau of Prisons Clinical Practice Guideline. Washington: U.S. Department of Justice; Aug. 2009. www.bop.gov/news/medresources.jsp.

28. Improving Outcomes for People With Mental Illnesses Under Community Corrections Supervision: A Guide to Research-Informed Policy and Practice. New York: Council of State Governments Justice Center; 2009. http://consensusproject.org/downloads/community.corrections.research.guide.pdf.

29. Khalifa N, Saleem Y, Stankard P. The use of telepsychiatry within forensic practice: a literature review on the use of videolink. J Forensic Psychiatry Psychol. 2008 Mar;19(1):2-13.

Introduction

Definitions

For this evidence review, we define serious mental illness (SMI) as a diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, or major depression. Study populations classified as SMI or as having a severe and persistent mental illness are also included. Excluded are individuals with dementia, personality disorder, or mental retardation.

SMI offenders include those in jails (which house inmates who are awaiting adjudication of their cases or who are serving sentences of less than 1 year for minor offenses), prisons (which house inmates convicted of more serious crimes for longer durations), and forensic hospitals (often specialized units within State-run psychiatric hospitals that house offenders for varying lengths of time).

Incidence and Prevalence

Overall prevalence estimates of SMI among incarcerated adults range from 15 percent to 25 percent, depending on the study and data source.[1-3] Numerous reports indicate that individuals with SMI are over-represented in the criminal justice system. These estimates are three to five times as high as in the general population, in which the prevalence of SMI ranges from 5 percent to 8 percent.[4] In its report on prisons and offenders with mental illness, the organization Human Rights Watch indicated that up to 19 percent of adults in State prisons have significant psychiatric or functional disabilities.[5,11,30] The National Commission on Correctional Health Care reported the following prevalence estimates of mental illness in State prisons:[5]

- Major depression, 13.1 percent to 18.6 percent
- Schizophrenia or another psychotic disorder, 2.3 percent to 3.9 percent
- Bipolar disorder, 2.1 percent to 4.3 percent

Research conducted in the United States found that between 28 percent and 52 percent of those with SMI have been arrested at least once.[6]

Treatment Requirements

Jails and prisons have a constitutional obligation to provide treatment to inmates with serious medical and psychiatric conditions.[7] The case of Ruiz v. Estelle set forth minimum requirements for providing mental health services in the U.S. correctional system.[8] To receive accreditation by the American Correctional Association and the National Commission on Correctional Health Care, an adult correctional facility must provide all inmates with standard mental health screening and crisis and suicide intervention. More specialized mental health treatment generally varies depending on type of facility (e.g., jail vs. prison) and level of security (e.g., minimum vs. maximum). However, the National Commission on Correctional Health Care and others recommend that all correctional facilities offer standard outpatient or inpatient mental health treatment, such as individual or group psychotherapy, psychotropic medication, or discharge planning.[8,9]

A 1997 study by Steadman and Veysey, however, indicated that few jails provide a range of services, with most providing only intake screening, mental health evaluations, and suicide prevention services (83 percent, 60 percent, and 73 percent, respectively, of 1,013 jails

surveyed).[10] Because prisons hold inmates for long periods of time, they generally provide a greater range of services than jails do. However, the type and extent of treatment provided varies from prison to prison depending on factors including regional location and funding. A survey of mental health services provided in U.S. prisons indicated that 77 percent provide access to inpatient care and 36 percent have specialized housing.[11] According to Baillargeon and colleagues, the primary barrier to improving mental health treatment provided in adult correctional facilities is inadequate State funding.[8] To meet the basic requirements for providing mental health services, many prisons outsource to for-profit companies that provide services with an eye towards cost containment.[31]

Recidivism

Overall, offenders with mental illness have slightly higher rates of recidivism than do offenders without mental illness.[12] One study reported that 64 percent of offenders who were mentally ill were rearrested within 18 months of release; in offenders without mental illness, the rate was 60 percent.[12] Another study that observed offenders who were mentally ill for an average of 39 months after release into the community found that "renewed involvement in the criminal justice system was the norm," with 41 percent being convicted of felonies, 61 percent being convicted of any crime, and 70 percent being convicted of new offenses or supervision violations.[13]

The literature suggests that recidivism among offenders with mental illness is largely associated with poor coordination of services and treatment upon release into the community.[13]observed Most offenders with SMI are eligible for Medicaid or Medicare through Supplemental Security Income or Social Security Disability Insurance (during periods when they are not institutionalized).[14] Some advocacy groups are concerned that terminating benefits during incarceration and waiting up to 90 days for benefits to be reinstated after release may contribute to treatment nonadherence and recidivism.[14]

High rates of incarceration and recidivism along with insufficient treatment options have led to considerable interest in improving the outcomes of offenders with SMI. A systematic review of the evidence on the comparative effectiveness of interventions intended to improve mental health and other outcomes of offenders with SMI could help individuals with SMI, family members, treatment providers, criminal justice administrators and staff, and, possibly, State and Federal policymakers make decisions about available treatment options.

This review is about interventions provided to offenders 18 years of age or older with SMI who are detained in a jail, prison, or forensic hospital or who are transitioning from one of these settings back to the community (e.g., returning to their home or a halfway house). This is an especially vulnerable population because "jails and prisons have cultures that often lead to maladaptive behaviors in offenders with SMI that subsequently undermine treatment" both in and out of incarceration settings.[15]

Disease Burden

Overrepresentation in the criminal justice system of individuals who are mentally ill not only places considerable stress on the individuals, their families, and the community in general but also on the criminal justice system. Jails and prisons are generally not equipped to care for large numbers of inmates with SMIs. As a result, offenders with SMI place a substantial structural burden on the criminal justice system because of longer prison stays and additional demands on the prison staff. According to a report by the Treatment Advocacy Group, the main reason

inmates who are mentally ill stay incarcerated longer than inmates who are not is that many find it difficult to understand and follow jail and prison rules.[1] Thus, inmates with mental illness are more likely than other inmates to be charged with facility rule violations or infractions. For instance, in Washington State prisons, inmates with mental illnesses accounted for 41 percent of infractions but constituted 19 percent of the prison population.[1]

Because of their impaired thinking, inmates with SMI may be disruptive or aggressive and present unique management challenges within the jail or prison setting.[1,32] Maladaptive behaviors exhibited by inmates with SMI range from physical and nonphysical assault (e.g., spitting, throwing urine) to disruptive behavior (e.g., setting fires, refusing to leave cell) to self-injurious behavior (e.g., cutting or mutilating self, threatening or attempting suicide). Managing these behaviors often places additional demands on custodial staff members who may feel underprepared to deal with such difficult behaviors. Maintaining safety and order requires custodial staff to work together and collaborate with mental health professionals.[32]

Studies have reported a wide range of substance-abuse rates among offenders with mental illness (10 percent to 90 percent).[33] Offenders with co-occurring mental illness and substance use disorders present treatment challenges. In general, they have a poorer prognosis for involvement in treatment than individuals with a single disorder.[16] Further, one study found that inmates involved in jail substance abuse treatment who had dual diagnoses had more pronounced difficulties than other inmates enrolled in substance abuse treatment in several areas of functioning, including employment, relationships, and medical problems and had lower baseline knowledge about substance abuse treatment principles and relapse-prevention skills.[16]

Providing Mental Health Services to Offenders With Serious Mental Illness Who Are in an Incarceration Setting (Jail, Prison, Forensic Hospital)

Jails are locally operated facilities that typically provide pretrial detention and short-term confinement after sentencing (generally less than 1 year).[7] Most arrestees are detained for brief periods usually lasting days or weeks. Mental health services provided in jails typically focus on identifying mental illness, crisis management (including suicide prevention), and short-term treatment. In their study of American jails, Steadman and Veysey found that the mental health services provided in jails varied depending on the size of the facility.[10] Small jails typically offered little more than screening and suicide prevention, whereas some large jails offered a comprehensive array of services that included screening, evaluation, specialized housing, and psychotropic medication.

Prisons, which are correctional facilities that typically hold inmates for longer than a year, are operated by Federal and State governments or by private companies. The responsibility of providing mental health services in prisons varies from State to State. According to Veysey and Bichler-Robertson, in some states, "psychiatric care is provided under the auspice of State mental health facilities, and in others, under the auspice of the State corrections authority."[7] Mental health services in Federal and State prisons are frequently contracted out.

Because incarceration within a prison can last for years, prisons typically provide a greater range of mental health services than jails.[7] The mental health services provided in prisons generally parallel those available in the community and may include psychological counseling, treatment of trauma-related symptoms, integrated treatment for co-occurring mental health and substance use disorders, and psychiatric medication management.[32]

Offenders with mental illness are sometimes found not guilty by reason of insanity, incompetent to stand trial, or are sentenced to serve time in a forensic hospital. A forensic hospital is often a unit within a State mental health hospital, which serves the general population. Forensic hospitals provide mental health treatment within an environment that must maintain security to prevent escapes, assaults, and self-injurious behavior.[34] In cases in which a jail does not provide inpatient care or specialized housing, individuals in whom SMI has been diagnosed may be transferred to a forensic hospital while awaiting further sentencing.[7]

Applying mental health services in the jail or prison environment presents exceptional treatment challenges. For example, adults with SMI can take medications that require multiple doses throughout the day. Correctional facilities may not be designed to accommodate a variety of medication administration schedules. Additionally, group therapy sessions may be impractical in situations in which individuals who commit prison-rule infractions or who pose a safety risk are segregated from other prisoners.

Interventions Used With Nonoffenders With Serious Mental Illness

There is a large literature base examining the interventions assessed in this report among nonoffenders. The following are a just few examples of what is known about these treatments.

Among psychotherapies, interpersonal therapy (IPT) is an evidenced-based treatment that has been shown to be effective in treating individuals with major depressive disorder living in the community.[35] Limited evidence existed showing no difference in the effectiveness of cognitive behavior therapy (CBT) as adjunct therapy versus other adjunct talk therapies (psychoeducation, supportive therapy, group therapy, relaxation therapy, and family therapy) for individuals with schizophrenia living in the community. However, there was limited evidence suggesting that CBT may have a long-term advantage in helping patients deal with emotions and distressing feelings.[36]

In medical treatments, among patients with major depressive disorder, second-generation antidepressants had similar effectiveness but different side effects and times to onset of action.[37] Among adults with schizophrenia, clozapine was more effective than chlorpromazine. Haloperidol had clinical effectiveness similar to aripiprazole, clozapine, risperidone, and ziprasidone. Among patients with bipolar disorder, haloperidol was more effective than ziprasidone.[38] However, in those with treatment-resistant depression or treatment-resistant depression in bipolar disorder, electroconvulsive therapy was more effective than medication.[39]

A review of treatment programs for individuals with dual diagnoses found that a clear mission, active leadership, and ongoing supervision are critical components of a program's success. No evidence favored one psychotherapy intervention over another, but long-term residential and peer-group interventions appeared to be effective treatment components.[40]

Interventions Used in Incarceration Settings

Individual and Group Psychotherapy

Psychological therapies provided in jails, prisons, or forensic hospitals may include CBT (with or without criminal thinking curriculum) and dialectical behavior therapy (DBT). CBT aims to build cognitive skills and replace distorted cognitions (self-justificatory thinking, displacement of blame, schemas of dominance and entitlement) with noncriminal thought patterns.[41] DBT was originally designed to treat chronically parasuicidal women with borderline

personality disorder, but it has been adapted to other populations, including offenders with SMI. DBT combines the basic strategies of CBT with Eastern mindfulness practices.[42]

Pharmacologic Therapy

According to Scott, if a correctional facility houses inmates with SMI, antipsychotic, antidepressant, and mood-stabilizing medications must be included in the medication formulary.[32] Further, "all correctional formulary policies must include a mechanism to access nonformulary medications on a case-by-case basis to ensure access to appropriate treatment for serious mental illness."[32] However, many correctional facilities limit access to certain medications based on their perceived abuse potential. In most correctional facilities, a psychiatrist and other mental health professionals must be involved in developing the institution's formulary.

Most correctional formularies include both conventional (first-generation) and second-generation antipsychotics for treating schizophrenia, psychotic disorders, and psychotic symptoms. First-generation antipsychotics such as chlorpromazine (Thorazine®) and haloperidol (Haldol®) are available in generic form and are thus relatively inexpensive. However, most conventional antipsychotics are associated with severe and often painful movement disorders, such as dystonia (painful muscle spasms), akathisia (profound restlessness), and tardive dyskinesia (uncontrolled movement of various muscle groups usually around the face and mouth), which often interfere with patient medication adherence. Patients taking second-generation antipsychotic medications such as clozapine (Clozaril®) and olanzapine (Zyprexa®) have a lower risk of developing movement disorders, but the drugs are known to produce unwanted metabolic side effects including weight gain. Anecdotal evidence suggests that some of these drugs also carry the potential for abuse and diversion because of their sedating effects. This potentiality has led some correctional facilities to exclude them from their formularies.[43,44]

Many classes of antidepressants are available to treat major depression: tricyclic antidepressants (TCAs), monoamine oxidase inhibitors (MAOIs), and selective serotonin-reuptake inhibitors (SSRIs). A review at the Texas Department of Corrections found that more than 50 percent of inmates with depressive disorders were treated with TCAs, one-third with SSRIs, and about 20 percent were not being treated for their condition.[45] However, case reports have raised questions about the potential of TCA abuse, primarily in individuals with dual diagnoses. MAOIs, such as phenelzine (Nardil®), can cause a hypertensive crisis if ingested with certain foods or over-the-counter medications. Thus, if used, TCAs and MAOIs require close monitoring, which presents an added challenge in correctional facilities.[32] SSRIs are generally considered safer and have lower toxicity than TCAs and MAOIs. Mood stabilizers such as lithium and some anticonvulsant medications (e.g., divalproex [Depakote®], valproic acid [Depakene®]) are included in most prison formularies for treating bipolar disorder and schizoaffective disorder because these drugs carry no potential for abuse.

Specialized Housing

Specialized housing includes self-contained mental health units for caring for inmates with SMI who are unable to function in the general population.[8] Specialized housing options vary and include inpatient care, short-term crisis beds, and long-term residential units.

Integrated Dual Disorder Treatment

With Integrated Dual Disorder Treatment (IDDT), the same treatment team treats addiction and SMI simultaneously. The substance abuse treatment is tailored to people with mental illness. Individuals are taught how mental health and substance abuse disorders interact. This approach uses CBT.[46,47]

Modified Therapeutic Community

Modified Therapeutic Community (MTC) is an intensive, long-term, residential treatment program that has been modified to meet the special needs and issues of a corrections population. The goal of MTC is to teach individuals how to live and function within the greater society and within their own families in a sober, prosocial manner. The program labels its users "family members" and assigns each person to a unit that staff refer to as a "family" or "community."[48] MTCs can be provided within a prison setting as well as in the community as an aftercare program once the inmate is released from prison.

Telemedicine

Telemedicine (i.e., telepsychiatry, telepsychology) is becoming an increasingly common mode of delivery for psychological and psychiatric services. Treatment is delivered by way of videoconferencing.[49]

Providing Mental Health Services to Offenders With Serious Mental Illness Transitioning From Incarceration to the Community

Successful reentry into the community (e.g., family/home, halfway house) is a challenge for inmates with SMI or dual diagnoses.[8] They are more likely than inmates without SMI to experience homelessness and are less likely to find employment. This is especially true for returning inmates with SMI and a co-occurring substance use disorder. A recent study assessing short-term, postrelease outcomes of prisoners with SMI only and those with SMI and substance abuse disorders found that the population with a dual diagnosis was more likely than the SMI-only population to experience homelessness and to be returned to correctional custody.[50]

Obtaining appropriate community mental health and other related services is often difficult for returning inmates with SMI. According to Baillargeon and colleagues, inadequate treatment and discharge planning take place during incarceration and too few mental health care programs are available upon release. Additionally, mainstream, community-based, mental health programs may be ineffective in meeting the diverse needs of returning inmates with SMI. Some community mental health programs may also be unwilling to provide services to those with a criminal history.[8]

Examples of Interventions Provided When Inmates Are Transitioning to the Community

Discharge or Release Planning

Discharge planning has been defined as the process of "creating a continuum of care pertaining to mental health and substance abuse services as an inmate is released to the community."[8] The basic element of discharge planning should include the following actions:

assessing the inmate's clinical and social needs, writing a plan detailing the treatment and services required by the inmate, and identifying specific community providers and coordinating treatment with them. The extent of discharge planning may vary depending on the needs of the inmate, availability of resources to meet those needs, and incarceration setting (e.g., jail vs. prison, rural vs. urban setting). One important factor in successfully linking returning inmates with SMI to community mental health services is access to health benefits.[8]

Critical Time Intervention

Critical Time Intervention (CTI) is a three-phase treatment model that supports transition from institutional settings into community settings.[51] The phases of treatment include transition, tryout, and transfer to care. Mental health practitioners designed CTI to prevent homelessness and other adverse outcomes in people with mental illness following discharge from hospitals, shelters, prisons, and other institutions. It combines several treatment models, including CBT, illness management, supported housing, IDDT, and motivational enhancement.

Case Management Interventions

Below are examples of some commonly used case management strategies.

Strengths-Based Case Management

The goal of strength-based case management is to build on a person's successes so he or she develops a sense of personal empowerment. This treatment promotes the use of informal helping networks, offers assertive community involvement by case managers, and emphasizes the relationship between client and case manager.[52]

Standard Case Management

Standard case management follows a "service broker" model. It emphasizes assessment, planning, referral, and monitoring of functions without extensive outreach, linkage, or direct service contacts.[53]

Intensive Community Treatments

Below are examples of some commonly used intensive community treatments.

Assertive Community Treatment

Assertive community treatment (ACT) provides comprehensive (around-the-clock) community care to patients who are mentally ill, including access to a psychiatrist, nurse, substance abuse specialist, and case manager. The ratio of care is 10 patients to 1 staff member. ACT members provide medication; CBT, including issues of structuring time and handling activities of daily living; supported employment services; support and education of family members; and help with housing, transportation, or other client needs.[54]

Forensic Assertive Community Treatment

Forensic assertive community treatment (FACT) is a modification of ACT meant to reduce recidivism rates. The FACT team intervenes when clients are decompensating, to ensure they get appropriate mental health treatment before they recidivate.[55]

Scope of Report and Key Questions

This report focuses on the comparative effectiveness of interventions provided to offenders with SMI, with or without a co-occurring substance use disorder, during incarceration in jail, prison, or forensic hospital or during transition from incarceration in these settings to the community. Transitional interventions are usually initiated within 3 months of an inmate's release from incarceration and continued once he or she reenters the community.

In determining the scope of this report, we considered a number of programs designed to prevent or minimize incarceration. This included prebooking diversion interventions such as mobile crisis intervention teams or other interventions delivered at the point of contact with the police. We also considered postbooking strategies, such as mental health courts designed to divert offenders with SMI to a treatment environment in lieu of incarceration and court-ordered involuntary treatment intended to restore competency to stand trial.[8] However, after discussions with our Technical Expert Panel (TEP), we decided against including these interventions so we could focus the report on those used during incarceration or during transition to the community.

Evidence-based Practice Center (EPC) reports and translation products produced for the Agency for Healthcare Research and Quality (AHRQ) are intended for use by patients, providers, administrators, researchers, and sometimes policymakers. This report and any AHRQ-sponsored derivative products have a broad target audience.

Two other comprehensive systematic reviews have been conducted on interventions for offenders with SMIs; however, neither review described the interventions assessed in their included studies and both conducted meta-analyses based on single treatment components (e.g., presence or absence of a homework component).[20,21] Important goals of this comparative effectiveness review are to describe incarceration-based and incarceration-to-community interventions in a manner that would allow treatment providers to replicate effective treatments and to identify gaps in the scientific literature for future research in the field.

Topic Development and Refinement

We posted four Key Questions for public comment on the Web site of the Effective Health Care Program from January 18, 2012, to February 15, 2012. Following the public comment period, we included our definition of SMI within the Key Questions. Based on discussions with members of the TEP for the report, we condensed what were originally Key Questions 1 and 2 and Key Questions 3 and 4 into two broader Key Questions that incorporate those with or without a substance abuse disorder. The Key Questions as currently written also reflect feedback from the panel on the importance of including jails as a treatment setting of interest in this report.

We further modified KQ2 to more clearly indicate the types of community-oriented interventions covered in this report. More specifically, it clarifies that we considered studies that describe a community treatment that is being provided to inmates with SMI who are returning to the community from incarceration. This does not include studies of community treatment provided for individuals who have been diverted out of the criminal justice system.
We recognize that the types of interventions provided to these groups are likely to be similar. However, the intent of the interventions may differ depending on the population being served. For instance, diversion programs focus on reducing or eliminating involvement in the criminal justice system and replacing it with treatment, whereas reentry programs focus on community reintegration and reducing future involvement in the criminal justice system (i.e., recidivism or reincarceration).[56]

The final Key Questions are listed below. They are followed by the PICOTS outline (populations, interventions, comparisons, outcomes, timing, and settings), which clarifies the scope of each Key Question, and the analytic framework, which provides the same information in a pictorial format.

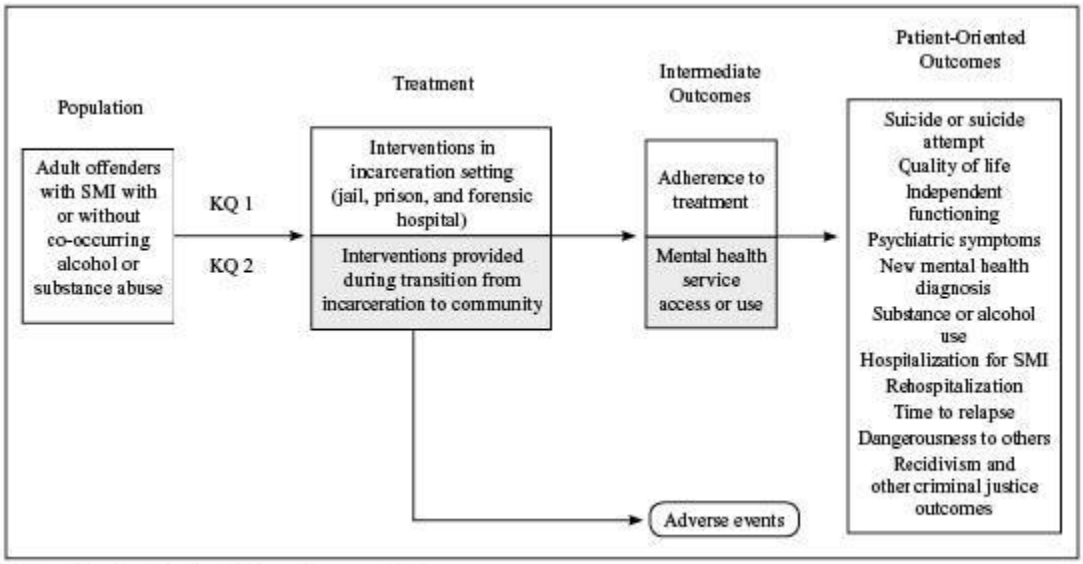
Key Question 1 (KQ1). What is the comparative effectiveness of interventions applied within a jail, prison, or forensic hospital setting for adults with SMI (schizophrenia, schizoaffective disorder, bipolar disorder, or major depression) with or without a co-occurring alcohol/substance abuse diagnosis? Is there a difference in the comparative effectiveness of interventions based on the setting (jail, prison, forensic hospital) in which the interventions are provided?

Key Question 2 (KQ2). What is the comparative effectiveness of incarceration-to-community transitional interventions for adults with SMI (schizophrenia, schizoaffective disorder, bipolar disorder, or major depression) with or without a co-occurring alcohol/substance abuse diagnosis? Is there a difference in the comparative effectiveness of interventions based on the setting (jail to community, prison to community, forensic hospital to community) in which the interventions are provided?

Analytic Framework

The analytic framework (Figure 1) depicts the population, treatment, intermediate- and patient-oriented outcomes that are assessed in this report. On the left side of the figure we list the populations of interest: adults with SMI with or without a co-occurring alcohol or substance abuse diagnosis who are involved in one of the criminal justice system settings of interest. KQ1 compares interventions within an incarceration setting (i.e., jail, prison, or forensic hospital) or the same intervention applied across incarceration settings. KQ2 compares interventions provided during the transition from incarceration (i.e., jail, prison, or forensic hospital) to the community (e.g., home/family, halfway house). For KQ2, the comparisons are different interventions applied within an incarceration-to-community transitional setting, the same intervention applied across settings, or an incarceration intervention compared with an incarceration-to-community transitional intervention. We gathered information on any treatment-related adverse events. “Intermediate Outcomes,” which may lead to improved patient-centered outcomes, include adherence with treatment and mental health service access or use.

Figure 1. Analytic framework for interventions for adult offenders with serious mental illness



Note: KQ = Key Question; SMI = serious mental illness

To the far right of the diagram we list the patient-oriented outcomes assessed: suicide and suicide attempts, quality of life, independent functioning, psychiatric symptoms, new mental health diagnosis, substance- or alcohol use, hospitalization for SMI, time to rehospitalization, time to relapse, dangerousness to others, and recidivism and other criminal justice outcomes.

Populations

The population considered for this report is adults (18 years of age or older) with a diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, or major depression with or without a co-occurring substance abuse disorder who have been found guilty of a crime or not guilty by reason of insanity or its equivalent and who have been incarcerated for a minimum of 24 hours in one of the settings of interest. Diagnosis must have been made based on clinical assessment or a validated instrument administered by a professional. For this report, self-report alone did not qualify an individual as having an SMI.

Interventions

The interventions considered in this report are listed in Table 1.

Table 1. Interventions by setting

Intervention[a]	Jail	Prison	Forensic Hospital	Incarceration-to-Community Transitional Services[b]
Individual or group psychotherapy (e.g., cognitive behavior therapy or dialectical therapy)	X	X	X	X
Pharmacologic therapies (first-generation antipsychotics, second-generation antipsychotics, tricyclic antidepressants, monoamine oxidase inhibitors, selective serotonin-reuptake inhibitors, serotonin-norepinephrine reuptake inhibitors, mood stabilizers, anticonvulsants, and any other medications used in patients with SMI reported in the literature)	X	X	X	X
Specialized housing	X	X		
Integrated dual disorder treatment (IDDT)	X	X	X	X
Telemedicine (telepsychiatry, telepsychology)	X	X	X	X
Discharge planning	X	X	X	X
Critical time interventions (CTI)				X
Case management interventions	X	X		X
Intensive community treatments (ACT or FACT)				X
Modified therapeutic community (MTC)		X	X	X
Other treatments (e.g., art therapy, music therapy, or peer support training)	X	X	X	X

[a]For the interventions, compelled versus voluntary treatment (e.g., forced medication vs. voluntary medication) was to be examined if the data permitted. However, there were no data available for this comparison.
[b]For the interventions, immediate access to mental health services upon release versus no or delayed access would be examined if data were available.
ACT = Assertive Community Treatment; FACT = Forensic Assertive Community Treatment

Comparators

For KQ1, the comparators are usual care or any one of the interventions listed in Table 1 applied within in a jail, prison, or forensic hospital setting or the same intervention applied across settings.

For KQ2, the comparators are usual care or any one of the interventions listed in Table 1 applied within an incarceration-to-community transitional setting, the same intervention applied in different settings, or an incarceration intervention compared with an incarceration-to-community transitional intervention.

Outcomes

Mental health outcomes:

- Completed suicide
- Suicide attempts
- Quality of life
- Independent functioning (including employment, housing, social integration)
- Psychiatric symptoms that characterize SMI
- New mental health diagnosis

- Substance or alcohol use
- Hospitalization for SMI
- Time to rehospitalization
- Time to relapse
- Dangerousness to others based on administrative records or validated assessment instruments
- Criminal justice outcomes in prison
- Infractions of prison code of conduct (time in administrative segregation, secure housing)
- Recidivism
- Reincarceration

Intermediate mental health outcomes:

- Mental health service access use
- Adherence with treatment

Adverse events including medication side effects

Time Points

We required a minimum followup of 3 months for studies included in this report.

Settings

- KQ1: jail, prison, and forensic hospital
- KQ2: jail-to-community, prison-to-community, and forensic hospital-to-community transitional services

Organization of This Report

The remainder of this review describes our methods and results in detail and provides a discussion of our findings and recommendations for future research. Appendixes provide details of the literature search methods (Appendix A); forms used for title, abstract, and full article review (Appendix B); studies excluded at the full-text review stage (Appendix C); risk-of-bias assessments for studies included in this report (Appendix D); general study, treatment, and patient characteristics of included trials (Appendix E); and comprehensive evidence tables (Appendix F); as well as relevant guidelines (Appendix G); previous systematic reviews (Appendix H); and ongoing clinical trials (Appendix I).

Methods

Review Team

A three-person team conducted the systematic review. Although each member of the team has a background in behavioral health and has worked with individuals with SMI and co-occurring substance use disorders, none of the members is currently working with or within the criminal justice system or any other organization(s) that may have an interest in this report. Each member of the team has experience performing systematic reviews of behavioral health and health care evidence.

Mental health clinicians, representatives from the criminal justice system, and policymakers from both the behavioral health and criminal justice fields were involved only as key informants and/or members of the TEP. These groups provided some guidance on the scope of the report and its Key Questions, reviewed the protocol, and answered any questions that arose during the process.

Topic Nomination, Triage, Refinement, and Review Protocol

A patient advocacy group and a national organization for psychiatry nominated this topic in November 2010. Topic triage and refinement occurred between February 2011 and April 2011. Individuals involved in the triage and refinement process conducted a preliminary literature search to determine the feasibility of conducting a CER on this topic and devised a list of possible Key Questions. ECRI Institute received this CER assignment in June 2011.

We enlisted five key informants to assist with refining the Key Questions and determining the scope of the report. They included a physician from a national patient advocacy group, a doctoral-level social worker working in a correctional setting, a medical director of a State Medicaid agency, a methodologist with experience conducting systematic reviews on criminal justice topics, and the director of medical services for a State correctional system. The Key Questions were posted for public comment for a 4-week period ending February 15, 2012.

Following the public comment period, a TEP reviewed and further refined the protocol. The TEP was comprised of an associate director of a forensic fellowship program, a former mental health director for a State department of corrections, three Ph.D.-level professors teaching in the areas of social policy and correctional mental health, a State department of corrections health services director, two methodologists, and a professor of psychiatry, medicine, and law. The protocol was completed in April 2012.

Search Strategy

Information professionals performing literature searches within the ECRI Institute EPC Information Center followed established guidelines and procedures as identified by the Director of the Information Center. Below is an overview of the search process; specific search strategies are listed in Appendix A.

Consistent with our evidence-based searching protocol, for all Key Questions, we searched 12 external and internal databases on the OVID SP platform using the one-search and deduplication features. The databases included MEDLINE®, PreMEDLINE®, Embase, the Cochrane Library (including the Central Register of Controlled Trials, the Cochrane Database of Methodology Reviews, and the Cochrane Database of Systematic Reviews), the Database of Abstracts of

Reviews of Effects, the Health Technology Assessment Database, and the United Kingdom National Health Service Economic Evaluation Database. Searches were designed to identify unique reviews, trials, economic analyses, and technology assessments. Because this topic involves mental health and criminal justice issues, three additional databases were searched for this project: PsycINFO® (OVID SP platform), National Criminal Justice Reference Service (NCJRS) Abstracts Service (publicly available Web site), and ProQuest Criminal Justice (ProQuest platform). Our searches covered the time period January 1, 1990, through April 1, 2012.

We identified search terms by: (1) reviewing relevant systematic reviews on similar topics identified by members of the research staff; (2) reviewing how other relevant studies are indexed, their subject heading terms, and their keywords; and (3) reviewing MeSH, EMTREE, PsycINFO, NCJRS, and ProQuest Criminal Justice indexes for relevant and appropriate terms. After reviewing these, we identified a combination of subject headings and keywords. Two team members and the medical librarian reviewed the search strategies developed using these terms. We applied a study-design filter to retrieve systematic reviews and comparative studies. Details (specific search terms and search strategies) are provided in Appendix A.

We mined Web sites for gray literature meeting our inclusion/exclusion criteria. We excluded dissertations and literature that was not available as a full report (i.e., conference abstracts, slide presentations). Sources of gray literature included Bazelon Center for Mental Health Law, The Campbell Collaboration, Center for Evidence-based Policy, Justice Center (The Council of State Governments), Justice Policy Center (Urban Institute), Mental Health Primary Care in Prison, National Institute of Corrections, National Institute of Justice, RAND Corporation and the Washington State Institute for Public Policy. Resources (both for gray literature and peer-reviewed journal literature) and search strategies were discussed with the TEP and supplemented according to their recommendations. See Table 2, below, for a complete list of gray literature sources.

Table 2. Gray literature sources

Organization	Web Site
Academy of Criminal Justice Sciences	www.acjs.org/
American Academy of Psychiatry and the Law	www.aapl.org/
American Correctional Association	www.aca.org/
American Correctional Association Annual Conference	www.aca.org/Conferences/Summer2011/home.asp
American Correctional Health Services Association	www.achsa.org/index.html
American Psychiatric Association	www.psych.org/
American Psychological Association	www.apa.org/
Bazelon Center for Mental Health Law	www.bazelon.org/
Bureau of Justice Assistance	www.bja.gov/Default.aspx
Bureau of Justice Statistics	http://bjs.ojp.usdoj.gov/
Bureau of Prisons	www.bop.gov/
Campbell Collaboration	www.campbellcollaboration.org/

Table 2. Gray literature sources (continued)

Organization	Web Site
Center for Behavioral Health Services & Criminal Justice Research (Rutgers, The State University of New Jersey)	www.cbhs-cjr.rutgers.edu/
Center for Evidence-based Policy (Oregon Health & Science University)	www.ohsu.edu/xd/research/centers-institutes/evidence-based-policy-center/index.cfm/
Cochrane Collaboration, College for Policy at George Mason University	http://cochrane.gmu.edu/about/projects-publications
Cochrane Justice Health Field	http://justicehealth.cochrane.org/welcome
Criminal Justice / Mental Health Consensus Project (this is from The Justice Center—see below)	http://consensusproject.org/
Department of Health (UK)	www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsLibrary/index.htm (Search the site with *mental* within *prison prisons prisoner prisoners* – 252 pubs)
HTAi (Health Technology Assessment international portal)	www.htai.org/index.php?id=579
International Association for Correctional and Forensic Psychology	www.ia4cfp.org/
Justice Center (The Council of State Governments)	http://justicecenter.csg.org/
Justice Policy Center at the Urban Institute	www.urban.org/justice/index.cfm
Mental Health Primary Care in Prison	www.prisonmentalhealth.org/home.html
National Alliance on Mental Illness	www.nami.org/
National Association of State Mental Health Program Directors	www.nasmhpd.org/
National Commission on Correctional Health Care	www.ncchc.org/
National Criminal Justice Reference Service	www.ncjrs.gov/
National Institute of Corrections	http://nicic.gov/
National Institute of Justice (Office of Justice Programs)	http://nij.gov/
National Institute of Mental Health	www.nimh.nih.gov/
National Institute on Alcohol Abuse and Alcoholism	www.niaaa.nih.gov/
National Institute on Drug Abuse	www.nida.nih.gov/nidahome.html
National Reentry Resource Center (from the Justice Center—see above)	www.nationalreentryresourcecenter.org/
National Research Council	www.nationalacademies.org/nrc/
President's New Freedom Commission on Mental Health	No direct Web site: www.nami.org/Content/NavigationMenu/Inform_Yourself/About_Public_Policy/New_Freedom_Commission/Default1169.htm
Prison Talk	www.prisontalk.com
RAND Corp. Institute for Civil Justice	www.rand.org/icj.html
Reentry Policy Council (from the Justice Center—see above)	www.reentrypolicy.org/
Robert Wood Johnson Foundation	www.rwjf.org/

Table 2. Gray literature sources (continued)

Organization	Web Site
SEARCH	www.search.org/
Substance Abuse and Mental Health Services Administration (SAMHSA)	www.samhsa.gov/
SAMHSA's National Registry of Evidence-based Programs and Practices	www.nrepp.samhsa.gov/
U.S. Department of Justice	www.justice.gov/
Washington State Institute for Public Policy	www.wsipp.wa.gov/

ECRI Institute's medical librarian reviewed the initial literature search results. Using the Key Questions and inclusion/exclusion criteria identified by team members, the medical librarian assessed relevancy and retrieved results. Feedback from two team members and the Director of the Health Technology Assessment/EPC Information Center—including details regarding gaps in the search strategy as well as articles identified by the principal investigator but not retrieved by the searches—were integrated into the search strategy using key terms and subject headings. We reran the updated strategy in all identified databases. The medical librarian scanned additional results and assessed their relevancy. New results were downloaded and forwarded to the principal investigator for review. Hand searches of reference lists in identified articles were also reviewed for possible inclusion. We updated the search through August 20, 2012, during the peer-review period of the draft report.

Inclusion and Exclusion Criteria

The inclusion criteria are listed below in separate categories pertaining to patient characteristics, study design, outcomes, and publication type.

Patient Characteristics

For a study to be included, results for individuals with SMI had to be reported separately from results for individuals with other diagnoses, or at least 75 percent of the sample had to have a diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, or major depression. In cases in which the diagnoses were not clearly presented, the study author(s) must have described the population as having SMI or as having severe and persistent mental illness or other equivalent. We considered studies to address the dually diagnosed population if at least 75 percent of the subjects also had an alcohol/substance use diagnosis. For studies with less than a 75 percent rate of substance use disorders, unless the study specifically excluded individuals with alcohol/substance use, we considered the sample to be a "mixed" population.

Studies of individuals with a primary diagnosis of a mental disorder such as posttraumatic stress disorder or a personality disorder without SMI were not included in this report.

Study Design

Randomized controlled trials (RCTs) were assessed first. If an insufficient number (less than 10) of RCTs were available to draw a conclusion to a Key Question for the most important mental health outcomes, we examined nonrandomized (prospective or retrospective) comparative trials. Studies must have either randomly assigned patients or facilities to treatments or used an analytic

method to address selection bias, such as baseline matching on multiple characteristics, propensity scoring, or other analytic approach.

Studies must have had an active treatment comparator (including treatment as usual). Because symptoms of SMI tend to wax and wane over time, we did not include noncomparative studies, such as case series, in this report.

Studies must have enrolled an independent control group. We excluded studies in which subjects acted as their own controls, such as in a pre-post or crossover study design. Facility-versus-facility comparisons as well as within-facility comparisons that employed an independent historical control group were considered for inclusion.

Studies must have included at least five subjects in both treatment arms because the results of studies with very small patient groups are often not applicable to the general population.

Included studies must have observed patients for a minimum of 3 months. For many outcomes, a minimum of 3 months may be necessary to determine if the treatment is effective (e.g., time to relapse).

Outcomes

Studies must have reported at least one of the mental health outcomes assessed in this report. Studies that reported only an intermediate mental health outcome, but no patient-oriented mental health outcomes, are discussed but not analyzed. For all outcomes, we considered data only from time points for which at least 50 percent of the originally enrolled participants contributed data. Subjective outcomes, such as psychiatric symptoms and quality of life, must have been measured using validated instruments.

Publication Type

Studies must have provided a sufficient description of the treatment provided (e.g., duration, dosage) such that the treatment could be replicated by others. Basing conclusions about treatments that are inadequately described will not add to our knowledge base.

Studies must have been conducted in the United States or in another country (Canada, United Kingdom, Australia, and New Zealand) with a legal system and heritage (i.e., rule of law and common law) similar to the United States. This report is aimed at assessing the comparative effectiveness of interventions available within the United States or interventions that could be applied in the United States. Because of differences across nations in justice and health care systems, only studies likely to produce results that are generalizable to the United States are included.

Publications must have been peer-reviewed, full-length articles or conducted by one of the agencies identified in the description of gray literature sources in this protocol. Abstracts alone were not included because they typically do not include sufficient detail about experimental methods to permit an evaluation of study design and conduct, and they also may contain only a subset of the measured outcomes.[57,58] Abstracts of randomized studies that did not subsequently appear as full-length articles were flagged for possible evidence of publication bias.

To capture the most relevant data, we included studies published on or after January 1, 1990. Studies published before 1990 are likely to describe procedures and treatments no longer in common use or outcomes and conditions that are not likely to predict current outcomes. An updated search was conducted while this report is under review.

To avoid double-counting patients when several reports of overlapping patients were available, only outcome data from the report with the largest number of patients were included.

We included the data from a smaller report when it provided data on an outcome that was not provided by the largest report.

Studies must have been published in English. Because this report has been limited to studies conducted in English-speaking countries for reasons of applicability, we do not anticipate being at risk of language bias by further restricting to studies published in English.

Study Selection

Two team members independently reviewed articles in duplicate at the abstract level. We obtained for full review any articles possibly meeting the inclusion criteria for at least one Key Question. In cases in which the two abstract-reviewers disagreed, the full article was retrieved. Two team members also independently reviewed all retrieved articles for inclusion; disagreements between the two reviewers about full-length article inclusion were resolved by discussion and consensus.

Data Extraction

We abstracted the information on general study characteristics, patient characteristics, treatment characteristics, risk-of-bias items, and outcome data (see next section) from full articles meeting the inclusion criteria.

We used the DistillerSR® Web-based systematic review software for abstract screening and data extraction. A second team member reviewed each team member's data extraction. Also, because of the possibility of subjective interpretation, we judged the risk-of-bias items in duplicate. We resolved all discrepancies by discussion. The overall categories of information to be obtained from each study include the following:

General study characteristics. Author, publication year, country, setting (rural or urban, as well as jail, prison, forensic hospital, and incarceration-to-community transitional services), study design, and which Key Question(s) the study addressed.

Patient characteristics. Number of enrolled patients, age, sex, education, ethnicity, primary mental health diagnosis, presence of a co-occurring personality disorder, percentage with a substance abuse diagnosis, and prior criminal justice involvement.

Treatment characteristics. Treatment, duration of treatment, dosage/frequency, education/educational degree of treatment administrator, modality, compelled versus voluntary.
Risk of bias items. See the next section.

Outcome data. For each included outcome, we extracted the number of patients contributing data to each included time point. We extracted the numerical data needed to compute an effect size and its 95 percent confidence interval (CI) for all included outcomes for each study. These may include means, standard deviations, counts, proportions, results of authors' statistical tests, or other statistical details, depending on what was reported.

Multiple publications of the same study (e.g., publications reporting subgroups, other outcomes, or longer followup) were identified by examining author affiliations, study designs, enrollment criteria, and enrollment dates.

Quality (Risk-of-Bias) Assessment of Individual Studies

We assessed the risk of bias (i.e., internal validity) separately for each outcome and time point. The reason for outcome specificity is that some subjective outcomes are more susceptible to bias than others. The reason for time-point specificity is that longer followup often results in attrition or right-censoring, which may yield patients who are somewhat different from the full set of enrolled patients and also may introduce a systematic difference between the groups being compared.

For all included studies we assessed risk of bias using the items below. All of these items were selected from a pool of items typically used by this EPC for systematic reviews of controlled trials. Each of these items was answered as "Yes," "No," or "Not reported." See Table 3 below.

Table 3. Risk-of-bias assessment

Item	Comment
Were patients randomly assigned to the study's groups?	
Was the process of assigning patients to groups made independently from physician/mental health care provider and patient preference?	
For nonrandomized trials, did the study employ any other methods to enhance group comparability?	
Was the comparison of interest prospectively planned?	
Were the 2 groups treated concurrently?	
Were those who assessed the patients' outcomes blinded to the group to which the patients were assigned?	
Was the outcome measure of interest objective and was it objectively measured?	We categorized hospitalization for serious mental illness, mental health service access, suicide, recidivism, and adverse events as objective outcomes. We categorized change in primary psychiatric symptoms and quality of life as subjective outcomes. For adherence to pharmacotherapy and avoidance of substance or alcohol use, we categorized it as objective if the patient had a blood or urine test.
Was the treatment applied consistently across study subjects and over time?	To ensure that all patients, even those enrolled later, receive the same treatment, (e.g., the original version vs. an updated version)
Was there a ≤5% difference between groups in ancillary treatment(s)?	
Was there a ≤15% difference in the length of followup for the 2 groups?	
Did ≥85% of enrolled patients provide data at the time point of interest?	
Was there a ≤15% difference between groups in the percentage of patients who provided data at the time point of interest?	
Was funding free of financial interest?	We answered "no" if the authors developed the treatment examined in the study.

We have categorized each study as "low," "medium," or "high" risk of bias using the following method:

To be considered low risk of bias, the study must receive a "yes" on ALL of the following conditions and have at least 50 percent of the other items on the checklist above answered "yes":

- Randomized
- Blinded outcome assessors
- If NOT blinded outcome assessors (or NR blinded outcome assessors), then the outcome was objective
- Treatment applied consistently across patients and time
- ≤15 percent difference in length of followup between groups
- ≥85 percent of enrolled patients provided data to this time point
- ≤15 percent difference in data provision rates to this time point

To be considered high risk of bias, the study must receive a "no" on the first question and a "yes" on the second question below and have less than 50 percent of the other items on the checklist answered "yes":

- Was the process of assigning patients to groups made independently from physician and patient preference?
- Was a nonblinded outcome assessor assessing a subjective outcome?

To be considered medium risk of bias, the study meets neither the criteria for low risk of bias nor the criteria for high risk of bias.

Two team members performed all risk of bias category assignments (as low, medium, or high) in duplicate and independently, with disagreements resolved by consensus.

Data Synthesis

From each included study, we extracted all important information about study design, patients, and reported data. Because the populations, interventions, and outcome measures used were heterogeneous, they did not lend themselves to a pooled analysis, so we chose to explore the data using a qualitative synthesis. When data from a study permitted, we calculated individual study effect size estimates. The choice of effect size metric depended on whether reported outcomes were continuous or dichotomous. Pre-post treatment differences and between-group posttreatment differences in outcomes measured using continuous data (e.g., scores on psychological tests) were calculated as the standardized mean difference. We computed baseline adjusted values using a pre-post correlation of 0.5. For dichotomous outcomes, we used the odds ratio as the measure of effect size; values greater than 1 favored the experimental group, and values less than 1 favored the control group. For all effect size metrics, we computed 95 percent CIs using standard methods.

The results of our analysis along with additional analysis reported by the authors of the studies are reported in the findings sections under each Key Question. We used calculated effect size estimates to help determine the overall strength of evidence. See the next section for further details about our strength of evidence assessment.

For each outcome, an important consideration is the smallest difference between groups that can still be considered clinically significant (minimum important difference). This definition aids interpretation in two main ways: (1) to determine whether a statistically significant difference is

clearly clinically significant, and (2) to determine whether a statistically nonsignificant difference is small enough to exclude the possibility of a clinically significant difference.

For quality of life, we used established values for a clinically significant difference (e.g., Short Form-36, mental health subscale—5 points).[17] For all other outcomes assessed on a scale in this report, we defined the minimum important difference as an odds ratio of 1.39, which corresponds to a Hedges' g of 0.2, using the formula recommended by Sánchez-Meca and colleagues.[18] For suicide, any statistically significant difference met the standard of a clinically significant difference.

Strength of the Body of Evidence

We assessed strength of evidence for each Key Question based on guidance from the "Methods Guide for Effectiveness and Comparative Effectiveness Reviews" from the Agency for Healthcare Research and Quality.[59] We judged the evidence for each outcome reported according to risk of bias, consistency, directness, and precision. Because there was little variability in risk-of-bias assessments, we modified this approach slightly, looking to other domains to make a determination about the grade. We defined the evidence base as consistent if all trials found an effect in the same direction. We defined direct evidence as studies that reported the effect of treatment on a patient-oriented, rather than intermediate outcome. Because we decided against performing meta-analysis in this report, we considered an effect size to be precise if it was statistically significant in the included studies. We also factored in the number of trials and participants in making this determination. We graded the evidence as insufficient if there was only one trial addressing a particular outcome or if two trials reported inconsistent results for the same outcome. If there was sufficient evidence (at least two trials reporting a consistent conclusion), then we assigned a strength of evidence grade based on the number of included studies. We applied a low strength of evidence grade in cases in which only two trials reported an outcome. See Table 4 below.

Table 4. Strength-of-evidence grade for the body of evidence

Grade	Evidence-based Practice Center Program Definition	Operational Definition for This Report
High	High confidence that the evidence reflects the true effect. Further research is unlikely to change our confidence in the estimate of effect.	Four or more trials of any risk of bias reported a consistent and precise (narrow confidence interval) effect size estimate for a patient-oriented (direct) outcome.
Medium	Medium confidence that the evidence reflects the true effect. Further research may change our confidence in the estimate of effect.	Three trials with any risk-of-bias grade reported a consistent and fairly precise (fairly narrow confidence interval) effect size estimate for a patient-oriented (direct) outcome.
Low	Low confidence that the evidence reflects the true effect. Further research is likely to change our confidence in the estimate of effect	Two trials with any risk of bias grade reported consistent results on either a direct (patient-oriented) or indirect (intermediate) outcome.
Insufficient	Evidence is either unavailable or does not permit a conclusion.	No trials or only one trial reported an outcome or two trials reported inconsistent findings for the outcome.

Applicability Assessment

As defined in the AHRQ Effective Health Care Program "Methods Guide for Comparative Effectiveness Reviews of Medical Interventions," applicability is "the extent to which the effects

observed in published studies are likely to reflect the expected results when a specific intervention is applied to the population of interest under 'real-world' conditions."[60] Applicability depends on context and cannot be assessed with a universal rating system.[60]

Assessment of the applicability of a body of evidence is a complex task and involves addressing a series of methodological questions. These questions include:

- What are the populations of interest and the "real world" conditions relevant to the stakeholders of this evidence report? From whose perspectives should the applicability of the evidence be evaluated? This CER potentially serves multiple stakeholders, such as clinicians, patients, families, and policymakers. Different stakeholders may have different populations of interest and different applicability issues for consideration.
- What factors may affect the applicability of a study? What factors need to be considered in the assessment of applicability? While the PICOTS (i.e., population, intervention, comparator, outcome, timing, and setting) approach may be used to identify these factors, some of the factors may have already been considered, at least in part, in the study inclusion/exclusion process.
- How would the impact of each of these factors be judged or graded? The answer to this question is not always straightforward. For example, it is difficult to judge the exact degree to which the findings of a study that included only patients of 55 years of age or older apply to a younger population. The judgment is often made on a subjective basis.
- How would the impact of these various factors be synthesized to reach a general conclusion about the applicability of an individual study? Studies included in evidence reviews may report different applicability-related data (e.g., different types of comorbidities) or report the same types of data (e.g., recidivism) in different ways (e.g., new offense, new incarceration).

Given these issues, we chose a practical approach to assessing the applicability of evidence for this evidence review. The goal of our assessment is to provide useful information to concerned stakeholders in judging whether the evidence is applicable to the population or conditions of their interest.

We first abstracted data from each included study on factors that may affect the applicability of the study. We primarily focused on factors in the three following areas that are most relevant:

- Population—demographic characteristics, comorbidity of substance abuse diagnosis, criminal history
- Intervention and comparators—pharmacologic, psychological, dual diagnoses, discharge planning with benefit assistance, and generalist- versus specialist-provided treatments; the comparator was usually standard of care
- Setting—place of incarceration, rural versus urban

Based on a review of the data abstracted, we narratively summarized any patterns reflected from these factors that could potentially affect the applicability of the evidence. Our narrative summaries are intended to draw stakeholders' attention to potential applicability issues embedded in the evidence.

Peer Review and Public Commentary

Experts in the mental health, criminal justice, law, and research methodology fields and individuals representing stakeholders and user communities were invited to provide external peer

review of this CER. Manufacturers were invited to provide information on their products. AHRQ and an associate editor also provided comments. AHRQ posted the draft report on its Web site for 4 weeks to elicit public comment. We addressed all reviewer comments, revising the text as appropriate, and documented everything in a "disposition of comments report" that will be made available 3 months after the Agency posts the final CER on the AHRQ Web site.

Results

Introduction

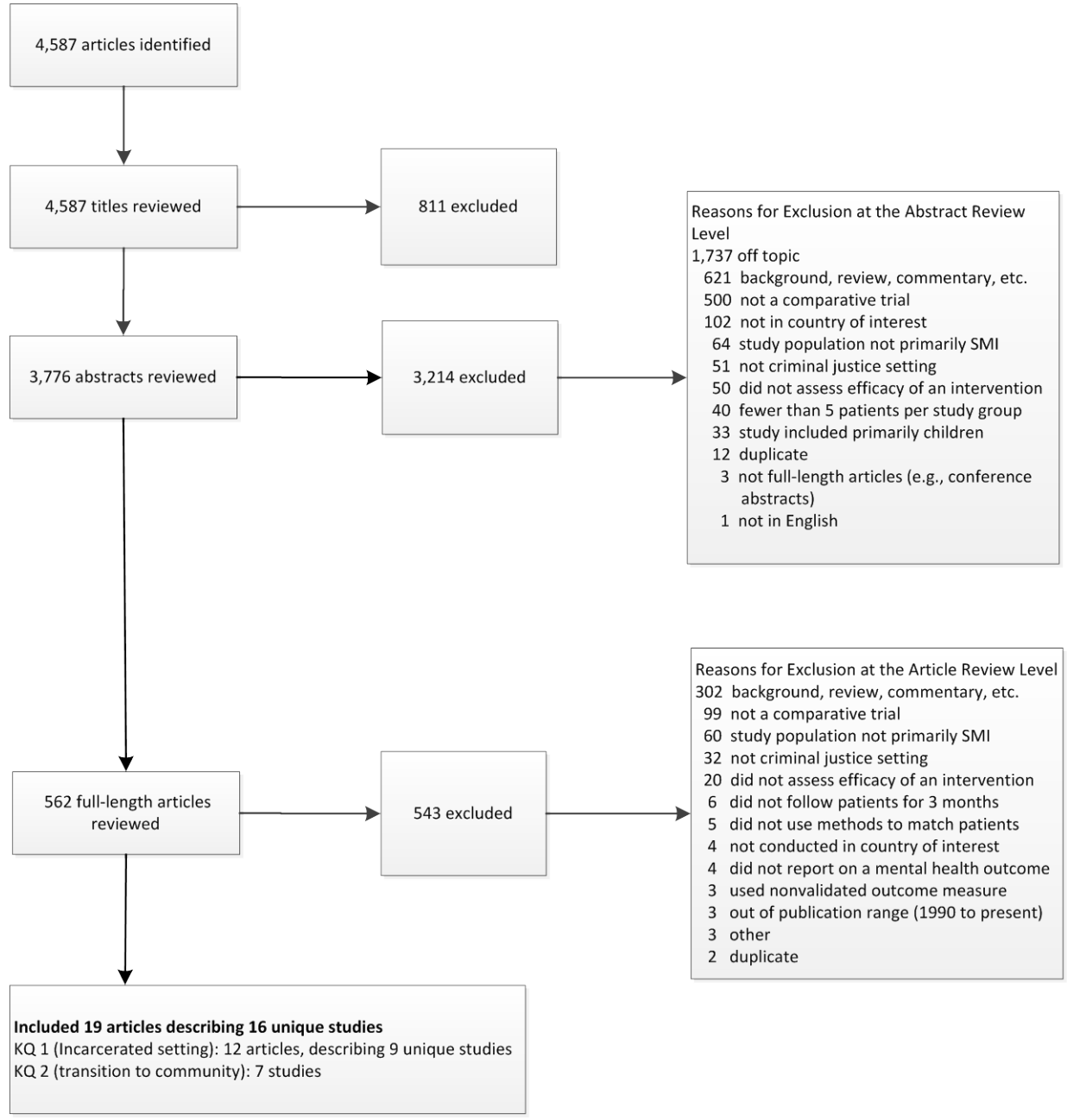
In this section, the reader will find our literature search results, including information about how many abstracts we identified and why we excluded most abstracts from this report. This is followed by the key findings for Key Question 1 (KQ1; incarceration setting) organized by treatment type (pharmacologic therapy, psychological therapy, and dual disorder treatments); a description of the included studies for KQ1, including basic study design information, inclusion/exclusion criteria, outcomes reported, a description of the instruments used to measure each outcome; a more in-depth description of the study findings; and a description of individual study risk-of-bias assessments, strength-of-evidence grades for the body of evidence, and applicability; all organized by the type of treatment studied. All of the same information is then provided for Key Question 2 (KQ2; incarceration to community transitions), organized by treatment type.

Literature Search Results

Our searches of the literature identified 4,587 potentially relevant articles, and we excluded 811 of these at the title level (Figure 2). At the abstract level, we excluded another 3,214 articles typically because they were irrelevant to our Key Questions (1,737 publications); were background, review, commentary, or protocol articles (621 publications); were not comparative trials (500 publications); or were not conducted within a country of interest to this report (102 publications). At the full-length article review, we further excluded another 543 articles, typically because they were background, review, commentary, or protocol articles (302 publications); were not comparative trials (99 publications); or the study populations were not primarily serious mental illness (SMI; 60 publications).

The remaining 19 publications describing16 unique studies made up the evidence base for this review. Twelve articles describing nine unique studies addressed KQ1 (interventions delivered within an incarceration setting), and seven studies addressed KQ2 (interventions provided during transition from incarceration to a community setting).

Figure 2. Literature flow diagram



KQ = Key Question; SMI = serious mental illness

KQ1. Interventions Applied Within Jail, Prison, or Forensic Hospital Settings

KQ1. What is the comparative effectiveness of interventions applied within a jail, prison, or forensic hospital setting for adults with SMI (schizophrenia, schizoaffective disorder, bipolar disorder, or major depression) with or without a co-occurring alcohol/substance abuse diagnosis?

Key Points

- Evidence of low strength favored antipsychotics other than clozapine over clozapine for improving psychiatric symptoms in an incarceration setting.
- Evidence was insufficient to draw conclusions about the comparative effectiveness of risperidone with other antipsychotics or of chlorpromazine at a high dosage versus chlorpromazine at a standard dosage in these populations and settings.
- Evidence was insufficient to draw conclusions about the comparative effectiveness of cognitive behavior therapy (CBT) versus treatment as usual or individual supportive therapy.
- Evidence was insufficient to draw conclusions about the comparative effectiveness of modified therapeutic community (MTC) treatment with more standard in-prison mental health and substance abuse services for men and women with dual diagnoses.

Description of Included Studies

For KQ1, we reviewed studies that evaluated interventions that were provided during incarceration within a jail, prison, or forensic hospital. To be eligible, studies must have covered one or more of the interventions of interest for the settings addressed in KQ1 listed in Table 1 in the background section of this report. The studies must have compared one of the identified interventions with another intervention or to standard of care or treatment as usual. We did not consider studies that compared an intervention with a waitlist control or no treatment group for this question. We also considered whether there was a difference in the comparative effectiveness of interventions based on the setting (i.e., jail, prison, forensic hospital) in which the interventions were provided.

Nine studies published in 12 separate publications met the eligibility criteria for this Key Question. Two of the studies were reported in more than one publication. Three publications reported results on different outcomes for the same patient population.[61-63] For this report, we considered those publications to be one study. However, we described the results for all outcomes reported in each of the publications. Another two publications reported the same outcomes for an overlapping patient population but for different time points.[64,65]

As presented in Table 5, four studies evaluated pharmacologic interventions, three considered psychological therapies, and two evaluated interventions designed to treat inmates who had a dual diagnosis of SMI and substance abuse. Four of the studies were randomized controlled trials (RCTs) and five were nonrandomized comparison trials that used a matching strategy to ensure that the patients considered in the study were comparable on key baseline characteristics such as age, diagnosis, treatment history, and criminal justice history. The number of patients enrolled in the studies ranged from 10 to 468.

Table 5. Characteristics of included studies for Key Question 1

Reference	Number of Patients	Study Design	Treatment	Comparator	Setting
Rees-Jones et al., 2012[66]	121	Nonrandomized comparative trial	Cognitive skills training: Reasoning & Rehabilitation	Treatment as usual	Forensic hospital
Cullen et al., 2011[67]	84	Multisite randomized control trial	Cognitive skills training: Reasoning & Rehabilitation	Treatment as usual	Medium secure forensic units
Balbuena et al., 2010[68]	98	Nonrandomized comparative trial	Clozapine	Other antipsychotics	Forensic hospital
Martin et al., 2008[69]	73	Nonrandomized comparative trial	Clozapine	Other antipsychotics	Acute unit of a forensic hospital
J. Sacks et al., 2008[64] & J. Sacks et al. 2012[65]	468	Randomized controlled trial	Modified therapeutic community	Intensive outpatient program	Medium secure prison
S. Sacks et al., 2004[61] & Sullivan et al., 2007a[62] & Sullivan et al., 2007b[63]	139	Randomized controlled trial	Modified therapeutic community with or without aftercare	Standard mental health interventions	Maximum security forensic prison
Tavernor et al., 2000[70]	50	Nonrandomized comparative trial	High-dose chlorpromazine	Standard-dose chlorpromazine	Maximum security hospital for patients considered to be a "grave and immediate danger"
Beck et al., 1997[71]	20	Nonrandomized comparative trial	Risperidone	Traditional neuroleptics	Maximum security unit of a State mental hospital
Wilson, 1990[72]	10	Randomized controlled trial	Group cognitive therapy	Individual supportive therapy	Maximum security prison

Notes: J. Sacks et al. 2008 and J. Sacks et al. 2012 report on overlapping patient populations. The J. Sacks et al. 2012 publication included 154 additional subjects and longer-term followup. We consider these two publications a single study. Because the quality of data reporting was superior in the J. Sacks et al. 2008 publication, we rely mainly on that report, but supplement it when possible with information from the 2012 publication.

S. Sacks 2004, Sullivan 2007a, and Sullivan 2007b all report different outcomes for the same patient population. Because these publications report on the same patient population, we consider it a single study.

See Table 6 for details on the types of patients enrolled and excluded for each trial. Two trials required a diagnosis of psychosis, one required depression, three did not clearly specify psychiatric diagnosis for eligibility, and two required both a psychiatric and substance abuse diagnosis for study entry.

Table 6. Participant inclusion and exclusion criteria for studies addressing Key Question 1

Types of Therapies	Study	Participant Inclusion Criteria (as described in article)	Participant Exclusion Criteria (as described in article)
Pharmacologic therapies	Balbuena et al., 2010[68]	The clozapine group included all patients with psychosis who were treated with clozapine for a minimum of 6 weeks since facility opened in 1978. The nonclozapine group included matched patients with psychosis who were never treated with clozapine but were on 1 or more antipsychotic medications for a minimum of 6 weeks during the same period. All patients who met DSM-IV criteria for psychosis or other related disorders identified through review of clinical records by 2 research psychiatrists.	Did not meet DSM-IV criteria for psychosis or related disorders.
Pharmacologic therapies	Martin et al., 2008[69]	Patients admitted to the forensic acute admissions ward between 1999 and 2004	Not reported
Pharmacologic therapies	Tavernor et al., 2000[70]	Not reported	Not reported
Pharmacologic therapies	Beck et al., 1997[71]	Not reported	Not reported
Psychological therapies	Rees-Jones et al., 2012[66]	Males 18–65 years of age detained under the UK Mental Health Act at 10 secure forensic facilities. Inmates must have had current diagnosis or history of severe mental illness (schizophrenia, schizoaffective disorder, or bipolar disorder), a history of violent or antisocial behavior, no previous treatment with Reasoning & Rehabilitation or any similar treatments, absence of a learning disability, and proficiency in the English language.	Participants were excluded from the study if they were mentally unstable or posed a risk of violence to the research team.

Table 6. Participant inclusion and exclusion criteria for studies addressing Key Question 1 (continued)

Types of Therapies	Study	Participant Inclusion Criteria (as described in article)	Participant Exclusion Criteria (as described in article)
Psychological therapies	Cullen et al., 2011[67]	Inmates were included if they met the following criteria: (1) a primary clinical diagnosis of psychotic disorder, (2) a history of violent behavior leading to current admission, (3) not having participated in Reasoning & Rehabilitation or treatment, (4) not actively psychotic, (5) absence of significant cognitive impairment, and (6) proficiency in English language sufficient to allow participation in the program.	Not reported
Psychological therapies	Wilson, 1990[72]	Inmates were included if they met the following criteria: (1) self-reported depression of not less than 5 weeks, (2) a structured interview and judgment by a trained interviewer (author) that depression was a major presenting psychopathology, (3) Beck Depression Inventory scores of not less than 13, (4) not currently receiving medication or other treatment, and (5) willingness to complete treatment and assessment instruments.	Not reported
Dual disorder treatment	J. Sacks et al., 2008[64,65 a]	Participants must have had the following: (1) at least 6 months (and no more than 24 months) remaining until parole eligibility, (2) a Colorado Department of Corrections Standardized Offender Assessment score of 4 or greater indicative of serious substance abuse problems requiring treatment, and (3) a security risk level classification of minimum, minimum-restricted, or medium to permit participation in treatment.	Not reported
Dual disorder treatment	S. Sacks et al., 2004[61 b] & Sullivan et al., 2007a[62 b] & Sullivan et al., 2007b[63 b]	Male inmates with psychiatric disorders and co-occurring substance use disorders	Inmates who represented a clear danger to themselves or others

[a]These studies report on the same patient population and are not considered independent studies in this report.
[b]These studies report outcomes on the same patient population and are not considered independent studies in this report.
DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, fourth edition

Table 7 lists the outcomes reported on for each of the studies that addressed KQ1. As per the inclusion criteria for this report, all the studies reported on at least one mental health outcome, with all studies reporting on change in psychiatric or behavioral symptoms. The criminal justice outcomes reported by some of the studies included infractions of prison code, recidivism, and

reincarceration. Other outcomes reported by some of the studies included substance or alcohol use, time to relapse, dangerousness to others, mental health services use, and adherence to treatment. Only two of the studies, each evaluating pharmacological therapies, reported on adverse events.

Table 7. Included studies and outcomes for Key Question 1

Reference	Independent Functioning	Psychiatric Symptoms	Substance or Alcohol Use	Time to Relapse	Dangerousness to Others	Infractions of Prison Code	Recidivism	Reincarceration	Adverse Events	Mental Health Service Use*	Adherence to Treatment*
Rees-Jones et al., 2012[66]		✓									
Cullen et al., 2011[67]		✓									
Balbuena et al., 2010[68]	✓	✓				✓					✓
Martin et al., 2008[69]		✓							✓		
J. Sacks et al., 2008[64,65 a]		✓	✓				✓	✓		✓	
Sullivan et al., 2007a[62 b]			✓	✓							
Sullivan et al., 2007b[63 b]		✓								✓	
S. Sacks et al., 2004[61 b]							✓	✓			
Tavernor et al., 2000[70]		✓							✓		✓
Beck et al., 1997[71]		✓			✓						
Wilson, 1990[72]		✓									

*Intermediate outcomes.
[a]These studies report on overlapping patient populations and are not considered independent studies in this report.
[b]These studies report outcomes on the same patient population and are not considered independent studies in this report.

In most of the studies, psychiatric or behavioral symptoms were measured using a variety of observational or self-reported instruments. The most common instruments used across studies were the Beck Depression Inventory (BDI, 3 studies), the Brief Psychiatric Rating Scale (BPRS, 2 studies), and the Brief Symptom Inventory (BSI, 2 studies). The Beck Depression Inventory (BDI, BDI-II) is one of the most widely used instruments for measuring depression severity.[73]

The BDI is a 21-question, multiple-choice, self-report inventory composed of items relating to symptoms of depression such as hopelessness and irritability, cognitions such as guilt or feelings of being punished, as well as physical symptoms such as fatigue, weight loss, and lack of interest in sex. Higher scores on the BDI indicate more severe depressive symptoms.

The BPRS and BSI are designed to measure an array of psychiatric symptoms in a fairly brief amount of time. The BPRS is a one-page, 16- to 18-item scale measuring self-report and patient observation of affective and psychotic symptoms.[74] Higher scores on this scale indicate the presence of more symptoms.

The BSI is a 53-item, self-report scale used to measure nine primary symptom dimensions (somatization, obsessive-compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) and three global indices (Global Severity Index, Positive Symptom Distress Index, and Positive Symptom Total).[75] The BSI is a shortened version of the SCL-90 (Symptom Check List-90) and is designed to provide a multidimensional symptom measurement in about 10 minutes. Higher scores on both versions of the BSI indicate the presence of more psychiatric symptoms. See Table 8 below for more details.

Table 8. Instruments used to measure psychiatric symptoms for Key Question 1

Reference	Instrument
Rees-Jones et al., 2012[66]	Maudsley Violence Questionnaire and Locus of Control Scale
Cullen et al., 2011[67]	Social Problem Solving Inventory
Balbuena et al., 2010[68]	Brief Psychiatric Symptom Inventory
Martin et al., 2008[69]	Global Impression Scale
J. Sacks et al., 2008[64,65 a] & J. Sacks et al., 2012[64,65 a]	Beck Depression Inventory, Brief Symptom Inventory, Posttraumatic Symptom Scale
S. Sacks et al., 2004[61 b] & Sullivan et al., 2007a[62 b] & Sullivan et al., 200b7[63 b]	Beck Depression Inventory, Brief Symptom Inventory, Adult Manifest Anxiety Scale
Tavernor et al., 2000[70]	Brief Psychiatric Symptom Inventory, Global Assessment Scale, Nurses' Observation Scale, Social Dysfunction and Aggression Scale
Beck et al., 1997[71]	Time Sample Behavioral Checklist
Wilson, 1990[72]	Beck Depression Inventory, Hopelessness Scale, Multiple Affect Adjective Check List, Minnesota Multiphasic Personality Inventory

[a]These studies report on overlapping patient populations and are not considered independent studies in this report.
[b]These studies report outcomes on the same patient population and are not considered independent studies in this report.

Risk-of-Bias Assessment

Our risk-of-bias assessments for the studies that address KQ1 appear in Table D1 of Appendix D. We categorized all trials as medium risk of bias for all reported outcomes. The most common reasons for the designation were that they used subjective outcome measures

(psychiatric symptoms, self-reported criminal justice outcomes), failed to blind outcome assessors (either not performed or not reported), and experienced attrition.

Pharmacologic Therapies

Description of Studies

Four studies that addressed KQ1 evaluated the efficacy of pharmacologic therapies for incarcerated individuals with SMI. All four studies were nonrandomized comparison studies that used matching strategies to ensure baseline comparability of the enrolled patients on key characteristics such as diagnosis, functioning, criminal justice history, and age. Only one study was prospectively planned.[71] The other three studies were retrospective chart reviews.[68-70] The patients in all four studies were incarcerated in forensic hospitals or specialized forensic units.

The studies took place in various locations, with one each taking place in the United States, the United Kingdom, Australia, and Canada. See Table E1 of Appendix E for more information about the general characteristics of the studies.

Two of the studies compared the efficacy of clozapine with the efficacy of other antipsychotics.[68,69] The objective of both studies was to examine the suitability of clozapine for forensic patients. Clozapine is often used in treatment-resistant schizophrenia and is known for its antiaggression properties.[68] However, its use has been associated with a number of adverse events, including sleepiness, rapid heartbeat, constipation, drooling, weight gain, and orthostatic hypotension.[76] More serious adverse events include agranulocytosis, myocarditis, cardiomyopathy, pulmonary embolism, respiratory depression, and seizures. Patients taking clozapine are required to undergo regular blood monitoring. This, along with the side effects of clozapine, may interfere with treatment adherence. See Tables E2 and E3 in Appendix E for further details about the treatment conditions in these and the other studies assessing psychopharmacological therapies.

Another study addressing KQ1 compared risperidone with other antipsychotics.[71] Risperidone has effects similar to clozapine with less serious side effects, but unlike clozapine it is not approved for treatment-resistant schizophrenia.

The final study compared high-dose chlorpromazine (more than 1,400 mg) with standard dose (less than 1,000 mg).[70]

In all four studies, patients had received a diagnosis of a psychotic disorder (schizophrenia or schizoaffective disorder) and most had a history of violence or aggression. The average age of the patients ranged from 34 to 40 years. In one study, the authors reported that the majority of patients had a co-occurring substance use/dependence disorder.[69] See Tables E4 and E5 in Appendix E for more information about the patients enrolled in the studies.

Findings

See Table 9 below for a summary of our findings.

Of the two studies that compared clozapine with other antipsychotics, Balbuena and colleagues (98 patients) measured change in psychiatric symptoms using the BPRS and Martin and colleagues (73 patients) used the Clinician Global Impression of Severity.[68,69] Our analysis of the BPRS scores in the Balbuena and colleagues study indicated that psychiatric symptoms decreased for both groups from baseline to 6-month followup, but a statistically significant difference between groups did not exist at followup. In their repeated measures analysis using time and drug group as predictor variables, the authors of the study demonstrated a significantly

greater decrease in BPRS scores (indicating a greater decrease in symptoms) for the nonclozapine group. Although no analysis could be completed because of missing data, the authors suggested that time on medication and adherence to treatment may have had an impact on the BPRS scores of the clozapine group.[68] See Table F1 in Appendix F for more detail.

In the Martin and colleagues study, no statistically significant difference was observed between patients experiencing very much or much improvement on clozapine compared with the number of patients on other antipsychotics experiencing a similar improvement. Martin suggested that high rates of co-occurring substance misuse and medical and behavioral problems may have had an impact among patients in the clozapine group.[69]

We gave a low strength of evidence grade to this evidence base because, although there was no statistically significant difference between study arms in either clozapine trial, both studies tended to favor antipsychotics other than clozapine over clozapine for improving psychiatric symptoms.

Besides the above outcomes, Balbuena and colleagues reported on the number of institutional infractions.[68] At 12-month followup, count data indicated that 68 percent (32/47) of the patients treated with clozapine remained offense free, compared with 52 percent (14/27) of the patients not treated with clozapine. The difference between groups in number of offenses was not statistically significant (likely due to sample sizes at followup). Balbuena and colleagues also reported a measure of independent functioning, an increase in pay. A significantly greater percentage of patients, about 60 percent, in the clozapine treatment arm received a pay increase versus 30 percent receiving a pay increase in the other antipsychotic medication group.[68]

Martin and colleagues reported on adverse events for the clozapine group only.[69] Overall, 10 percent (5/47) of patients treated with clozapine experienced a serious adverse event. Four percent (2/47) developed neutropenia and 6 percent (3/47) experienced seizures. Further, the authors reported that 15 patients discontinued clozapine at some point during the study for the following reasons: patient refusal, neutropenia, or sedation (2/15 or 13 percent for each); hyperglycemia, hypersalivation, ineffectiveness, seizures, or weight gain (1/15 or 7 percent each).[69] See Table F9 in Appendix F for more detail.

Results of the study by Beck and colleagues (20 patients), which compared risperidone with other antipsychotics, did not find any significant difference in levels of adaptive and maladaptive behaviors (as measured by the Time Sample Behavioral Checklist) between patients on risperidone and patients on other antipsychotics at 6-month followup.[71] They also failed to find a difference between groups for the parameter of change in the number of aggressive incidents from baseline to followup. The authors reported that patients on risperidone did not display any change in number of aggressive acts from the time they were placed on the medication to followup. One particularly limiting factor in this study was that there was no washout period between the time patients were taken off other antipsychotic medications and put on risperidone. See Table F1 in Appendix F for more detail.

Finally, the overall findings of the study by Tavernor and colleagues, which compared high-dose chlorpromazine with standard dose in a maximum security hospital, indicated that patients receiving the high dose experienced significantly more psychiatric symptoms and adverse events than did patients on the standard dose.[70] The patients receiving the high dose demonstrated a higher overall score on the BPRS and on four subscales of the Nurses' Observational Scale for Inpatient Evaluation (NOSIE).

Specific results for the Tavernor and colleagues study are as follows: for BPRS (standardized mean difference [SMD] 0.744; 95% confidence interval [CI], 0.171 to 1.317; p=0.011); NOSIE

subscale social interest (SMD 0.631; 95% CI, 0.129 to 1.133; p=0.014), psychotic depression (SMD 0.750; 95% CI, 0.243 to 1.257; p=0.004), manifest psychosis (SMD 0.883; 95% CI, 0.370 to 1.397; p=0.001), and irritability (SMD 0.587; 95% CI, 0.087 to 1.088; p=0.021).[70]

Patients in the high-dose group demonstrated higher levels of general and peak aggression than the standard dose group as measured by the Social Dysfunction and Aggression Scale (general SMD 0.532; 95% CI, 0.034 to 1.031; p=0.036; and peak SMD 0.631; 95% CI, 0.125 to 1.137; p=0.014).

The authors also reported that the high-dose group experienced significantly more autonomic and neurological side effects than did the standard dose group (mean score for high-dose group was 6.96, mean for standard dose was 4.84, p=0.048).[70] See Tables F1 and F9 in Appendix F for additional information.

Table 9. Strength-of-evidence grade for studies assessing pharmacologic therapies for Key Question 1

Comparison	Outcome	N Studies (N Patients)	Overall Risk of Bias	Consistency	Directness	Precision	Direction of Effect Favored	SOE Grade
Clozapine vs. other antipsychotics	Psychiatric symptoms	2 (171)	Medium	Consistent	Direct	Imprecise	Antipsychotics other than clozapine	Low
Clozapine vs. other antipsychotics	Independent functioning	1 (98)	Medium	Unknown (1 study)	Direct	Precise	Clozapine	Insufficient
Risperidone vs. other antipsychotics	Psychiatric symptoms	1 (20)	Medium	Unknown (1 study)	Direct	Imprecise	—	Insufficient
Risperidone vs. other antipsychotics	Institutional infractions	1 (20)	Medium	Unknown (1 study)	Direct	Imprecise	—	Insufficient
High-dose chlorpromazine vs. standard dose	Psychiatric symptoms	1 (64)	Medium	Unknown (1 study)	Direct	Precise for BPRS, subscales of NOSIE, the general and peak SDAS, and adverse events	Standard dose	Insufficient

BPRS = Brief Psychiatric Rating Scale; NOSIE = Nurses' Observational Scale for Inpatient Evaluation; N = number; SDAS = Social Dysfunction and Aggression Scale; SOE = strength of evidence

Applicability

In all of the pharmacologic therapy studies, the patients had a psychotic disorder and most had a history of violence and aggression. The findings of these studies are applicable only to this subset of inmates. Further, these studies took place in forensic hospitals or specialized units in which patients may have been more carefully observed for adverse events than would occur in a nonspecialized jail or prison setting. This is an important point because clozapine and high-dose chlorpromazine are associated with serious adverse events and patients on these medications need

to undergo periodic blood tests and be closely monitored. Such attention may not be available in some jails or prisons.

Psychological Therapies

Description of Studies

Three studies that addressed KQ1 evaluated the efficacy of psychological therapies used to treat incarcerated individuals with SMI. Two studies, Rees-Jones and colleagues and Cullen and colleagues, evaluated the use of a cognitive skills program called Reasoning and Rehabilitation (R&R) to treat men incarcerated in secure forensic units located across the United Kingdom.[66,67] Both were multisite studies.

In the Rees-Jones trial, 121 males with a diagnosis of schizophrenia or schizoaffective or bipolar disorder were nonrandomly assigned to receive R&R (n=67) or treatment as usual (n=54).[66] More than half of these offenders had a history of violence. In the Cullen and colleagues study, 72 men with a primary diagnosis of psychotic disorder and a history of violence were randomly assigned to receive R&R (n=36) or treatment as usual (n=36).[67] The majority of the patients in this study had a diagnosis of schizophrenia that was based on Diagnostic and Statistical Manual of Mental Disorders, fourth edition, (DSM-IV) or International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) criteria.

Cullen and colleagues did not report whether the patients had a history of substance abuse but did indicate that overall, 44 percent (37 patients) of patients had a co-occurring diagnosis of antisocial personality disorder.[67] Neither rates of substance use nor co-occurring personality disorder were reported by Rees-Jones.

The average age of the men enrolled in both studies was 35 years. Cullen and colleagues reported that the median number of previous convictions was five for the R&R group and six for the treatment-as-usual group. The participants in Rees-Jones had between seven and eight earlier convictions, on average.[66] For more information about the patients enrolled in this study see Table E4 and E5 in Appendix E.

The R&R cognitive skills program was developed on the premise that many offenders, with or without mental illness, "have failed to develop core social cognitive skills and are therefore nonreflective, impulsive, egocentric, concrete in their thinking, and tend to externalize blame for their actions."[67] The program targets cognitive deficits and maladaptive thinking styles and encourages offenders to develop prosocial skills and behaviors.

In Cullen and colleagues study, the R&R program consisted of 36 sessions, 2 hours each, covering the following eight modules: problem solving, assertiveness skills, social skills, negotiation skills, creative thinking, emotion management, values reasoning, and critical reasoning.[67] Groups of five to eight patients received the program, with group sessions held twice or three times weekly, led by staff who received intensive training from the program developers.

Patients in the treatment-as-usual group in the Cullen and colleagues study were free to receive any interventions considered to be part of their usual treatment with the exception of R&R.[67] In the Rees-Jones and colleagues study, investigators modified the program for a mentally disordered offender population.[66] It consisted of 16 sessions, with individual mentoring between group sessions. See Table E2 of Appendix E for more information about the treatments provided in this study.

Patients in the Wilson study were randomly assigned to receive either group cognitive treatment (n=5) or individual supportive therapy (n=5).[72] The patients in this study were

incarcerated in a large, maximum-security prison. They had all received a diagnosis of major depression by the referring physician or therapist. The average age of patients was 33 years, and the average length of current incarceration was 28 years. The author did not report whether patients had a history of substance abuse or other co-occurring disorders. See Tables E4 and E5 of Appendix E for more information about the patients in this study.

Therapy in the Wilson cognitive group was based on the assumptions and techniques developed by Beck and colleagues.[72] The group sessions were problem-oriented and focused on specific techniques, such as developing activity schedules and recording dysfunctional thinking, as well as on group processes, such as modeling and attention to group interactions. Patients were encouraged to identify, challenge, and modify negative thoughts. Patients were offered 14 sessions of 90 minutes each and were given homework assignments to improve mood and teach adaptive skills. The author of the study delivered the therapy.

The individual supportive therapy was designed to be a brief form of treatment in which patients were encouraged to discuss their moods, current functioning, and personal concerns.[72] The treatment avoided using specific cognitive or behavioral techniques and, instead, encouraged patients to deal with problematic issues through reflection. Patients in this group received brief, ongoing, individual supportive sessions lasting 5–10 minutes by the author of the study or the cellblock counselor as part of the standard prison routine. See Table E2 of Appendix E for more details about the therapies provided in the Wilson study.

Findings

All included data for these studies appear in Tables F1 through F9 in Appendix F. A summary of findings appears below in Table 10.

All three of the studies that evaluated psychological therapies reported on change in psychiatric or behavioral symptoms. The primary outcome in the Cullen and colleagues study was change in social problem solving as measured by the Social Problem Solving Inventory (SPSI).[67] The SPSI is a 25-item questionnaire that consists of two subscales that measure problem-solving orientation (positive orientation and negative orientation) and three that measure problem-solving style (rational problem solving, impulsivity/carelessness, and avoidant). Higher scores in the areas of total problem-solving skills, positive problem orientation, and rational problem solving indicate more adaptive functioning. Higher scores for negative problem orientation, impulsivity/carelessness, and avoidant problem solving indicate more maladaptive behaviors.

Rees-Jones and colleagues reported Maudsley Violence Questionnaire (MVQ) total score and Locus of Control (LoC) Scale.[66] The MVQ is a 56-item true/false questionnaire assessing machismo and acceptance of violence. Higher scores indicate more violent tendencies. The LoC Scale is a 40-item yes/no questionnaire that measures whether subjects believe events are internally or externally controlled. Higher scores are judged to be worse.[66]

Cullen and colleagues reported that, at posttreatment, the R&R group demonstrated significant improvement compared with improvement in the treatment-as-usual group on the impulsive/carelessness and avoidant problem-solving style subscales of the SPSI. Results showed the following: for impulsive/carelessness, SMD 0.612; 95% CI, 0.140 to 1.085; p=0.011; and avoidant, SMD 0.557; 95% CI, 0.086 to 1.028; p=0.02. The R&R group continued to demonstrate significant improvement on these subscales at 12-month followup (impulsivity/carelessness, SMD 0.524; 95% CI, 0.054 to 0.994; p=0.029; and avoidant, SMD 0.834; 95% CI, 0.352 to 1.315; p=0.001).[67]

Our calculation of effect size estimates did not indicate any significant difference between Cullen and colleagues groups on the SPSI total score or most of the subscales. However, in their post-hoc analysis of treatment completers, the authors found that the R&R group improved significantly compared with improvement in the treatment-as-usual group on the total score of the SPSI (p=0.04 at posttreatment and p=0.01 at 12-month followup).

Results of the Rees-Jones and colleagues study indicate that the R&R group significantly reduced their violent tendencies by the 3-month followup compared with violent tendencies measured in the treatment-as-usual group.[66] The authors noted no significant group difference for the LoC measure.

Wilson measured change in psychiatric symptoms using multiple instruments (see Table 8 for a list of the instruments used in this study).[72] At posttreatment and at 9-month followup, no statistically significant differences were observed between the cognitive therapy group and the individual supportive therapy group on any of the instruments used to measure depression or other psychiatric symptoms.

Because of differences in the interventions, outcomes reported, and diagnostic enrollment criteria, these studies were not combined in the strength-of-evidence grades that follow. The R&R trials were not combined because each study reported different outcome measures, with R&R participants outperforming the treatment-as-usual group on some but not all measures. Additionally, all three of the studies that evaluated psychological therapies for incarcerated individuals with SMI had limitations. The primary limitations in the Cullen and colleagues study were possible selection bias and attrition bias in the R&R group.[67] Only half (21 of 42) of the patients randomly assigned to the R&R group completed treatment. A major limitation of the Rees-Jones and colleagues study was that study assignments were not made independently from physician or patient preference, possibly resulting in selection bias.[66]

In a separate publication, Cullen and colleagues examined treatment dropout among the 42 patients who were assigned to the R&R group.[77] The goal of the analysis in this study was to determine which patient characteristics (demographic, behavioral, and clinical) predicted dropout. The authors of the study reported that "program noncompletion was significantly predicted in univariate analysis by current and future violence risk, antisocial traits, and recent violence." Multivariate analysis indicated that psychopathy, antisocial personality disorder, and recent violence were the strongest predictors of failure to complete treatment.

The main limitation of the Wilson study was the small sample.[72] Only 10 inmates agreed to participate in this study. As indicated by the author, such a small sample size limits the ability to uncover any meaningful differences between the two treatment groups.

Table 10. Strength-of-evidence grade for studies assessing psychological therapies for Key Question 1

Comparison	Outcome	N Studies (N Patients)	Overall Risk of Bias	Consistency	Directness	Precision	Direction of Effect Favored	SOE Grade
Cognitive problem solving group (R&R) vs. treatment as usual	Psychiatric symptoms	2 (205)	Medium	Unknown (different measures used)	Direct	Precise for the impulsiveness/ carelessness and avoidant subscales of the SPSI and MVQ	Cognitive problem solving group	Insufficient
Cognitive group therapy vs. individual supportive therapy	Psychiatric symptoms	1 (10)	Medium	Unknown (1 study)	Direct	Imprecise	—	Insufficient

MVQ = Maudsley Violence Questionnaire; N = number; R&R = Reasoning and Rehabilitation; SOE = strength of evidence; SPSI = Social Problem Solving Inventory

Applicability

We further evaluated the studies that assessed psychological therapies for incarcerated individuals with SMI to identify factors that could potentially affect the applicability of the evidence. The patients enrolled in the three studies represent the heterogeneity of incarcerated individuals with SMI. In two studies, the patients had a diagnosis of schizophrenia or bipolar disorder and all or most had a history of violence. In the other study, the patients had a diagnosis of depression. The inclusion/exclusion criteria of the studies include items that may limit the generalizability of the findings of the studies. For instance, the Cullen and colleagues study excluded patients with cognitive deficits[67] and the Wilson study excluded patients who were taking medication or involved in other treatment for their depression.[72] All three studies enrolled only male inmates. The findings of the studies may not be applicable to female inmates.

In general, providing incarcerated individuals with psychological therapy can be challenging. Inmates in the Wilson study were incarcerated in a maximum security prison in which the author indicates they were in "lock-down" for 23 hours a day.[72] Further, as evidenced by the high attrition rate of patients assigned to the R&R group in the Cullen and colleagues study, certain treatments may not be easily adaptable to inmates with SMI. The R&R program was originally developed for incarcerated individuals without mental illness. The investigators adapted it for use in offenders with mental disorders on the basis that they demonstrate patterns of criminal thinking and behavior similar to offenders without mental disorders. However, as Cullen and colleagues point out, the program may be too demanding or may not meet the needs of offenders with SMI, particularly those who have a history of violence and antisocial behavior.[77] Rees-Jones and colleagues attempted to overcome this limitation by decreasing the number of sessions required by inmates and adding an individual mentoring component.[66] These adaptations may have been beneficial because their dropout rate was relatively low (22 percent).

Dual-Disorder Treatments

Description of Studies

Two studies assessed the efficacy of MTCs for offenders with co-occurring mental illness and substance use disorders.[61,64] Both studies were RCTs that compared the outcomes of inmates randomly assigned to MTC with outcomes in subjects randomly assigned to more standard in-prison mental health and substance abuse services. Both studies took place in correctional facilities located in urban areas in Colorado.

Both studies were reported in multiple publications. One study, by J. Sacks and colleagues, reported preliminary, 6-month, postprison outcome data[64] in one publication[64] and 12-month postprison outcome data in a second.[65] Because the investigators were still recruiting patients at the time of the first publication, the second publication included an additional 154 patients. We relied mainly on the first publication in writing our review because the quality of data reporting was superior. The second study of MTC reported on different outcomes for the same patient population in three separate publications—one each reporting on criminal justice outcomes,[61] mental health outcomes,[63] and substance use outcomes.[62]

In the study by J. Sacks and colleagues, all participants were female, with an average age of 35 years (n=468).[64,65] The average length of incarceration in this study was 1.1 years with most inmates being incarcerated for a drug-related crime.

Based on DSM-IV diagnostic criteria, 69 percent of the participants in the J. Sacks and colleagues study would have received a lifetime diagnosis of severe mental disorder (mania or

hypomania, bipolar disorder, or major depression) and 75 percent would have received a lifetime diagnosis of one or more Axis I disorders, with the majority (65 percent) having major depression. The patients had, on average, two Axis I mental disorder diagnoses. The women's primary substances of choice were crack/cocaine (30 percent), alcohol (23 percent), methamphetamine (19 percent), marijuana (18 percent), and opiates (7 percent).

In the other study, by the S. Sacks and colleagues, all participants were male, with an average age of 35 years (n=139).[61] The average length of incarceration in this study was 4.5 years with most inmates having committed a drug-related crime in the year before incarceration.

Based on DSM-IV diagnostic criteria, 90 percent of patients in the J. Sacks and colleagues study had a substance use disorder, 78 percent had an Axis I mental disorder diagnosis, and 37 percent had a co-occurring personality disorder. The primary drugs of choice were marijuana (34.5 percent), alcohol (32.0 percent), and crack/cocaine (21.0 percent). See Tables E4 and E5 in Appendix E for more information about the patients enrolled in these studies.

In both studies, the authors modified existing models of therapeutic community programs for substance users to accommodate offenders with co-occurring mental and substance use disorders. The MTC programs in the studies that addressed KQ1 used "a cognitive behavioral curriculum within the foundation of therapeutic community principles to change attitudes and lifestyles in three critical areas: substance abuse, mental illness, and criminal thinking."[61] The principles of traditional therapeutic communities involve developing and fostering a community of both offenders and staff, in which members are encouraged to help themselves and others while using the community as part of the treatment. Within the therapeutic community population, inmates are provided with opportunities for leadership, for exercising authority in a positive manner, and for becoming positive role models. Program participants are housed together in prison, separate from the general inmate population.

The MTC programs in each study included psychoeducational classes, cognitive behavior protocols, medication, and other therapeutic interventions. See Tables E2 and E3 in Appendix E for more information about the delivery and duration of the interventions provided within the MTC in each study.

In the study by J. Sacks and colleagues, investigators further adapted the MTC program to meet the needs of female offenders with co-occurring disorders.[64,65] In this study, inmates were provided with gender-specific interventions that addressed trauma and abuse, parenting, and relationships.

In the study by S. Sacks and colleagues, participants in the MTC program were eligible to enter the MTC residential aftercare program upon release from prison.[61] Entry into the aftercare program was voluntary and based on the inmate's preference. However, the authors of the study indicated that entry was never strictly voluntary, because agreeing to enter often facilitated parole approval.

The control condition in the study by S. Sacks and colleagues involved a mental health program that consisted of intensified psychiatric services that included medication, weekly individual therapy and counseling, and specialized groups.[61] The substance abuse services consisted of a 72-hour cognitive behavior core curriculum that focused on substance abuse education and relapse prevention. Inmates enrolled in the mental health program were offered aftercare services upon release from prison. The mental health aftercare program included a variety mental health services provided by a community-based agency in an outpatient setting.

The control condition in the study by J. Sacks and colleagues was similar.[64,65] In this study, women in the intensive outpatient program (IOP) received a range of services that included

mental assessment, psychiatric evaluation, medication, and counseling. The IOP substance abuse treatment curriculum consisted of a 90-hour course that used a cognitive behavior format to address underlying issues of substance abuse and criminal behavior. The authors of this study reported that a majority of participants in the MTC or IOP programs received some services upon release but did not provide detail about these services. See Tables E2 and E3 in Appendix E for more information about the delivery and duration of the control interventions in each study.

Findings

All included data for these studies appear in Tables F1 through F9 in Appendix F. A summary of findings appears below in Table 11.

Because of variations in the interventions assessed and study participant sex differences, these two trials were not combined in the qualitative analysis that follows. Psychiatric symptoms in the study by J. Sacks and colleagues were measured using the BDI, the BSI, and the Posttraumatic Symptom Scale (PSS).[64,65] Scores for all three measures of psychiatric symptoms demonstrated statistically significant improvement for both the MTC and IOP group from pretreatment to 6-month followup. Our calculations of individual effect size estimates did not find a statistically significant difference between groups on any of these measures. However, the authors report they found statistically significant differences on the BDI and PSS favoring the therapeutic community group at the 6 month followup.[64,65] According to the authors, one-third of the women in each group remained on psychotropic medication upon release from prison. Thus, differences in psychological symptoms cannot be attributed to differences between the groups in terms of medication adherence. The authors also report that participants in the IOP study arm continued to improve through the 12-month followup, causing the two groups' scores on these measures of mental health symptomology to converge.

Psychiatric outcomes of participants in the S. Sacks and colleagues study were reported in a separate publication by Sullivan et al (2007b).[63] Symptoms in this study were measured using the BDI, BSI, and Manifest Anxiety Scale. The authors did not report data from the measures of psychiatric symptoms in a manner that allowed us to calculate individual study effect size estimates. However, according to the authors' reported results, no significant differences were detected between the MTC and mental health program groups from baseline to 12-month followup on any measures of symptom change or on measures of medication use or treatment involvement. The authors suggest that the following limitations may have affected the ability of the study to demonstrate positive mental health effects: small sample size, the use of psychotropic medications by both groups before entry into the study, and the high level of trauma experienced by both groups.

J. Sacks and colleagues assessed substance use/abuse and other related problems through self-reported information on the subjects' historic and current frequency of use of alcohol, illegal substances, misuse of prescribed medication, perceived problems related to substance use, and historic and current substance-abuse treatment.[64,65] The results of both our analysis of individual effect size estimates and the authors' analysis indicated that both the MTC and IOP groups showed significant reductions on all measures of substance abuse (alcohol use, substance use, frequency of alcohol use, and highest frequency of drug use) from baseline to 6-month followup, with no significant differences between the groups on any of the measures. The authors also reported that the magnitude of the reported improvements appeared to be similar for each group. According to the authors, a number of factors might explain the lack of differences between groups, including the strength of the comparison treatment, the dosage, and the receipt of

substance treatment after prison release. This pattern continued at the 12-month postprison followup.

Substance use outcomes of participants in the S. Sacks and colleagues study were reported in a separate publication by Sullivan and colleagues (2007a).[62] Self-reported data were collected on any substance use, use of alcohol, use of illegal substances, severity of use, and time to relapse. Using data from the 12-month followup, our analysis indicated a statistically significant reduction favoring the MTC group over the mental health program group in any substance use (SMD 0.344; 95% CI, 0.171 to 0.690; p=0.003) and in use of illegal substances (SMD 0.436; 95% CI, 0.213 to 0.894; p=0.023). This is consistent with the authors' findings. The authors also found greater reduction in alcohol use for the MTC group compared with alcohol use in the mental health–program group. Further, according to the authors' findings, the MTC group had greater reductions in the severity of substance use and frequency of alcohol used to intoxication. MTC treatment also significantly reduced the likelihood of relapse (3.7 months vs. 2.6 months, $p \leq 0.05$).

Finally, J. Sacks and colleagues considered the following measures of criminal behavior: self-reported information about historic and current criminal justice involvement (including any arrest, arrest for crimes other than parole violation, any criminal acts, drug-related crimes, and sex crimes, reincarceration, and time to reincarceration) and frequency of illegal activities.[64,65] Both the authors' and our analysis indicated that women in the MTC group showed significantly greater reduction in arrests for crimes other than parole violations (SMD 0.377; 95% CI, 0.195 to 0.729; p=0.004) than women in the IOP group at the 6-month followup. However, by the 12-month followup, the two groups were similar in arrest rates. No statistically significant between-group differences were observed for any other criminal justice outcome.

The criminal justice outcomes reported in the study by S. Sacks and colleagues included reincarceration, involvement in criminal activity, offenses related to alcohol or substances, and nonalcohol or nonsubstance offenses.[61] Our findings and those of the authors indicated no statistically significant differences in any of the criminal justice outcomes between the MTC-only group and the standard mental health program group. Statistically significant differences were observed only between men who received both in-prison MTC and MTC aftercare and those who received standard mental health and substance use services. Because the men in the MTC plus aftercare were self-selected and not randomly assigned, we did not consider the differences between this group and the standard mental health group when we assessed the strength of evidence for this study. Table 11 shows strength of evidence for the studies assessing dual disorder therapies for KQ1.

Table 11. Strength-of-evidence grade for studies assessing dual disorder therapies for Key Question 1

Comparison	Outcome	N Studies (N Patients)	Overall Risk of Bias	Consistency	Directness	Precision	Direction of Effect Favored	SOE Grade
MTC vs. IOP J. Sacks et al.[64,65]	Psychiatric symptoms	1 (468)	Medium	Unknown (1 study)	Direct	Imprecise	—	Insufficient
MTC vs. MH Sullivan et al. (2007b)[63]	Psychiatric symptoms	1 (139)	Medium	Unknown (1 study)	Direct	Imprecise	—	Insufficient
MTC vs. IOP J. Sacks et al.[64,65]	Substance use or abuse	1 (468)	Medium	Unknown (1 study)	Direct	Imprecise	—	Insufficient
MTC vs. MH Sullivan et al. (2007a)[62]	Substance use or abuse	1 (139)	Medium	Unknown (1 study)	Direct	Precise for all measures of substance use/abuse including reduction in use, severity of use, and time to relapse	MTC	Insufficient
MTC vs. IOP J. Sacks et al.[64,65]	Criminal justice outcomes	1 (468)	Medium	Unknown (1 study)	Direct	Precise for reduction in arrests for crimes other than parole violations at the 6-month followup	MTC	Insufficient
MTC vs. MH S. Sacks et al.[61]	Criminal justice outcomes	1 (139)	Medium	Unknown (1 study)	Direct	Imprecise	—	Insufficient

IOP = intensive outpatient program; MH = usual mental health services; MTC = modified therapeutic community; N = number; SOE = strength of evidence

Applicability

The findings of the studies assessed in this section demonstrate that therapeutic communities can be adapted within a prison setting to treat individuals with co-occurring mental health and substance use disorders. Also, therapeutic communities within the prison setting can be further adapted to meet the gender-specific needs of male and female offenders.

Of the two studies that evaluated MTCs, one included prisons housing only men[61] and the other was set in a facility for women.[64,65] The findings of each study indicated differences in the outcomes of women versus men. Women who received MTC treatment demonstrated improvement on some psychological measures according to the authors' calculations and on criminal justice outcomes. However, they failed to demonstrate greater improvement than the standard-of-care group on all measures of substance use/abuse. Men who received MTC showed significant improvement on all substance-abuse measures compared with improvement of men in the standard of care group, but failed to demonstrate improvement on any measure of psychiatric symptom change. Further, only the men who went on to receive MTC aftercare demonstrated

statistically significant reductions on criminal justice outcomes compared with those outcomes in subjects who received more standard prison services for mental health and substance use disorders.

Of course, it is difficult to determine whether these differences are due to gender-specific responses to treatment or to study-specific factors such as sample size, differences in the characteristics of the MTC programs, strength of the comparison treatment, or other differences in participant characteristics.

KQ2. Incarceration Setting to Community Transitional Interventions

KQ2. What is the comparative effectiveness of incarceration-to-community transitional interventions for adults with SMI (schizophrenia, schizoaffective disorder, bipolar disorder, or major depression) with or without a co-occurring alcohol/substance abuse diagnosis? Is there a difference in the comparative effectiveness of interventions based on the setting (jail to community, prison to community, forensic hospital to community) in which the interventions are provided?

Key Points

- Evidence of low strength demonstrated an increase in service use following release from incarceration with treatment that included discharge planning and assistance applying for health benefits. The two trials that incorporated discharge planning with application assistance had other treatment components as well; therefore, it is unclear if the increased service use was entirely a result of application assistance in both of these trials or another component of treatment.
- Evidence of low strength indicated that psychiatric hospitalizations were reduced and service use, both during incarceration and upon release, was increased among clients who received integrated dual diagnosis treatment (IDDT) compared with psychiatric hospitalization and service use among clients who received other, nondual-diagnoses treatments.
- Evidence for the impact of specialist versus mental health generalist care on psychiatric symptoms, psychiatric hospitalization, substance abuse, quality of life, and completed suicide was rated as insufficient because only one trial reported these outcomes for these comparisons.
- Evidence was also insufficient for assessing the effect of interpersonal therapy (IPT) versus psychoeducation for psychiatric symptoms and substance abuse because only one trial assessed this intervention comparison.

Description of Included Studies

For KQ2, we reviewed studies that evaluated interventions that were provided during incarceration within a jail, prison, or forensic hospital and continued upon release into the community. To be eligible, studies must have covered one or more of the interventions of interest in the settings addressed in KQ2 listed in the Introduction under “Providing Mental Health

Services to Offenders With SMI Transitioning From Incarceration to the Community." The studies must have compared one of the identified interventions with another intervention or with standard care or treatment as usual. Studies that compared an intervention with a waitlist control or with a no-treatment group were not considered for this question. We also considered whether there was a difference in the comparative effectiveness of interventions based on the setting (i.e., jail to community, prison to community, forensic hospital to community) in which the interventions were provided.

Seven comparative trials (3 RCTs and 4 nonrandomized) enrolling 2,559 subjects addressed KQ2. The interventions assessed were quite varied but may be divided into four categories: discharge planning with benefit-application assistance, dual diagnoses treatment; specialist- versus generalist-provided treatment, and IPT versus psychoeducation. Two studies assessed treatments that included discharge planning with benefit-application assistance, three comprehensive interventions treated inmates who had dual diagnoses, two studies compared treatment provided by a forensic specialist with treatment provided by a mental health generalist, and one trial compared IPT with psychoeducation. Because the Mentally Ill Offender Community Transition Program (MIOCTP) incorporates both discharge planning with benefit-application assistance and dual diagnosis treatment, we included this study in the analysis of both of those treatment categories.[78] See Table 12 for more details.

Table 12. Characteristics of included studies for Key Question 2

Reference	Number of Patients	Study Design	Treatment	Comparator	Setting
Johnson and Zlotnick, 2012[35]	38	Randomized controlled trial	IPT	Psychoeducation	Prison to community
Wenzlow et al., 2011[79]	686	Nonrandomized comparative trial	Discharge planning with benefit-application assistance	Treatment as usual	Prison to community
Theurer and Lovell, 2008[78]	128	Nonrandomized comparative trial	MIOCTP (this treatment includes discharge planning with benefit-application assistance and co-occurring disorder treatment)	Residential MH treatment program in prison; treatment as usual upon release	Prison to community
Coid et al., 2007[80]	1,061	Nonrandomized comparative trial	Forensic specialist psychiatric services	General adult psychiatric services	Forensic unit of a psychiatric hospital to community
Chandler and Spicer, 2006[81]	182	Randomized controlled trial	Jail: intensive assessment, 1-on-1 counseling, and crisis intervention Community: high-fidelity IDDT	Jail: intensive assessment, 1-on-1 counseling, and crisis intervention Community: treatment as usual	Jail to community
Van Stelle and Moberg, 2004[82]	278	Nonrandomized comparative trial	MICA in prison and upon release into community	Treatment as usual	Prison to community

Table 12. Characteristics of included studies for Key Question 2 (continued)

Reference	Number of Patients	Study Design	Treatment	Comparator	Setting
Solomon and Draine, 1995[83]	176	Randomized controlled trial	Jail: mental health services Community: ACT	Jail: forensic mental health services Community: intensive case management Jail: mental health service Community: treatment as usual	Jail to community

ACT = assertive community treatment; IDDT = integrated dual diagnosis treatment; IPT = interpersonal therapy; MH = mental health; MICA = mentally ill chemical abuser (treatment); MIOCTP = Mentally Ill Offender Community Transition Program

Six of the seven trials were conducted in the United States[35,78,79,81-83] and the seventh was conducted in the United Kingdom.[80] Three trials were conducted in urban areas within the United States,[78,81,83] three did not describe the location,[35,79,82] and the seventh trial, conducted in the United Kingdom, covered inmates in both urban and rural areas.[80] In all seven trials, treatment was initiated during incarceration and was continued upon release into the community. In four of the seven trials, the incarceration setting was prison,[35,78,79,82] in two it was jail,[81,83] and in the final trial it was a medium-secure psychiatric hospital.[80] See Table E6 in Appendix E for more detail.

The inclusion criteria for patient enrollment appear in Table 13.

Table 13. Participant inclusion and exclusion criteria for Key Question 2

Study	Participant Inclusion Criteria (as described in article)	Participant Exclusion Criteria (as described in article)
Johnson and Zlotnick, 2012[35]	Primary (nonsubstance induced) major depressive disorder diagnosis determined by the Structured Clinical Interview for DSM-IV Axis I disorders after at least 4 weeks of abstinence and prison substance abuse treatment. Patients also needed a minimum score of 18 on the Hamilton Depression Scale, met criteria for a substance use disorder 1 month before incarceration, and were 10–24 weeks away from prison release.	Patients with bipolar disorder or psychotic disorder
Wenzlow et al., 2011[79]	Adults aged 18 years or older in whom major depression, bipolar disorder, or psychotic illness had been diagnosed who were identified as requiring intensive treatment and released from 1 of 3 correctional facilities in Oklahoma between July 2007 and March 2008	Adults who required 24-hour monitoring
Theurer and Lovell, 2008[78]	MIOCTP: major mental illness that influenced previous criminal activity; judged as less likely to reoffend if provided with ongoing MH treatment; unlikely to obtain housing/treatment from another source; a minimum of 3 months remaining on sentence; willing to participate MH treatment: Participants in this group were matched on 8 pre-identified factors found to be important predictors of recidivism; released from prison between 1996 and 2000	Level 3 sex offender
Coid et al., 2007[80]	Patients admitted to a medium-secure forensic hospital; psychiatry services provided by 7/14 prereorganization Regional Health Authorities in England and Wales 1989–1993	Not reported

Table 13. Participant inclusion and exclusion criteria for Key Question 2 (continued)

Study	Participant Inclusion Criteria (as described in article)	Participant Exclusion Criteria (as described in article)
Chandler and Spicer, 2006[81]	Jail inmates with current SMI and current substance abuse disorder; not sentenced to prison, not on parole, and not a resident of another county; not currently enrolled in another Alameda County treatment program; Global Assessment of Functioning score of ≤50; fluent in English or Spanish; and at least 2 jail episodes in the 2 years before the index admission or spent 90 days in jail in the past 2 years	Not reported
Van Stelle and Moberg, 2004[82]	Male prisoners who had committed a felony and had severe and persistent mental illness and substance abuse diagnoses. The control group was made up of similar individuals who were being released in less than 18 months and so were not entered into the therapeutic community.	Not reported
Solomon and Draine, 1995[83]	Inmates of a large urban city jail expected to be released in 4–6 weeks with a major mental illness (schizophrenia, affective, or personality disorder) according to the DSM-III-R; Global Assessment of Functioning score ≤40 if older than age 35 years or ≤60 if 35 years of age or younger; recent extended MH treatment including community hospitalization, outpatient treatment, or State hospitalization; and did not have housing upon release	Refused to consent

DSM-III-R = Diagnostic and Statistical Manual of Mental Disorders, third edition, revised; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, fourth edition; MH = mental health; MIOCTP = Mentally Ill Offender Community Transition Program; SMI = serious mental illness

Table 14 lists the outcomes reported for each of the studies that addressed KQ2. In both the Wenzlow and colleagues[79] and Theurer and Lovell[78] studies, only subjects with a major mental disorder who required ongoing assistance were enrolled. Wenzlow and colleagues excluded individuals requiring 24-hour monitoring and Theurer and Lovell excluded Level III sex offenders.

All of the studies reported at least one mental health outcome (including mental health service use), and five out of seven reported at least one criminal justice outcome as well.[78,80-83] One trial each reported function[82] and quality of life.[83] None of the trials reported treatment-related adverse events.

Table 14. Included studies and outcomes for Key Question 2

Reference	Completed Suicide	Quality of Life	Independent Functioning	Psychiatric Symptoms	Substance or Alcohol Use	Hospitalization for SMI	Time to Relapse	Infractions of Prison Code	Recidivism	Reincarceration	Mental Health Service Use*	Adherence to Treatment*
Johnson and Zlotnick, 2012[35]				✓	✓							
Wenzlow et al., 2011[79]											✓	
Theurer and Lovell, 2008[78]									✓		✓	
Coid et al., 2007[80]	✓					✓			✓			
Chandler and Spicer, 2006[81]				✓		✓			✓		✓	
Van Stelle and Moberg, 2004[82]			✓		✓	✓		✓	✓	✓	✓	✓
Solomon and Draine, 1995[83]	✓	✓		✓	✓		✓			✓		

*Intermediate outcomes.
SMI = serious mental illness

The studies that reported on increases in psychiatric symptoms and rehospitalization used administrative records; the BPRS, a 1-page, 16–18 item scale measuring self-report and physician-observation of affect and psychotic symptoms; or the Hamilton Rating Scale for Depression (HRSD), a 17-item scale measuring depressive symptoms.[35,74] The single study that reported patient function and medication adherence used agent-reported data.[82] Substance abuse was reported by three studies;[35,82,83] two used urinalysis to determine substance use and the other, the alcohol scale of the Addiction Severity Index. The Addiction Severity Index is a semistructured interview with seven parts, one of which is alcohol use. It covers the past 30 days as well as lifetime use.[84] Service use, suicide, infractions, and criminal justice outcomes were measured using administrative data.

Solomon and Draine reported quality of life measured with the Lehman's Quality of Life Interview.[83] This tool is a measure developed for people with severe and persistent mental illness. It is a structured interview that requires administration by a trained interviewer. Quality of life is assessed across eight domains: living situation, daily activities and functioning, family relations, social relations, finances, work and school, legal and safety, and health.[85]

Risk-of-Bias Assessment

Our risk-of-bias assessments for the studies that address KQ2 appear in Table D2 of Appendix D. Six trials were categorized as medium risk of bias[78-83] for all reported outcomes and the seventh was graded low risk of bias[35] for both of its reported outcomes. The most common

reasons for the medium risk of bias for these studies were lack of randomization (4 trials),[78-80,82] use of subjective outcome measures (e.g., psychiatric symptoms, substance abuse, quality of life), lack of blinding of outcome assessors (either not performed or not reported, all 6 trials), poor treatment fidelity (3 trials),[78,79,83] lack of reporting of ancillary treatment or large differences by treatment group (5 trials),[78-80,82,83] and high attrition (3 trials).[81-83] The single low risk-of-bias trial was randomized, blinded the outcome assessors, reported high treatment fidelity, reported ancillary treatments, and had low attrition.[35]

Discharge Planning With Benefit-Application Assistance

Description of Studies

In two trials, Wenzlow and colleagues and Theurer and Lovell, the authors described a treatment that included a discharge-planning component in which subjects received assistance with applying for benefits.[78,79] In the Wenzlow and colleagues study, discharge-planning managers employed by the State mental health agency to work in correctional facilities helped prison inmates apply for Federal disability benefits and Medicaid benefits 4 and 2 months before their scheduled release date, respectively. In the other three trial arms assessed by Wenzlow and colleagues, inmates did not receive application assistance, just treatment as usual in the community upon release. Subjects in the trial were followed up for 3 months after release.[79]

In the Theurer and Lovell trial, subjects in the MIOCTP received assistance with the entitlement application process while in prison, besides other services including postrelease case management, individual and group therapy, housing assistance, co-occurring disorders treatment, and increased monitoring by community corrections officers.[78] The subjects in the comparison arm of this trial resided in a mental health program while in prison and received treatment as usual upon release. Theurer and Lovell trial subjects were followed up in the community for 2 years.

A minority of subjects in the Wenzlow and colleagues trial received ancillary treatment with a Reentry Intensive Care Coordination Team (RICCT).[79] Wenzlow reports that because the focus of RICCT is not on application assistance, receipt of this service did not affect mental health service use after release. Theurer and Lovell did not report that subjects in their study received ancillary treatment.[78] In both trials, treatment fidelity was noted to be poor. See Tables E7 and E8 in Appendix E for more information on this and other treatment characteristics.

Subjects in both of these trials tended to be young men, approximately half of whom were Caucasian. More than half of the subjects in the Wenzlow and colleagues trial had basic literacy skills, and between 70 percent and 80 percent had an earlier or current felony conviction.[79] The Theurer and Lovell publication did not report the literacy level or rate of felony convictions of its participants.[78]

Approximately 27 percent of subjects in the Wenzlow and colleagues trial had an earlier or current felony conviction,[79] and 37 percent of those in the MIOCTP arm of the Theurer and Lovell study had such a conviction record.[78] Twenty-two percent of subjects in Wenzlow and colleagues study were incarcerated for 5 years or more. Theurer and Lovell did not report length of conviction. About 5 percent of the Wenzlow study subjects were enrolled in Medicaid at study entry; Theurer and Lovell did not report this participant characteristic. See Tables E9 and E10 in Appendix E for more detail.

All subjects in the Wenzlow and colleagues trial were described by study authors as having a primary diagnosis of major depression, bipolar disorder, or a psychotic illness, without further

detail.[79] In the Theurer and Lovell trial, 56 percent of MIOCTP subjects had a psychotic disorder, 20 percent had depression, and 20 percent, bipolar disorder.[78] Three percent of subjects had another diagnosis that was not further defined. All participants in the Wenzlow and colleagues trial met C1 mental health service classification, indicating an SMI. Wenzlow and colleagues did not report any other diagnoses of its participants. A mental health risk-assessment specialist diagnosed the mental health conditions in the participants in the Theurer and Lovell trial; 89 percent of its subjects had a co-occurring chemical dependence or abuse diagnosis, and a little more than half had a co-occurring personality disorder. See Tables E9 and E10 in Appendix E for more information.

Findings

See Table 15 for a summary of findings.

Mental health service use upon release from incarceration was reported by both of the studies of discharge planning with application assistance.[78,79] Both the Wenzlow and colleagues and Theurer and Lovell trials found discharge planning including application assistance led to more mental health service use than no application assistance. Specifically, Wenzlow and colleagues reported application assistance to be associated with a 16 percent increase in any Medicaid mental health service, a 14 percent increase in outpatient Medicaid mental health services, and a 10 percent increase in Medicaid-covered prescription drug mental health services within 90 days of release from incarceration.[79] Theurer and Lovell made comparisons between MIOCTP participants and a larger, unmatched control group, but they also found that those receiving application assistance used more services and received them sooner upon release from incarceration.[78] MIOCTP subjects received 92 hours of service within the first 90 days after release compared with just 5.5 hours for control subjects. Likewise, MIOCTP subjects received services sooner upon release (2.3 days vs. 185 days). See Table F20 in Appendix F for further detail.

Table 15. Strength-of-evidence grade for studies assessing discharge planning with benefit-application assistance for Key Question 2

Comparison	Outcome	Number of Studies (Number of Patients)	Overall Risk of Bias	Consistency	Directness	Precision	Direction of Effect	SOE Grade
Discharge planning with benefit-application assistance	MH service use upon release	2 (814)	Medium	Consistent	Indirect	Imprecise	Discharge planning with benefit-application assistance	Low

MH = mental health; SOE = strength of evidence

Applicability

In both of the studies of discharge planning with benefit-application assistance, the population was made up of young men with an SMI, about half of whom were Caucasian. About one-third had a prior or current conviction for violent crime. These are the only participant characteristics that were reported by both trials. The findings presented here may be applicable only to this subset of inmates.

It is important to note that 89 percent of subjects in the Theurer and Lovell study also had a co-occurring chemical dependence or abuse diagnosis and a little more than half had a co-occurring personality disorder.[78] These characteristics were not reported by Wenzlow and colleagues. See Tables E9 and E10 in Appendix E for more detail.

Integrated Dual-Disorder Treatments

Description of Studies

Three studies describe treatments for individuals with dual diagnoses versus treatment as usual in the community.[78,81,82]

The Van Stelle and Moberg study described a mentally ill chemical abuser (MICA) therapeutic community, participation in which was started in prison and continued in the community upon release.[82] The in-prison program included daily group and individual mental health and substance abuse counseling sessions, sessions to deal with issues that arose in the community living setting, structured social activities, and classes on topics such as anger management and improving one's physical health. Upon release, prisoners met monthly with specially trained staff members, were closely monitored for medication adherence, and received assistance in obtaining community services. In the other trial arm, subjects received treatment as usual in the community. Followup lasted for 1 year, and investigators did not report treatment fidelity.

In the second trial to assess dual diagnoses treatment, Chandler and Spicer, jail inmates in both trial arms received intensive assessment, medication, discharge planning, counseling, and crisis intervention while in custody.[81] Upon release, one group of subjects received high-fidelity IDDT in the community while other subjects received treatment as usual in the community, supplemented by housing assistance and up to 60 days of case management. Subjects were observed for a maximum of 2.5 years, and the authors did not report treatment fidelity.

In the third trial, Theurer and Lovell, subjects in the MIOCTP received assistance with the entitlement-application process while in prison besides other services including postrelease case management, individual and group therapy, housing assistance, co-occurring disorders treatment, and increased monitoring by community corrections officers.[78] The subjects in the comparison arm of this trial resided in a mental health program while in prison and received treatment as usual upon release. Subjects were observed in the community for 2 years. The investigators noted that treatment fidelity was poor in this trial.

None of these trials reported that subjects received ancillary treatments. See Tables E7 and E8 in Appendix E for these and other treatment characteristics.

In terms of substance abuse and criminality, participants in the Van Stelle and Moberg and Chandler and Spicer trials must have had a co-occurring substance abuse diagnosis and to have committed either a felony or been arrested two times in the 2 years preceding the index offense or to have spent a minimum of 90 days in jail, respectively, to be enrolled.[81,82] The Theurer and Lovell study did not require subjects to have a dual diagnosis, but 89 percent of its participants did. The study enrolled subjects with a major mental illness and a criminal history believed to have been affected by that mental illness and who were judged to be poor candidates for successful community reintegration without ongoing assistance.[78]

All subjects in the Van Stelle and Moberg study had a current or earlier felony conviction (more than 40 percent for crimes of violence).[82] A little more than a third of subjects in the Theurer and Lovell trial had an earlier or current conviction for violent crime.[78] Chandler and

Spicer[81] study subjects had two or more jail episodes within the past 2 years or spent at least 90 days in jail. This suggests more criminality in the Van Stelle and Moberg sample than in the other two trials. MICA (Van Stelle and Moberg study) participants were incarcerated for 7.6 years, on average. Length of incarceration was not reported by the other two studies. None of these trials reported the percentage of clients with Medicaid at study entry. See Table E9 in Appendix E for more information.

Patient characteristics in the two dual-diagnoses treatment trials, Van Stelle and Moberg and Theurer and Lovell, showed that the enrolled subjects were, on average, 36 years of age. A majority of subjects in the third trial, Chandler and Spicer, were between 36 and 50 years of age.[81] Van Stelle and Moberg and Theurer and Lovell study participants were more likely to be Caucasian than those enrolled in the Chandler and Spicer trial (43 percent, 51 percent, and 21 percent, respectively), and all three trials enrolled subjects that were predominantly male. The mean Test of Adult Basic Education score in Van Stelle and Moberg subjects was 6.6, indicating a sixth-grade reading level.[82] Neither Theurer and Lovell nor Chandler and Spicer reported a measure of basic literacy.

All three dual-diagnoses treatment studies used trained clinical staff members to diagnose SMI in their samples.[78,81,82] The clinical staff members in the Chandler and Spicer study[81] were aided in their diagnostic assessment by use of the Psychiatric Research Interview for Substance and Mental Disorders (PRISM) tool; clinicians in the Van Stelle and Moberg study[82] used a variety of tools to determine the primary diagnosis. Van Stelle and Moberg enrolled 21 percent of subjects with diagnoses that did not meet this report's definition of SMI: drug-related psychotic disorder (11 percent), other (5 percent), no Axis 1 diagnosis (4 percent), and anxiety or mood disorders (1 percent).

A majority of subjects in the Van Stelle and Moberg and Chandler and Spicer investigations had received a diagnosis of alcohol or substance abuse. Theurer and Lovell reported that 89 percent of subjects had co-occurring chemical dependence or abuse, although that was not a requirement for enrollment.[78] None of the subjects in the MICA therapeutic community arm of the Van Stelle and Moberg trial had a co-occurring personality disorder, and the authors did not report the posttraumatic stress disorder rate.[82] Eight percent of the sample of the Chandler and Spicer study[81] had either co-occurring posttraumatic stress disorder or another anxiety disorder, and half of the subjects in the Theurer and Lovell trial had a co-occurring personality disorder.[78] See Table E10 in Appendix E for more detail.

Findings

See Table 16 for a complete list of findings.

One dual-diagnoses treatment trial reported change in psychiatric symptoms.[81] This trial, Chandler and Spicer, reported the mean number of crisis visits per treatment group as well as the percentage of participants who experienced a crisis during the study followup period. The mean number of crisis visits was significantly lower among participants receiving high-fidelity IDDT compared with the number of crisis visits in the treatment-as-usual group (2.10 [4.59] vs. 3.32 [6.95], p=0.004). A lower percentage of patients experienced any crisis, although this did not reach statistical significance. See Table F10 in Appendix F for more information.

Two trials reported on psychiatric hospitalizations. Chandler and Spicer found that those receiving high-fidelity IDDT experienced fewer days in a psychiatric hospital than those in the treatment-as-usual group.[81] Van Stelle and Moberg also reported psychiatric hospitalizations, operationalized as a documented institutional transfer to a mental health facility in the case files.

They found that participation in the MICA therapeutic community led to fewer hospitalizations than treatment as usual (20.77 percent vs. 43.00 percent, p=0.000).[82] See Table F11 in Appendix F for more information.

The Van Stelle and Moberg trial reported level of function as measured by appropriate housing, existence of an adequate social support system, and the observation that the individual appeared "stable," all based on agent reports; it was the only trial to report on these parameters.[82] MICA therapeutic community clients were more often rated as having adequate housing than participants treated as usual (83 percent vs. 79 percent) and as stable (58 percent vs. 44 percent), and MICA therapeutic community clients were rated the same as treatment-as-usual clients on presence of a social support system (76 percent vs. 76 percent), although none of these differences reached statistical significance. See Table F12 in Appendix F for more detail.

The Van Stelle and Moberg study was also the only trial to report medication adherence.[82] Clients in MICA therapeutic community were more likely than participants in the treatment-as-usual arm to take their medications consistently, based on agent reports (58 percent vs. 34 percent, p=0.005). See Table F13 in Appendix F for more detail.

For substance abuse, Van Stelle and Moberg used self-reported, 3-month abstinence rates (63 percent MICA vs. 49 percent treatment as usual) and positive urinalysis rates (12 percent MICA vs. 15 percent treatment as usual); they both favored the MICA therapeutic community group, but the differences did not reach statistical significance.[82] See Table F14 in Appendix F for more information.

Mental health service use upon release from incarceration was reported by both Theurer and Lovell and Chandler and Spicer. Theurer and Lovell found more mental health service use among clients in MIOCTP than among clients receiving treatment as usual.[78] However, because this comparison was to a larger control group than the original matched sample, we did not calculate an effect size estimate.

Chandler and Spicer found high-fidelity IDDT increased service use more than treatment as usual.[81] Seventy-seven percent of clients in IDDT received services within 60 days of release versus 18 percent of clients given treatment as usual (p=0.000). A similar result was found for outpatient medication service, with 83 percent of clients in IDDT and 62 percent of clients in the treatment-as-usual group receiving these services (p=0.01). See Table F20 in Appendix F for more detail.

Theurer and Lovell also reported that clients in MIOCTP received 20 hours of service while in prison compared with 0.7 hours in the comparison group.[78] No calculation of a difference in effect size is presented because this outcome was not based on the matched control group, but on a larger unmatched "control" cohort. In the Van Stelle and Moberg trial, 45 percent of clients in a MICA therapeutic community versus 29 percent of the treatment-as-usual group accessed institutional mental health services while in prison (p=0.03).[82] No difference by group membership was evident in terms of in-prison medication monitoring (96.2 percent and 94.0 percent, p=0.39). See Table F17 in Appendix F for more information.

The Van Stelle and Moberg study was the only trial to report institutional infractions.[82] The investigators measured infractions in six different ways: percentage in segregation, average days in segregation, percentage with a minor conduct disorder, average number of subjects with a minor conduct report, percentage with major conduct reports, and average number of major conduct reports. Because the authors did not present any measure of variance for average days in segregation or average number of major or minor conduct reports, we could not calculate the effect size for these three measures. However, for the remaining three measures (percentage in

segregation, percentage with a minor conduct disorder, and percentage with a major conduct disorder) a trend was evident for clients in a MICA therapeutic community to have fewer institutional infractions than clients receiving treatment as usual, although not all differences reached statistical significance. See Table F18 in Appendix F and for more information.

Table 16. Strength-of-evidence grade for studies assessing interventions for dual disorders for Key Question 2

Comparison	Outcome	Number of Studies (Patients)	Overall Risk of Bias	Consistency	Directness	Precision	Direction of Effect	SOE Grade
Intensive jail treatment followed by high-fidelity IDDT vs. intensive jail treatment followed by treatment as usual	Psychiatric symptoms (crisis visits)	1 (182)	Medium	Unknown (1 study)	Direct	Precise	High-fidelity IDDT	Insufficient
IDDT vs. treatment as usual in the community	Psychiatric hospitaliza-tion (adminis-trative records)	2 (460)	Medium	Consistent	Direct	Precise	IDDT (MICA and high-fidelity IDDT)	Low
MICA vs. treatment as usual	Function (correction-al facility agent reports)	1 (278)	Medium	Unknown (1 study)	Direct	Imprecise	MICA	Insufficient
MICA vs. treatment as usual	Medication adherence (correction-al facility agent reports)	1 (278)	Medium	Unknown (1 study)	Indirect	Precise	MICA	Insufficient
MICA vs. treatment as usual	Substance use (urinalysis)	1 (278)	Medium	Unknown (1 study)	Direct	Imprecise	MICA	Insufficient
IDDT vs. treatment as usual in the community	Mental health service use upon release (adminis-trative records)	2 (310)	Medium	Consistent	Indirect	Imprecise	IDDT (MIOCTP and high-fidelity IDDT)	Low

Table 16. Strength-of-evidence grade for studies assessing interventions for dual disorders for Key Question 2 (continued)

Comparison	Outcome	Number of Studies (Patients)	Overall Risk of Bias	Consistency	Directness	Precision	Direction of Effect	SOE Grade
IDDT vs. treatment as usual	Mental health service use during incarceration (administrative records)	2 (406)	Medium	Consistent	Indirect	Imprecise	IDDT (MIOCTP and MICA)	Low
MICA vs. treatment as usual	Institutional infractions (time in segregation, conduct reports)	1 (278)	Medium	Unknown (1 study)	Direct	Imprecise	MICA	Insufficient

IDDT = integrated dual diagnosis treatment; MICA = mentally ill chemical abuser; MIOCTP = Mentally Ill Offender Community Transition Program; SOE = strength of evidence

Applicability

On the whole, the three studies that enrolled patients with dual diagnoses to test the efficacy of comprehensive co-occurring disorders treatment enrolled non-Caucasian, middle-aged men, between 36 and 50 years of age.[78,81,82]

In two of the three trials, about 40 percent had a current or prior violent conviction.[78,82] In the third trial, Chandler and Spicer, participants seem to have had less criminal justice involvement because the inclusion criteria required only that subjects had two or more jail episodes in the past 2 years or 90 days in jail.[81] The rate of co-occurring personality disorders varied from study to study. Thus, the findings presented here may be applicable only to this subset of inmates. See Tables E9 and E10 in Appendix E for more detail.

Forensic Specialist Versus Generalist Treatments

Description of Studies

Two trials, Coid and colleagues and Solomon and Draine, describe treatments administered by forensic specialists compared with treatments administered by general mental health staff.[80,83] All subjects in the Coid and colleagues trial received standard-of-care treatment in a medium-secure unit of a psychiatric hospital. Upon release, individuals received either forensic specialist psychiatric care or mental health generalist care in the community for an average of a little more than 6 years.[80]

In the Solomon and Draine trial, subjects were assigned to one of three conditions: mental health service in jail and Assertive Community Treatment (ACT) upon release, forensic specialist services in jail and after release, or mental health service in jail followed by intensive case management brokered services.[83] Subjects in the ACT treatment arm had case management services available 24 hour per day, 7 days a week, if needed. They also received assistance with

housing, daily living and coping skills, locating resources, and supportive services for their family members. Participants in the Solomon and Draine study were observed for 1 year.

No ancillary treatments were reported by either of these studies. Treatment fidelity was noted to be poor in the Solomon and Draine study.[83] Coid and colleagues did not comment on treatment fidelity.[80] See Tables E7 and E8 in Appendix E for these and other treatment characteristics.

Subjects in the Solomon and Draine study were jail inmates due to be released in 4–6 weeks with a major mental illness, functional limitations, no housing upon release, and recent mental health service use.[83] Participants in the Coid and colleagues trial were in a medium-secure forensic psychiatric service at the time of enrollment.[80] No other details were provided. See Tables E9 and E10 in Appendix E for more information.

The two trials enrolled subjects in their late 20s to early 30s. Coid and colleagues did not report the ethnic breakdown of study participants,[80] but 30 percent of those enrolled in the Solomon and Draine trial were Caucasian.[83] Between 14 percent and 27 percent of the sample was female. Education levels in the Solomon and Draine study were low, with two-thirds of participants not completing high school. Coid and colleagues did not report a measure of literacy or education level attained.

Solomon and Draine did not report on the percentage of participants with convictions for violent crimes or Medicaid enrollment upon study entry. However, their study subjects were serving an average of 9.5-month terms during the study period.[83] Approximately 50 percent of those in the Coid and colleagues trial had a history of or a current violent-crime conviction.[80] Neither study reported on felony conviction status. See Tables E9 and E10 in Appendix E for more detail.

Participants in these specialist-versus-generalist trials had disease diagnoses based on clinical files using criteria from International Statistical Classification of Diseases and Related Health Problems, 10th Revision and Diagnostic and Statistical Manual of Mental Disorders, third edition, revised. The majority of participants in each trial had a diagnosis of schizophrenia or schizoaffective disorder. Based on clinical charts, a little more than half of subjects in the Solomon and Draine study had substance use disorders,[83] and about 25 percent of Coid and colleagues study participants had alcohol or substance dependence.[80] It is unclear to what extent these groups overlapped. Solomon and Draine did not report rates of co-occurring personality disorder, but 16 percent of Coid's sample had a co-occurring antisocial personality disorder. See Table E10 in Appendix E for further detail.

Findings

Solomon and Draine measured change in psychiatric symptoms, substance abuse, and quality of life.[83] Coid and colleagues did not report these outcomes. Solomon and Draine note that these outcome variables were dropped from the discriminant analysis because they did not add to the model's predictive power. See Tables F10, F14, and F15 in Appendix F for more information.

Coid and colleagues reported psychiatric hospitalizations,[80] and for readmissions, found no difference between treatment groups once potential confounders were controlled for. See Table F11 in Appendix F for more detail.

The Coid and colleagues study was the sole study to present findings on completed suicide: the authors found no difference between participants treated by forensic specialists and those treated by mental health generalists in completed suicide rates (10/409 (2.4 percent) vs. 20/652 (3.1 percent), p=0.55). See Table F16 in Appendix F and Table 17 below for additional detail.

Table 17. Strength-of-evidence grade for studies assessing specialist versus generalist treatment for Key Question 2

Comparison	Outcome	Number of Studies (Number of Patients)	Overall Risk of Bias	Consistency	Directness	Precision	Direction of Effect	SOE Grade
ACT vs. forensic specialist vs. treatment as usual	Psychiatric symptoms	1 (176)	Medium	Unknown (1 study)	Direct	Imprecise	—	Insufficient
ACT vs. forensic specialist vs. treatment as usual	Substance abuse	1 (176)	Medium	Unknown (1 study)	Direct	Imprecise	—	Insufficient
ACT vs. forensic specialist vs. treatment as usual	Quality of life	1 (176)	Medium	Unknown (1 study)	Direct	Imprecise	—	Insufficient
Forensic specialist vs. general MH services	Completed suicide	1 (1,061)	Medium	Unknown (1 study)	Direct	Imprecise	Forensic specialist	Insufficient
Forensic specialist vs. general MH services	Psychiatric hospitalizations	1 (1,061)	Medium	Unknown (1 study)	Direct	Imprecise	Forensic specialist	Insufficient

ACT = Assertive Community Treatment; MH = usual mental health services; SOE = strength of evidence

Applicability

The two trials that compared treatment provided by a specialist versus treatment by a generalist enrolled mostly males with an SMI in their early to mid-30s. In the Coid and colleagues trial, more than 40 percent had a violent criminal history.[80] Participants in the Solomon and Draine trial were incarcerated, on average, 9.5 months, suggesting they, too, had a significant criminal history.[83] Between 25 percent and 50 percent of enrollees in these trials had a substance abuse disorder and about 10 percent of the subjects in the Coid and colleagues study had a co-occurring diagnosis of antisocial personality disorder. Solomon and Draine did not report that patient characteristic. The findings presented here may be applicable only to this subset of inmates. See Tables E9 and E10 in Appendix E for more detail.

Interpersonal Therapy Versus Psychoeducation

Description of Study

The last trial, Johnson and Zlotnick, compared IPT with psychoeducation.[35] Participants in the IPT group attended manualized group treatment sessions three times per week for 8 weeks while incarcerated and 6 weekly postrelease individual sessions. IPT sessions targeted such areas as disrupted relationships with family and friends and coping with loss. Participants in the psychoeducation group received attention-matched, manualized psychoeducation sessions which

focused on teaching participants about mental health issues and their relationship to substance abuse, providing medication-specific information, and about resources available in the community. Participants were observed for 3 months after treatment.

Subjects in the Johnson and Zlotnick trial received standard-of-care substance-abuse treatment in prison in addition to receiving the study treatment, and more than half of all subjects were on antidepressants.[35] Treatment fidelity was noted to be very high in this trial. See Tables E7 and E8 in Appendix E for these and other treatment characteristics. Subjects were prison inmates due to be released in 10–24 weeks with both major depressive disorder and substance abuse diagnoses. The study enrolled female subjects in their mid-30s, the majority of whom were unmarried and Caucasian. The authors did not report patient education level, but 74 percent had an annual income of less than $10,000.

Johnson and Zlotnick did not report the percentage of participants with convictions for violent crimes, but the median number of arrests was 4 and 6 in the psychoeducation and IPT arms, respectively.[35] This study did not report on felony conviction status or Medicaid enrollment upon study entry. See Tables E9 and E10 in Appendix E for more detail.

Participants had disease diagnoses based on the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders Axis I disorders and for substance-use disorders. All participants had a primary (not substance induced) diagnosis of major depressive disorder and a substance use disorder. Co-occurring personality disorders, including borderline personality disorder and antisocial personality disorder, were present in a quarter to one-half of study subjects.[35] See Table E10 in Appendix E for further detail.

Findings

Johnson and Zlotnick measured change in psychiatric symptoms and substance abuse.[35] They reported that by the 3-month followup, both groups experienced a reduction in their depressive symptoms as measured by the mean HRSD, with no difference by treatment group (15.8 [SD, 11.7] and 12.0 [SD, 12.3] for the IPT and psychoeducation groups, respectively). Likewise, the two groups experienced similar rates of substance-abuse relapse after being release from incarceration (9/19 [47 percent] and 6/19 [32 percent] for the IPT and psychoeducation groups, respectively). See Tables F10 and F14 in Appendix F and Table 18 below for more information.

Table 18. Strength-of-evidence grade for studies assessing interpersonal therapy versus psychoeducation treatment for Key Question 2

Comparison	Outcome	Number of Studies (Number of Patients)	Overall Risk of Bias	Consistency	Directness	Precision	Evidence Favors	SOE Grade
IPT vs. psychoeducation	Psychiatric symptoms, substance abuse	1 (38)	Low	Unknown (1 study)	Direct	Imprecise	—	Insufficient

IPT = interpersonal therapy; SOE = strength of evidence

Applicability

The single trial that compared IPT with psychoeducation enrolled women in their mid-30s with dual diagnoses of major depressive disorder and substance abuse.[35] They had a median of

five prior arrests, and from 25 percent to 50 percent had a co-occurring personality disorder. The findings presented here may be applicable only to this subset of inmates. See Tables E9 and E10 in Appendix E for more detail.

Discussion

Key Findings and Strength of Evidence

This review covered the treatment of offenders with serious mental illness (SMI). This is a population that has trouble coping with prison life and is more likely to return to incarceration following release than offenders without SMI.

Two studies (low strength of evidence) suggest that providing incarcerated inmates with antipsychotics other than clozapine may improve psychiatric symptoms better than treatment with clozapine.[68,69]

Two studies (low strength of evidence) suggest that providing inmates with discharge planning that includes Medicaid application assistance is likely to increase their use of mental health services upon release.[78,79] Theoretically, increasing individuals' use of mental health service will lead to better control of their mental health symptoms, which, in turn, may lessen future contacts with the criminal justice system.

The findings of this review also suggest that providing offenders who have dual diagnoses with a comprehensive, integrated dual disorder treatment (IDDT) intervention increases mental health service use both during and after release from incarceration and may reduce psychiatric hospitalizations better than standard of care (low strength of evidence).[78,81,82] See Table 19 below for more detail.

Table 19. Summary of findings for Key Question 1 and Key Question 2

Key Question	Comparison	Outcome	SOE Grade
Key Question 1 – incarceration setting	Clozapine vs. other antipsychotics	Psychiatric symptoms	Low in favor of antipsychotics other than clozapine
	Clozapine vs. other antipsychotics	Independent functioning	Insufficient
	Risperidone vs. other antipsychotics	Psychiatric symptoms; institutional infractions	Insufficient
	High dose chlorpromazine vs. standard dose	Psychiatric symptoms	Insufficient
	Cognitive problem solving group (R&R) vs. treatment as usual	Psychiatric symptoms	Insufficient
	Cognitive group therapy vs. individual supportive therapy	Psychiatric symptoms	Insufficient
	Modified therapeutic community vs. intensive outpatient	Psychiatric symptoms; substance abuse; criminal justice outcomes	Insufficient
	Modified therapeutic community vs. standard mental health treatment	Psychiatric symptoms; substance abuse; criminal justice outcomes	Insufficient

Table 19. Summary of findings for Key Question 1 and Key Question 2 (continued)

Key Question	Comparison	Outcome	SOE Grade
Key Question 2 – incarceration-to-community transition setting	Discharge planning with benefit-application assistance vs. no application assistance	Mental health service use upon release[a]	Low in favor of discharge planning with benefit-application assistance
	Intensive jail treatment followed by high-fidelity IDDT vs. intensive jail treatment followed by treatment as usual	Psychiatric symptoms (crisis visits)	Insufficient
	IDDT vs. treatment as usual in the community	Psychiatric hospitalization (administrative records)	Low in favor of IDDT
	Mentally ill chemical abuser treatment vs. treatment as usual	Function (correctional facility agent reports)	Insufficient
	Mentally ill chemical abuser treatment vs. treatment as usual	Medication adherence (correctional facility agent reports)	Insufficient
	Mentally ill chemical abuser treatment vs. treatment as usual	Substance use (urinalysis)	Insufficient
	IDDT vs. treatment as usual in the community	Mental health service use upon release (administrative records)[a]	Low in favor of IDDT
	IDDT vs. treatment as usual	Mental health service use during incarceration (administrative records)[a]	Low in favor of IDDT
	Mentally ill chemical abuser vs. treatment as usual	Institutional infractions (time in segregation; conduct reports)	Insufficient
	Interpersonal therapy vs. psychoeducation	Psychiatric symptoms (HRSD); substance abuse (urinalysis)	Insufficient

[a]Intermediate outcome
HRSD = Hamilton Rating Scale for Depression; IDDT = integrated dual diagnosis treatment; R&R = Reasoning and Rehabilitation; SOE = strength of evidence

Findings in Relationship to What Is Already Known

Key Question 1

Our searches found 10 previous systematic reviews on treatments assessed under Key Question 1 or interventions relevant to this review. (See Table H1 in Appendix H.) Two comprehensive systematic reviews have been conducted on interventions for offenders with SMI; however, neither review described the interventions assessed in their included studies and both conducted meta-analyses based on single treatment components (e.g., presence or absence of a homework component).[20,21] An important goal of our review is to describe incarceration-based and incarceration-to-community interventions in a manner that will allow treatment providers to replicate effective treatments and to identify gaps in the scientific literature for future research in the field.

Two of the previous systematic reviews examined the effectiveness of pharmacologic therapy for treating offenders who have mental illness. Griffiths and colleagues found that using more than one psychotropic medication simultaneously was a common practice in prison, as was prescribing medication at doses above the recommended maximum daily amount.[22] Huband and colleagues examined the effectiveness of antiepileptic pharmacologic therapy on prisoners with

personality disorders and a variety of other individuals requiring treatment for recurrent aggression. These researchers identified one study demonstrating that high-dose diphenylhydantoin was superior to low-dose diphenylhydantoin in reducing the intensity and frequency of aggressive outbursts.[23]

In our review, one study assessed high-dose versus standard-dose pharmacotherapy (chlorpromazine).[70] Investigators found more side effects among patients on the higher dose.

Another previous systematic review, by Nagi and Davies, examined the effectiveness of psychological interventions on reoffending behavior in a variety of male offender populations.[24] The authors performed a qualitative synthesis of the evidence and concluded that cognitive behavior therapy was the most effective treatment and the most commonly offered treatment in low-security forensic settings.[24]

Our review did not find cognitive therapy to be more effective than standard psychological treatment, but differences in trials' inclusion and exclusion criteria, including the exclusion in the Nagi and Davies review of trials conducted on female prisoners, may explain the difference in our results.

Another earlier systematic review examined the effectiveness of modified therapeutic community (MTC) compared with the effectiveness of standard of care. However, this review, by S. Sacks and colleagues, included only studies conducted by the author's own research team. They reported that, based on a qualitative synthesis, MTC was superior to standard of care in improving both mental health and criminal justice outcomes.[25] We thought that the heterogeneity of the study populations and interventions was too great in these studies for us to feel comfortable combining them in a meta-analysis.

Key Question 2

For Key Question 2, the incarceration-to-community transitional setting, limited evidence exists showing that discharge planning with benefit-application assistance increased subjects' use of mental health services upon release from incarceration.[78,79] Limited evidence also exists showing that IDDTs were more effective than standard treatments in reducing psychiatric hospitalizations and increasing mental health service use both during and upon release from incarceration.[78,81,82] One qualitative research synthesis examined the effectiveness of community-based interventions, including assertive community treatment (ACT), intensive case management, and other reentry initiatives compared with the effectiveness of treatment as usual upon release from incarceration.[86] On the whole, offenders with SMI did better if they received ACT, intensive case management, or other correctional reentry interventions than those receiving treatment as usual upon release.

Two studies assessed the efficacy of treatments provided by forensic specialists versus mental health generalists. However, because these two trials reported different outcomes of interest, we judged the evidence insufficient to draw a conclusion.[83,87] More research is needed to better assess the impact of provider type on treatment outcomes. However, one ongoing trial is testing the efficacy of forensic assertive community treatment (FACT) with enhanced outpatient treatment for individuals with a psychotic disorder who are facing criminal charges but who have not yet been sentenced. This trial is due to be completed in May 2014. Once the findings of this trial are published, we may be able to draw a conclusion about the effectiveness of forensic specialist–provided treatments.

Implications for Clinical and Policy Decisionmaking

Our conclusions that a limited number of interventions improve outcomes among offenders with SMI were based on evidence of low strength. Mental health care providers and correctional facility administrators need to consider whether to implement these treatments based on limited evidence of their effectiveness or wait until more evidence becomes available about their comparative effectiveness. This report did not gather information on the costs associated with implementing these treatments or the potential societal costs of not implementing them.

Three recent, relevant guidelines were also identified in our literature searches. In the incarceration setting, one guideline each addressed pharmacological therapy for offenders with schizophrenia and major depressive disorder. The National Commission on Correctional Health Care and Applied Clinical Education, 2009, recommends that drug selection for incarcerated schizophrenics should mirror drug selection for nonoffending schizophrenics living in the community.[26] The Federal Bureau of Prisons, 2009, recommends pharmacotherapy as first-line treatment for patients with major depressive disorder, with electroconvulsive therapy for severe and urgent situations. Psychotherapy should be an adjunctive treatment in this population.[27] The third guideline focused on improving mental health in offenders with SMI living in community correctional settings. Six interventions were identified as being likely to benefit this population: ACT, Self-management and Recovery, integrated dual diagnosis services, supported employment, psychopharmacology, and family psychoeducation.[28]

Limitations of the Evidence Base

The main limitation of this evidence base was the paucity of comparative trials assessing interventions for offenders with SMI in an incarceration or incarceration-to-community transitional setting. Only a handful of interventions were identified for each of the two Key Questions addressed by this report, although we know from our searches that other treatments, such as telepsychiatry and telepsychology, are gaining popularity in these settings. Other limitations include the following:

- Few female offenders or offenders with bipolar disorder or major depression were addressed in the trials that made up our evidence base.
- None of the treatments evaluated for KQ1, the incarceration setting, took place in jail, which houses inmates who have committed less serious offenses for shorter stays.
- Variability exists in how researchers define SMI. For instance, according to State Mental Health Parity laws, only Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revision Axis I diagnoses characterized by psychosis or an affective element (e.g., schizophrenia, major depressive disorder) are considered to be an SMI. Other, more clinically-based definitions emphasize a combination of diagnosis, duration of illness, and degree of functional disability.[88,89]
- Treatment fidelity was noted to be poor in most of the trials that reported this parameter.
- The authors did not describe the comparator treatment in many of the trials in as much detail as the treatment of interest, making it difficult to assess whether the comparator tested was the best comparator available.
- Attrition was quite high in some of the studies.
- For KQ2, in particular, patient-oriented outcome reporting was lacking.

Therefore, for most outcomes, we graded the strength of evidence as insufficient for both the incarceration and incarceration-to-community transitional settings.

For KQ1 specifically, all of the included trials had a medium risk of bias and reported patient-oriented (or direct) outcomes. The main problem with the evidence base was the limited number of trials assessing the same intervention and same or comparable outcomes. Therefore, we graded the strength of evidence for KQ1 as insufficient for most outcomes.

For KQ2, all but one of the included trials had a medium risk of bias; but, again, there were simply too few studies assessing the same intervention. For instance, the largest evidence base (3 trials) assessed IDDT, but because only two of the three trials reported the same outcome, we assessed the strength of evidence as low.

Many restrictions are placed on investigators interested in conducting research in the incarceration and incarceration-to-community settings, which may explain why so few studies were identified and included in this review. In 2006, the Committee on Ethical Considerations for Revisions to DHHS [U.S. Department of Health and Human Services] Regulations for Protection of Prisoners Involved in Research published a report aimed at increasing the protection of prisoners involved in research trials. The committee made several recommendations that make conducting clinical research more challenging in this setting. Specifically, some of the committee recommendations included the provision that investigators collaborate with prisoners and correction officers on the design and conduct of the research. To ensure that prisoners are not participating in research solely to gain access to adequate health care, all prisoners should have access to adequate health care even if they choose not to participate in a clinical trial. To protect research subjects, confidentiality is supposed to be maintained and a prison research subject advocate should be employed at the research site to oversee all research activities.[90]

Limitations of the Comparative Effectiveness Review Process

This report considered treatments for offenders with SMI. Some trials were eliminated from inclusion because we were unable to determine whether the study population had SMI or because investigators relied on self-reported mental illness as the basis for enrolling patients into the trial.

We also limited our evidence base to studies that reported at least one mental health outcome. A handful of studies identified in our literature search were excluded for failing to report a mental health outcome.

Another difficulty encountered in conducting this review was the tendency of study authors to describe the intervention of interest in detail while poorly describing the treatment comparator. This was particularly pronounced when the comparator was treatment as usual. Some of the included trials also reported more outcomes for the treatment of interest than for the comparator treatment. In some instances, it seems that the authors had more information about participants who received the treatment of interest. This may have been due to our inclusion of retrospectively conducted comparative trials.

Finally, noncomparative trials were the more common study design identified in our literature searches, but because this is a comparative effectiveness review we were unable to use data from those reports. As previously stated, more comparative trials are needed on this topic.

Research Gaps

Methodological Considerations

Much of the research in this field uses a case series design, assessing the same patients before and after treatment. Unfortunately, because most mental illness symptoms tend to wax and wane over time, this is not the preferred study design for this particular population. Few comparative trials were available that assessed treatments for offenders with SMI.

Some comparative trials compared results in subjects receiving one active treatment with results of subjects not receiving any treatment. Treatment comparators should be the best comparator available, which may be the standard of care. Because the standard of care may vary from one setting to another, a good description of the treatment provided is important.

Treatment fidelity was not consistently reported by study authors, and when it was reported, it was often found to be inadequate. Going forward, researchers may attempt to closely monitor and maintain fidelity throughout the trial, so the treatments' maximum benefit potentials can be determined. Once a program is established, researchers can attempt to implement it with some variations to see if the treatment effect remains constant.

As expected with vulnerable populations, attrition was high in some of the included trials. In one trial, 1-year followup data could not be assessed because more than 50 percent of the sample had dropped out by that point. Intention-to-treat analysis could be employed to help overcome this shortcoming.

Substantive Gaps

Overall, we found few trials with active comparators that assessed the impact on mental health of treatments for offenders with SMIs. Below we outline specific research gaps based on the PICOS (population, intervention, comparator, outcome, and setting) framework.

Female and Mood-Disordered Incarcerated Research Participants

For treatments administered in the incarceration setting, all but one of the included trials enrolled male offenders. One study of MTC was the exception. We also found that most of the included trials, including all of the pharmacologic therapy trials, enrolled patients with schizophrenia or schizoaffective disorder or both. The all-female MTC intervention was one of only two trials to enroll offenders with bipolar disorder.

Offenders with depression were underrepresented in the included studies for KQ1. Approximately 60 percent of the all-female MTC intervention had a diagnosis of depression and 100 percent of those in the study assessing group cognitive therapy were depressed. Although we recognize that the jail and prison populations are predominantly male, researchers should consider studying the effectiveness of pharmacotherapy, cognitive therapy, and MTC interventions in female offenders and in those with primary mood disorders.

Comparative Trials of Other Commonly Used Interventions

Comparative studies of other commonly used interventions would be useful for decisionmaking. For example, one systematic review by Khalifa and colleagues reported that videoconferencing appears to be an effective treatment in incarceration settings, but that review included noncomparative trials.[29]

For treatments administered in the incarceration-to-community setting, we noted that the studies were fairly representative of offenders regardless of their sex, ethnicity, or SMI diagnosis. However, very few treatments were studied in the incarceration-to-community setting. For example, no trials of medication initiated in incarceration and continued in the community were identified.

Balanced Reporting of All Interventions Assessed

The included trials addressing KQ1 tended to describe the treatment of interest in detail but provided very little information about the comparator treatment. In one of the clozapine trials, the study author did not provide details beyond that clozapine was being compared to other antipsychotics. Neither of the clozapine trials reported the dosage of the antipsychotic comparator(s). More detailed information about comparators is needed, so researchers can replicate existing studies and to ensure that studies are using the best comparator available.

As with KQ1, the included trials that addressed KQ2 tended to describe the treatment of interest in detail but provided very little information about the comparator treatment, the education level of its provider, and whether ancillary treatments were also received by study participants. Balanced descriptions of both trial arms would make future research reports more informative.

Standardization of Assessment Tools

Future research could also standardize which outcomes are reported and how these outcomes are measured. For instance, investigators used different assessment tools for measuring the same outcome and focused on different underlying constructs (Maudsley Violence Questionnaire and Social Problem Solving Inventory) for the same outcome. We were unable to perform meta-analysis of Reasoning and Rehabilitation in an incarceration setting because of this variability in measuring psychiatric symptoms. More standardization, including the use of validated assessment instruments, is needed.

Comparative Trials in the Jail Setting

None of the trials that addressed KQ1 was conducted in a jail setting. More research is needed on the effectiveness of pharmacotherapy, cognitive therapy, and MTC for offenders with SMI who experience longer stays (several months) in a jail setting. It is not clear whether the findings from other settings (e.g., prison) would also apply to longer-stay jail inmates. All settings of interest were represented among the trials that addressed KQ2.

Patient-Oriented Outcome Reporting

Future researchers might also consider reporting more downstream, patient-oriented outcomes. Some of our main findings for KQ2 relate to treatments that improve mental health service use. However, based on the available evidence, we cannot determine if increased service use led to improved patient outcomes such as a decrease in psychiatric symptoms.

Attrition

In the future, researchers might also consider offering research participants incentives to decrease attrition rates. Attrition rates greater than 50 percent occurred in some of the included trials.

Ongoing Clinical Trials

We identified six ongoing comparative trials—five randomized controlled trials and one retrospective comparison—through the National Clinical Trials database, ClinicalTrials.gov, and the NIH Reporter. Two trials each are sponsored by the National Institute of Mental Health and academic institutions, and one trial each is sponsored by industry and the National Institute on Drug Abuse. The trials are testing the following interventions:

- Critical time interventions versus enhanced reentry services for men with mental illness leaving prison
- The Massachusetts Department of Mental Health Forensic Transition Team versus treatment as usual for offenders with SMI
- FACT versus enhanced outpatient followup without judicial monitoring in psychotic offenders
- Interpersonal therapy (IPT) plus treatment as usual versus treatment as usual for male and female offenders with major depressive disorder
- Monthly paliperidone palmitate injection versus oral antipsychotic treatments in delaying time to treatment failure for incarcerated individuals with schizophrenia
- MTC versus standard case management and parole supervision for prisoners with dual diagnoses.

The trials were expected to be completed between July 2011 and October 2014. Their expected enrollment ranges from 53 to 442 subjects. Once published, the additional evidence may allow a more robust conclusion in systematic reviews. See Table I-1 in Appendix I for more detail on the ongoing trials.

Conclusions

We identified few comparative trials assessing interventions for offenders with SMI in an incarceration or incarceration-to-community setting. We graded the strength of the body of available evidence as low to insufficient for both the incarceration and incarceration-to-community settings. Results are presented below for interventions that were tested in a minimum of two trials that reported the same outcome.

For treatment in the incarceration setting, antipsychotics other than clozapine improved psychiatric symptoms better than clozapine. Clozapine was associated with a high rate of adverse events. Cognitive therapy was compared with other psychological treatment in three trials. Two trials found clients treated with cognitive therapy improved more than clients treated with standard psychological treatment on some but not all outcome measures; the third trial did not find a difference by treatment group.

Two trials that evaluated MTC versus standard treatment, one in female offenders and the other in a male population, found no between-group differences in psychiatric symptoms. Both trials reported substance abuse, with one favoring MTC and the other finding no difference by treatment arm. These trials also assessed several measures of recidivism but had conflicting results, with one favoring MTC and the other trial finding no difference between MTC and standard treatment.

For the incarceration-to-community setting, two trials assessed discharge planning with benefit-application assistance, three trials assessed IDDT, and two trials assessed forensic specialist services. Both trials that specified study participants received assistance with their

benefit applications as part of the discharge planning process, whether alone or in combination with other interventions, found this to be an effective treatment for increasing service use. However, discharge planning was combined with additional treatment components, so it is unclear what role those additional components may have had on service use upon release from incarceration.

Two studies clearly fell into the IDDT category, and we classified a third study, by Theurer and Lovell, in that category as well, given its high rate of study participants with dual diagnoses and the fact that substance abuse counseling was one component in the comprehensive Mentally Ill Offender Community Transition Program (MIOCTP) these authors evaluated. Two dual-diagnoses trials reported that psychiatric hospitalizations were reduced and that service use, both during incarceration and upon release, was increased among clients who received IDDT compared with these outcomes in other, nondual-diagnoses treatments.

One trial compared treatment provided by a forensic specialist with treatment as usual and with ACT. A second trial compared treatment by a forensic specialist with treatment provided by a mental health generalist. Insufficient evidence existed to draw a conclusion about the comparative effectiveness of treatments administered by a forensic specialist over a mental health generalist for psychiatric symptomology, psychiatric hospitalization, substance abuse, quality of life, and completed suicide because only one trial reported these outcomes.

In sum, correctional facilities may want to consider using antipsychotics other than clozapine for incarcerated offenders and adding discharge planning with benefit-application assistance and IDDT to the treatments they currently provide to offenders with SMIs reentering the community.

The next logical step for experts in the field is to conduct more research targeted at the interventions and populations for which evidence is lacking.

References

1. Torrey EF, Kennard AD, Eslinger D, et al. More mentally ill persons are in jails and prisons than hospitals: a survey of the States. Alexandria, VA: National Sheriffs' Association, Treatment Advocacy Center; 2010 May. www.treatmentadvocacycenter.org/storage/documents/final_jails_v_hospitals_study.pdf.

2. Dickson KK, Sigurdson C, Miller PS. Improving psychiatric care in the Minnesota Corrections System: the Minnesota Psychiatric Society and the Minnesota Department of Corrections engage in ongoing dialogue. St. Paul (MN): Minnesota Psychiatric Society. www.mnpsychsoc.org/2006%20DOC%20Paper

3. James DJ, Glaze LE. Bureau of Justice Statistics special report: mental health problems of prison and jail inmates. Washington (DC): U.S. Department of Justice; 2006 Sep. http://bjs.ojp.usdoj.gov/content/pub/pdf/mhppji.pdf.

4. State estimates of adult mental illness. In: National survey on drug use and health [database online]. Rockville (MD): Substance Abuse and Mental Health Services Administration; 2011 Oct 6. http://oas.samhsa.gov/2k11/078/WEB_SR_078_HTML.pdf. Accessed October 7, 2011.

5. Abramsky S, Fellner J. Ill-equipped: U.S. prisons and offenders with mental illness. New York (NY): Human Rights Watch; 2003. 223 p. www.hrw.org/en/reports/2003/10/21/ill-equipped.

6. Sirotich F. The criminal justice outcomes of jail diversion programs for persons with mental illness: a review of the evidence. J Am Acad Psychiatry Law 2009;37(4):461-72. PMID: 20018995

7. Veysey BM, Bichler-Robertson G. Providing psychiatric services in correctional settings. In: Health status of soon-to-be released inmates. Vol. 2, Report to Congress. Chicago: National Commission on Correctional Health Care; 2002.

8. Baillargeon J, Hoge SK, Penn JV. Addressing the challenge of community reentry among released inmates with serious mental illness. Am J Community Psychol 2010 Dec;46(3-4):361-75. PMID: 20865315

9. Standards for health services in jails. Chicago: National Commission on Correctional Health Care; 2008.

10. Steadman HJ, Veysey BM. Providing services for jail inmates with mental disorders. Nat Inst Just Res Brief 1997 Jan;1-12. www.ncjrs.gov/pdffiles/162207.pdf.

11. Prevalence of serious mental illness among U.S. adults by age, sex, and race. In: National Institute of Mental Health [internet]. Bethesda (MD): National Institutes of Health. www.nimh.nih.gov/statistics/SMI_AASR.shtml. Accessed November 7, 2011.

12. Lovell D, Gagliardi GJ, Peterson PD. Recidivism and use of services among persons with mental illness after release from prison. Psychiatr Serv 2002 Oct;53(10):1290-6. http://ps.psychiatryonline.org/article.aspx?articleID=87162. PMID: 12364677

13. Cloyes KG, Wong B, Latimer S, et al. Time to prison return for offenders with serious mental illness released from prison. A survival analysis. Crim Justice Behav 2010 Feb;37(2):175-87. http://cjb.sagepub.com/content/37/2/175.abstract.

14. Morrissey JP, Dalton KM, Steadman HJ, et al. Assessing gaps between policy and practice in Medicaid disenrollment of jail detainees with severe mental illness. Psychiatr Serv 2006 Jun;57(6):803-8. PMID: 16754756

15. Hoge SK, Buchanan AW, Kovasznay BM, Roskes EJ. Outpatient services for the mentally ill involved in the criminal justice system. A report of the Task Force on Outpatient Forensic Services. Arlington, VA: American Psychiatric Association; October 2009. www.psych.org/TFR200921

16. Edens JF, Peters RH, Hills HA. Treating prison inmates with co-occurring disorders: an integrative review of existing programs. Behav Sci Law 1997 Autumn;15(4):439-57. PMID: 9433747

17. O'Reilly R, Bishop J, Maddox K, et al. Is telepsychiatry equivalent to face-to-face psychiatry? Results from a randomized controlled equivalence trial. Psychiatr Serv 2007 Jun;58(6):836-43. PMID: 17535945

18. Sanchez-Meca J, Marin-Martinez F, Chacon-Moscoso S. Effect-size indices for dichotomized outcomes in meta-analysis. Psychol Methods 2003 Dec;8(4):448-67. PMID: 14664682

19. Methods Guide for Effectiveness and Comparative Effectiveness Reviews. AHRQ Publication No. 10(11)-EHC063-EF. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2011 Aug. Chapters available at www.effectivehealthcare.ahrq.gov.

20. Morgan RD, Flora DB, Kroner DG, et al. Treating offenders with mental illness: a research synthesis. Law Hum Behav 2012 Feb;36(1):37-50.

21. Martin MS, Dorken SK, Wamboldt AD, et al. Stopping the revolving door: a meta-analysis on the effectiveness of interventions for criminally involved individuals with major mental disorders. Law Hum Behav 2011 Mar 5; Epub ahead of print. PMID: 21380580

22. Griffiths EV, Willis J, Spark MJ. A systematic review of psychotropic drug prescribing for prisoners. Aust N Z J Psychiatry 2012 May;46(5):407-21. PMID: 22535291

23. Huband N, Ferriter M, Nathan R, et al. Antiepileptics for aggression and associated impulsivity. Cochrane Database Syst Rev 2010;(2):CD003499. PMID: 20166067

24. Nagi C, Davies J. Addressing offending risk in low secure mental health services for men: a descriptive review of available evidence. Br J Forensic Pract 2010 Feb;12(1):38-47.

25. Sacks S, McKendrick K, Sacks JY, et al. Modified therapeutic community for co-occurring disorders: single investigator meta analysis. Subst Abuse 2010 Jul;31(3):146-61. PMID: 20687003

26. Caring for individuals with schizophrenia in correctional settings and beyond. Chicago (IL): National Commission on Correctional Health Care; 2009.

27. Federal Bureau of Prisons. Management of major depressive disorder. Federal Bureau of Prisons clinical practice guidelines. Washington (DC): U.S. Department of Justice; 2009 Aug. www.bop.gov/news/medresources.jsp.

28. Improving outcomes for people with mental illnesses under community corrections supervision: a guide to research-informed policy and practice. New York: Council of State Governments Justice Center; 2009. http://consensusproject.org/downloads/community.corrections.research.guide.pdf.

29. Khalifa N, Saleem Y, Stankard P. The use of telepsychiatry within forensic practice: a literature review on the use of videolink. J Forensic Psychiatry Psychol 2008 Mar;19(1):2-13.

30. Serious mental illness among adults. In: National Household Survey on Drug Abuse (NHSDA) [database online]. Rockville (MD): Substance Abuse and Mental Health Services Administration (SAMHSA); October 18, 2002. www.oas.samhsa.gov/2k2/SMI/SMI.htm. Accessed November 7, 2011.

31. Fair care for all: humane treatment, just reform. Phoenix (AZ): American Civil Liberties Union of Arizona. www.acluaz.org/FairCareForAll. Accessed November 19, 2012.

32. Scott CL, editor. Handbook of correctional mental health. 2nd ed. Arlington (VA): American Psychiatric Publishing, Inc.; 2010.

33. Hartwell SW, Fisher WH, Deng X. The impact of regionalization on reentry service outcomes for individuals with severe mental illness. Psychiatr Serv 2009 Mar;60(3):394-7. PMID: 19252055

34. Woodson R. Security and patient management in a forensic hospital. New Dir Ment Health Serv 1996;(69):35-42. PMID: 8935821

35. Johnson JE, Zlotnick C. Pilot study of treatment for major depression among women prisoners with substance use disorder. J Psychiatr Res 2012 Sep;46(9):1174-83. PMID: 22694906

36. Jones C, Hacker D, Cormac I, et al. Cognitive behaviour therapy versus other psychosocial treatments for schizophrenia. Cochrane Database Syst Rev 2012;4:CD008712. http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD008712.pub2/pdf. PMID: 22513966

37. Eisenberg JM. Second-generation antidepressants for treating adult depression: an update [internet]. Houston (TX): Baylor College of Medicine; 2007. www.ncbi.nlm.nih.gov/books/NBK99902/pdf/clindep2.pdf.

38. First-Generation Versus Second-Generation Antipsychotics in Adults: Comparative Effectiveness. Comparative Effectiveness Review No. 63 (Prepared by the University of Alberta Evidence-based Practice Center under Contract No. 290-2007-10021.) AHRQ Publication No. 12-EHC054-EF. Rockville, MD: Agency for Healthcare Research and Quality; 2012 Aug. www.ncbi.nlm.nih.gov/books/NBK107254.

39. Gaynes BN, Lux LJ, Lloyd SW, et al. Nonpharmacologic interventions for treatment-resistant depression in adults. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2011 Sep. (Comparative Effectiveness Reviews; no. 33). PMID: 22091472

40. Drake RE, Mueser KT, Brunette MF. Management of persons with co-occurring severe mental illness and substance use disorder: program implications. World Psychiatry 2007 Oct;6(3):131-6. PMID: 18188429

41. Lipsey MW, Landenberger NA, Wilson SJ. Effects of cognitive-behavioral programs for criminal offenders. Campbell Syst Rev 2007 Aug 9;6:1-27.

42. Robins CJ, Chapman AL. Dialectical behavior therapy: current status, recent developments, and future directions. J Personal Disord 2004 Feb;18(1):73-89. PMID: 15061345

43. Pinta ER, Taylor RE. Quetiapine addiction. Am J Psychiatry 2007 Jan;164(1):174-5. PMID: 17202569

44. Waters BM, Joshi KG. Intravenous quetiapine-cocaine use ("Q-ball"). Am J Psychiatry 2007 Jan;164(1):173-4. PMID: 17202567

45. Baillargeon J, Black SA, Contreras S, et al. Anti-depressant prescribing patterns among prison inmates with depressive disorders. Washington (DC): U.S. Department of Justice; April 2002.

46. Co-occurring disorders: integrated dual disorder treatment. [internet]. St. Paul (MN): Minnesota Department of Human Services; 2009 Aug 12. www.dhs.state.mn.us/main/idcplg?IdcService=GET_DYNAMIC_CONVERSION&RevisionSelectionMethod=LatestReleased&dDocName=id_028650. Accessed July 8, 2011.

47. Integrated treatment for co-occurring disorders evidence-based practices (EBP) kit [CD-ROM/DVD version]. In: [internet]. Rockville (MD): Substance Abuse & Mental Health Services Administration (SAMHSA); 2010 Jan. http://store.samhsa.gov/product/Integrated-Treatment-for-Co-Occurring-Disorders-Evidence-Based-Practices-EBP-KIT/SMA08-4367. Accessed October 11, 2012.

48. What is a modified therapeutic community? [internet]. Butte (MT): Community Counseling, and Correctional Services, Inc. (CCCS). www.cccscorp.com/modthercom2.htm. Accessed July 8, 2011.

49. Morgan RD, Patrick AR, Magaletta PR. Does the use of telemental health alter the treatment experience? Inmates' perceptions of telemental health versus face-to-face treatment modalities. J Consult Clin Psychol 2008 Feb;76(1):158-62. PMID: 18229993

50. Hartwell SW. Comparison of offenders with mental illness only and offenders with dual diagnoses. Psychiatr Serv 2004 Feb;55(2):145-50. PMID: 14762238

51. Draine J, Angell B. Critical time intervention for prison and jail reentry: policy brief. New Brunswick (NJ): Center for Behavioral Health Services & Criminal Justice Research; 2008 Oct. www.cbhs-cjr.rutgers.edu/pdfs/10082008Policy_Brief.pdf.

52. Brun C, Rapp RC. Strengths-based case management: individuals' perspectives on strengths and the case manager relationship. Soc Work 2001 Jul;46(3):279-88.

53. Healey KM. Case management in the criminal justice system. Washington (DC): National Institute of Justice; February 1999. www.ncjrs.gov/pdffiles1/173409.pdf.

54. Brown KA. Assertive community treatment: a reentry model for seriously mentally ill offenders. Columbus (OH): Ohio Department of Rehabilitation; 2003 Jun. www.sconet.state.oh.us/Boards/ACMIC/resources/assertive.pdf.

55. Forensic Assertive Community Treatment (FACT) resiliency and disease management outcome measure guidelines. (FACT fidelity scale). Houston (TX): Mental Health and Mental Retardation Authority of Harris County; 2006 Apr 27. www.mhmraharris.org/LocalPlan/documents/7-FACTOutcomeMeasureGuidelines.pdf.

56. Loveland D, Boyle M. Intensive case management as a jail diversion program for people with a serious mental illness: a review of the literature. Int J Offender Ther Comp Criminol 2007 Apr;51(2):130-50. PMID: 17412820

57. Narine L, Yee DS, Einarson TR, et al. Quality of abstracts of original research articles in CMAJ in 1989. CMAJ 1991 Feb 15;144(4):449-53. PMID: 1993292

58. Pitkin RM, Branagan MA, Burmeister LF. Accuracy of data in abstracts of published research articles. JAMA 1999 Mar 24-31;281(12):1110-1. PMID: 10188662

59. Owens DK, Lohr KN, Atkins D, et al. Grading the strength of a body of evidence when comparing medical interventions-Agency for Healthcare Research and Quality and the Effective Health Care Program. J Clin Epidemiol 2010 May;63(5):513-23. PMID: 19595577

60. Atkins D, Chang S, Gartlehner G, et al. Assessing applicability when comparing medical interventions: Agency for Healthcare Research and Quality and the Effective Health Care Program. J Clin Epidemiol 2011 Nov;64(11):1198-207. Epub 2011 Apr 3. PMID: 21463926

61. Sacks S, Sacks JY, McKendrick K, et al. Modified TC for MICA offenders: crime outcomes. Behav Sci Law 2004;22(4):477-501. PMID: 15282836

62. Sullivan CJ, McKendrick K, Sacks S, et al. Modified therapeutic community treatment for offenders with MICA disorders: substance use outcomes. Am J Drug Alcohol Abuse 2007;33(6):823-32. PMID: 17994478

63. Sullivan CJ, Sacks S, McKendrick K, et al. Modified therapeutic community treatment for offenders with co-occurring disorders: Mental health outcomes. J Offender Rehabil 2007;45(1-2):227-47.

64. Sacks JY, Sacks S, McKendrick K, et al. Prison therapeutic community treatment for female offenders: Profiles and preliminary findings for mental health and other variables (crime, substance use and HIV risk). J Offender Rehabil 2008;46(3-4):233-61.

65. Sacks JY, McKendrick K, Hamilton Z. A randomized clinical trial of a therapeutic community treatment for female inmates: outcomes at 6 and 12 months after prison release. J Addict Dis 2012 Jul;31(3):258-69. PMID: 22873187

66. Rees-Jones A, Gudjonsson G, Young S. A multi-site controlled trial of a cognitive skills program for mentally disordered offenders. BMC Psychiatry 2012;12(1):44. PMID: 22607165

67. Cullen AE, Clarke AY, Kuipers E, et al. A multi-site randomized controlled trial of a cognitive skills programme for male mentally disordered offenders: social-cognitive outcomes. Psychol Med 2011 Aug 16;1-13. PMID: 21846425

68. Balbuena L, Mela M, Wong S, et al. Does clozapine promote employability and reduce offending among mentally disordered offenders. Can J Psychiatry 2010 Jan;55(1):50-6. PMID: 20113544

69. Martin A, O'Driscoll C, Samuels A. Clozapine use in a forensic population in a New South Wales prison hospital. Aust N Z J Psychiatry 2008 Feb;42(2):141-6. PMID: 18197509

70. Tavernor R, Swinton M, Tavernor S. High-dose antipsychotic medication in maximum security. J Forensic Psychiatry 2000 Apr;11(1):36-48.

71. Beck NC, Greenfield SR, Gotham H, et al. Risperidone in the management of violent, treatment-resistant schizophrenics hospitalized in a maximum security forensic facility. J Am Acad Psychiatry Law 1997;25(4):461-8. PMID: 9460034

72. Wilson GL. Psychotherapy with depressed incarcerated felons: a comparative evaluation of treatments. Psychol Rep 1990 Dec;67(3 Pt 1):1027-41. PMID: 2287655

73. Beck depression inventory - 2nd edition. [internet]. Ft. Lauderdale (FL): Center for Psychological Studies. http://cps.nova.edu/~cpphelp/BDI2.html. Accessed September 12, 2006.

74. Mortimer AM. Symptom rating scales and outcome in schizophrenia. Br J Psychiatry Suppl 2007 Aug;50:s7-14. Also available: http://bjp.rcpsych.org/content/191/50/s7.full.pdf. PMID: 18019038

75. Trauma Recovery and Empowerment Model (TREM). [internet]. Alexandria (VA): Mental Health America, Centers for Technical Assistance. www.ncstac.org/index.php?option=com_content&view=article&id=83%Atrauma-recovery-and-empowerment-model-trem&catid=38&Itemid=56. Accessed July 8, 2011.

76. Young CR, Bowers MB Jr, Mazure CM. Management of the adverse effects of clozapine. Schizophr Bull 1998;24(3):381-90. PMID: 9718630

77. Cullen AE, Soria C, Clarke AY, et al. Factors predicting dropout from the Reasoning and Rehabilitation program with mentally disordered offenders. Crim Justice Behav 2011 Mar;38(3):217-30.

78. Theurer G, Lovell D. Recidivism of offenders with mental illness released from prison to an intensive community treatment program. J Offender Rehabil 2008;47(4):385-406.

79. Wenzlow AT, Ireys HT, Mann B, et al. Effects of a discharge planning program on Medicaid coverage of state prisoners with serious mental illness. Psychiatr Serv 2011 Jan;62(1):73-8. PMID: 21209303

80. Coid JW, Hickey N, Yang M. Comparison of outcomes following after-care from forensic and general adult psychiatric services. Br J Psychiatry 2007 Jun;190:509-14. PMID: 17541111

81. Chandler DW, Spicer G. Integrated treatment for jail recidivists with co-occurring psychiatric and substance use disorders. Community Ment Health J 2006 Aug;42(4):405-25. PMID: 16933087

82. Van Stelle KR, Moberg DP. Outcome data for MICA clients after participation in an institutional therapeutic community. J Offender Rehabil 2004;39(1):37-62.

83. Solomon P, Draine J. One-year outcomes of a randomized trial of case management with seriously mentally ill clients leaving jail. Eval Rev 1995 Jun;19(3):256-73. http://erx.sagepub.com/content/19/3/256.abstract.

84. McLellan AT. Addiction Severity Index (ASI). [internet]. Bethesda (MD): National Institute on Alcohol Abuse and Alcoholism (NIAAA). http://pubs.niaaa.nih.gov/publications/Assesing%20Alcohol/InstrumentPDFs/04_ASI.pdf. Accessed May 21, 2012.

85. CMHSR measures collection: quality of life interview (QOLI). St. Louis (MO): George Warren Brown School of Social Work at Washington University, Center for Mental Health Services Research (CMHSR). http://brownprojects.wustl.edu/CMHSRMeasures/h3.html. Accessed May 9, 2012.

86. Heilbrun K, DeMatteo D, Yasuhara K, et al. Community-based alternatives for justice-involved individuals with severe mental illness: review of the relevant research. Crim Justice Behav 2012 Apr;39(4):351-419.

87. McKendrick K, Sullivan C, Banks S, et al. Modified therapeutic community treatment for offenders with MICA disorders: antisocial personality disorder and treatment outcomes. J Offender Rehabil 2007;44(2-3):133-59. PMID: PsycINFO (OVID):200708525005

88. Peck MC, Scheffler RM. An analysis of the definitions of mental illness used in state parity laws. Psychiatr Serv 2002 Sep;53(9):1089-95. http://ps.psychiatryonline.org/cgi/reprint/53/9/1089. PMID: 12221306

89. Definition of serious mental illness (SMI) - adults (18 and older). [internet]. Oklahoma City (OK): Oklahoma Department of Mental Health and Substance Abuse. www.odmhsas.org/eda/advancedquery/smi.htm. Accessed July 6, 2011.

90. Institute of Medicine (US), Committee on Ethical Considerations for Revisions to DHHS Regulations for Protection, Prisoners Involved in Research. Gostin LO, Vanchieri C, Pope A, editors. Ethical considerations for research involving prisoners. Washington, DC: National Academies Press; 2007.

91. Mitchell TR, Braham LG. The psychological treatment needs of deaf mental health patients in high-secure settings: A review of the literature. Int J Forensic Ment Health 2011 Apr;10(2):92-106.

92. Duncan EA, Nicol MM, Ager A, et al. A systematic review of structured group interventions with mentally disordered offenders. Crim Behav Ment Health 2006;16(4):217-41. PMID: 17143928

93. Hartwell S. Evaluating effectiveness of a statewide public mental health re-entry program. Project number: 5RC1MH088716-02. In: Research Portfolio Online Reporting Tools (RePORT) [database online]. Bethesda (MD): National Institutes of Health (NIH). http://projectreporter.nih.gov/pr_Prj_info_desc_dtls.cfm?aid=7941726&icde=13898463&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC&print=yes. Accessed September 25, 2012.

94. Hartwell SW, Deng X, Fisher W, et al. Harmonizing databases? Developing a quasi-experimental design to evaluate a public mental health re-entry program. Eval Program Plann 2012 Nov;35(4):461-72. PMID: 22436598

95. Gelles RJ. Critical time intervention (CTI) for men with mental illness leaving prison. Project no. 5R01MH076068-05. [internet]. Bethesda (MD): National Institutes of Health (NIH). http://projectreporter.nih.gov/pr_Prj_info_desc_dtls.cfm?aid=7898558. Accessed September 19, 2012.

Abbreviations and Acronyms

ACT:	Assertive community treatment
AHRQ:	Agency for Healthcare Research and Quality
ANOVA:	Analysis of variance
BDI:	Beck Depression Inventory
BPRS:	Brief Psychiatric Rating Scale
BSI:	Brief Symptom Inventory
CBT:	Cognitive behavior therapy
CI:	Confidence interval
CJ:	Criminal justice
CTI:	Critical time interventions
DBT:	Dialectical behavior therapy
DOC:	Department of Corrections
DSM-III-R:	Diagnostic and Statistical Manual of Mental Disorders, third edition, revised
DSM-IV:	Diagnostic and Statistical Manual of Mental Disorders, fourth edition
EPC:	Evidence-based Practice Center
FACT:	Forensic assertive community treatment
HRSD:	Hamilton Rating Scale for Depression
ICD-10:	International Statistical Classification of Diseases and Related Health Problems, 10th Revision
ICM:	Intensive case management
IDDT:	Integrated dual diagnosis treatment
IDDT:	Integrated dual disorder treatment
IOP:	Intensive outpatient program
IPT:	Interpersonal therapy
KQ:	Key question
LoC:	Locus of Control
MAOI:	Monoamine oxidase inhibitor
MH:	Mental health
MICA:	Mentally ill chemical abuser
MIOCTP:	Mentally Ill Offender Community Transition Program
MTC:	Modified therapeutic community
MVQ:	Maudsley Violence Questionnaire
N:	Number
NCJRS:	National Criminal Justice Reference Service
NOS:	Not otherwise specified
NOSIE:	Nurses' Observational Scale for Inpatient Evaluation
NR:	Not reported
OR:	Odds ratio
PSS:	Posttraumatic Symptom Scale
pts.:	Patients
R&R:	Reasoning and Rehabilitation
RCT:	Randomized controlled trial
RICCT:	Reentry Intensive Care Coordination Team
SAMHSA:	Substance Abuse and Mental Health Services Administration

SD:	Standard deviation
SDAS:	Social Dysfunction and Aggression Scale
SMD:	Standardized mean difference
SMI:	Serious mental illness
SOE:	Strength of evidence
SPSI:	Social Problem Solving Inventory
SSRI:	Selective serotonin-reuptake inhibitor
TAU:	Treatment as usual
TCA:	Tricyclic antidepressant
TEP:	Technical Expert Panel

Appendix A. Literature Search Methods

Electronic Database Searches

ECRI Institute information specialists searched the following databases for relevant information. Search terms and strategies for the bibliographic databases appear below.

Table A1. Electronic database searches

Name	Date Limits	Platform/Provider
ClinicalTrials.gov	Through September 20, 2012	U.S. National Institutes of Health
The Cochrane Central Register of Controlled Trials (CENTRAL)	1990 through 2012, Issue 8	Wiley
The Cochrane Database of Methodology Reviews (Methodology Reviews)	1990 through 2012, Issue 8	Wiley
The Cochrane Database of Systematic Reviews (Cochrane Reviews)	1990 through 2012, Issue 8	Wiley
Database of Abstracts of Reviews of Effects (DARE)	1990 through 2012, Issue 8	Wiley
EMBASE (Excerpta Medica)	1990 through August 20, 2012	OvidSP
Health Technology Assessment Database (HTA)	1990 through 2012, Issue 8	Wiley
Healthcare Standards Directory (ECRI Institute)	Through September 10, 2012	ECRI Institute
MEDLINE/PreMEDLINE	1990 through August 20, 2012	Ovid SP
National Criminal Justice Reference Service (NCJRS)	1990 through September 11, 2012	U.S. Department of Justice
ProQuest Criminal Justice	1990 through September 20, 2012	ProQuest
PsycINFO	1990 through August 20, 2012	Ovid SP
PubMed (In-process and Publisher records)	1990 through August 20, 2012	U.S. National Library of Medicine
U.K. National Health Service Economic Evaluation Database (NHS EED)	1990 through 2012, Issue 8	Wiley
U.S. National Guideline Clearinghouse™ (NGC)	Through September 20, 2012	Agency for Healthcare Research and Quality (AHRQ)

Detailed search strategies are presented below.

Hand Searches of Journal and Nonjournal Literature

Journals and supplements maintained in ECRI Institute's collections were routinely reviewed. Nonjournal publications and conference proceedings from professional organizations, private agencies, and government agencies were also screened. Other mechanisms used to retrieve additional relevant information included review of bibliographies/reference lists from peer-reviewed and gray literature. (Gray literature consists of reports, studies, articles, and monographs produced by federal and local government agencies, private organizations, educational facilities, consulting firms, and corporations. These documents do not appear in the peer-reviewed journal literature.)

Medical Subject Headings (MeSH), EMTREE, PsycINFO, and Keywords

The search strategies employed combinations of freetext keywords as well as controlled vocabulary terms including (but not limited to) the concepts shown in the Topic-specific Search Terms table.

Table A2. Topic-specific search terms

Concept	Controlled Vocabulary	Keywords
Serious mental illness and dual diagnosis	**MEDLINE (MeSH)** Depression/ Diagnoses dual/ Exp mood disorders/ Exp schizophrenia and disorders with psychotic features/ Mental disorders/ Mentally ill persons/ **EMBASE (EMTREE)** ((Exp addiction/ OR Exp substance abuse/) AND comorbidity/) Exp mood disorder/ Exp psychosis/ Mental disease/ **PsycINFO** Dual diagnosis/ Exp affective disorders/ Exp chronic mental illness/ Exp psychosis/ Mental disorders/ Schizoaffective disorder/	Affective disorder/s Bipolar Co-occurring Depression Depressive Dual diagnosis/es Dual disorder/s Dually diagnosed MDD Mental disorder/s Mental illness/es Mentally disordered Mentally ill MICA Mood disorder/s Psychiatric disorder/s Psychosis/es Psychotic Schizoaffective Schizophren* SMI SPMI
Criminal justice system	**MEDLINE** Criminals/ Prisoners/ Prisons/ **EMBASE** Offender/ Prison/ Prisoner/ **PsycINFO** Correctional institutions/ Exp criminals/ Incarceration/ Mentally ill offenders/ Prisoners/	Correctional Criminal* Forensic hospital/s Forensic setting/s High secure/ity Incarcerated Incarceration Inmate* Jail* Low secure/ity Medium secure/ity Offender* Parole* Prison/s Prisoner/s Probation*
Re-entry		Discharge planning Reentering Re-entering Reentrance Re-entrance Reentry Re-entry Reintegrating Re-integrating Reintegration Re-integration Releas* Return to society

Concept	Controlled Vocabulary	Keywords
Psychiatric interventions and delivery of services	**MEDLINE** Case management/ Community mental health services/ Exp forensic psychiatry/ Exp mandatory programs/ Exp medical assistance/ Exp program evaluation/ Exp psychotherapy Exp self-help groups/ Mental health services/ *Psychiatry/ Voluntary programs/ **EMBASE** Case management/ Community based rehabilitation/ OR Community care/ Community program/ Counseling/ Exp psychotherapy/ Forensic psychiatry/ Medicaid/ Medicare/ Mental health service/ Program development/ Psychiatric treatment/ *Psychiatry/ Social psychiatry/ Support group/ Voluntary program/ **PsycINFO** Cognitive therapy/ Community mental health centers/ Community mental health services/ Counseling/ Crisis intervention/ Exp *intervention/ Exp case management/ Exp program development/ Exp program evaluation/ Exp psychotherapy/ Forensic psychiatry/ Involuntary treatment/ Medicaid/ OR medicare/ Mental health programs/ Motivational interviewing/ Outpatient commitment/ Outpatient treatment/ *Psychiatry/ Support groups/	Aftercare After-care Assertive community treatment Case management Cognitive behavior/al therapy Cognitive behavior/al treatment Cognitive behaviour/al therapy Cognitive behaviour/al treatment Cognitive therapy Community-based program Community-based treatment Complementary Counseling Criminal thinking curricula Critical time intervention Dialectical Forensic psychiatry Group intervention Group support IDDT Integrated dual disorders treatment Intensive community treatment Meditat* Mental health team/s Modified therapeutic community Motivational interviewing Outpatient commitment Outpatient treatment Psychiatric treatment Psychoeducation* Psychotherapy Seeking safety Strengths-based care management Support group/s Trauma informed interventions Trauma recovery and empowerment model Trauma-informed services Treatment alternatives for safer communities <u>Broad terms</u>: Intervention* Medicaid Medical assistance Medical benefits Medicare Program* Rehabilitation Service* Social security disability insurance SSI Supplemental security income Therap* Treatment*

Concept	Controlled Vocabulary	Keywords
Pharmacologic interventions	**MEDLINE** Anti-anxiety agents/ Antimanic agents/ Antipsychotic agents/ Drug therapy.fs. Drug therapy/ Exp antidepressive agents/ Psychotropic drugs/ Therapeutic use.fs. **EMBASE** Drug therapy.fs. Drug therapy/ Exp antidepressant agent/ Exp anxiolytic agent/ Exp benzodiazepine derivative/ Exp neuroleptic agent/ Psychopharmacotherapy/ Psychotropic agent/ **PsycINFO** Benzodiazepines/ Drug therapy/ Exp antidepressant drugs/ Exp neuroleptic drugs/	Antidepressant* Anti-depressant/s Antipsychotic* Anti-psychotic/s Benzodiazepine* Drug counseling Drug therapy Drug treatment/s Drug-based Incarceration-based drug treatment Mood stabiliser/s Mood stabilizer/s Pharmacologic* Psychopharmacologic* Psychotropic/s Risperidone Serotonin reuptake inhibitor/s SSRIs Substance abuse treatment

Search Strategies

The strategy below is presented in OVID syntax; the search was simultaneously conducted across EMBASE, MEDLINE, and PsycINFO. A similar strategy was used to search the databases comprising the Cochrane Library, ProQuest Criminal Justice, and NCJRS.

OVID Conventions:

* = when appearing before a search term requires the term to be a "major" heading
* = when appearing at the end of a search term signifies truncation (wildcard)
ADJ*n* = search terms within a specified number (*n*) of words from each other in any order
exp = "explodes" controlled vocabulary term (e.g., expands search to all more specific related terms in the vocabulary's hierarchy)
.de. = limit controlled vocabulary heading
.fs. = floating subheading
.hw. = limit to heading word
.md. = type of methodology (PsycINFO)
.mp. = combined search fields (default if no fields are specified)
.pt. = publication type
.ti. = limit to title
.tw. = limit to title and abstract fields

Table A3. EMBASE/MEDLINE/PsycINFO – OVID Syntax

Set #	Concept	Search Statement
1	Mentally ill population	Mental disease/ OR mental disorders/ OR mentally ill persons/ OR exp chronic mental illness/ OR exp affective disorders/ OR depression/ OR exp mood disorder/ OR exp mood disorders/ OR exp psychosis/ OR schizoaffective disorder/ OR exp schizophrenia and disorders with psychotic features/ OR ((mental* OR psychiatric) ADJ (disorder* OR health OR ill OR illness*)) OR SMI OR SPMI OR (affective ADJ disorder*) OR bipolar OR depress* OR MDD OR (mood ADJ disorder*) OR psychosis OR psychoses OR psychotic OR schizoaffective OR schizophreni*
2	Dually diagnosed population	Diagnosis dual/ OR ((exp addiction/ OR exp substance abuse/) AND comorbidity/) OR dual diagnosis/ OR (co ADJ occurring) OR comorbid* OR (dual* ADJ (diagnos* OR disorder*)) OR MICA.ti,ab.
3	Criminal justice population	Exp criminals/ OR exp correctional institutions/ OR incarceration/ OR offender/ OR exp prison/ OR exp prisons/ OR prisoner/ OR prisoners/ OR correctional OR criminal* OR incarcerat* OR inmate* OR (offender* NOT sex*.ti.) OR high secure OR low secure OR medium secure OR jail* OR parole* OR prison OR prisons OR (prisoner* NOT (political* OR war).ti.) OR probation*
4	Concepts that cover both populations	mentally ill offenders/ OR (forensic ADJ (hospital* OR patients OR setting* OR unit OR units))
5	Psychiatric interventions Subject headings	Exp forensic psychiatry/ OR *psychiatry/ OR psychiatric treatment/ OR exp psychotherapy/ OR cognitive therapy/ OR exp complementary therapies/ OR counseling/ OR exp case management/ OR crisis intervention/ OR *intervention/ OR group intervention/ OR self help/ OR exp self-help groups/ OR self help techniques/ OR social psychiatry/ OR support group/ OR support groups/ OR group intervention/ OR mental health programs/ OR mental health services/ OR motivational interviewing/ OR involuntary treatment/ OR exp mandatory programs/ OR voluntary program/ OR voluntary programs/OR exp program development/ OR exp program evaluation/ OR community based rehabilitation/ OR community care/ OR community mental health centers/ OR community mental health services/ OR community program/ OR outpatient treatment/ OR telepsychiatry/
6	Psychiatric interventions Text words	Aftercare OR after care OR assertive case management OR assertive community treatment OR (case management).ti. OR cognitive therapy OR (cognitive ADJ behav* ADJ (therapy OR treatment)) OR CBT OR (community based).ti. OR community treatment OR complementary OR counseling OR (crisis ADJ intervention ADJ team*) OR critical thinking curricula OR critical time intervention OR dialectical.ti. OR forensic psychiatry OR (group* ADJ (intervention* OR support* OR therapy)) OR (support ADJ group*) OR integrated dual disorders treatment OR IDDT OR (intensive ADJ community ADJ treatment*) OR intensive supervision OR meditat* OR mindfulness based relapse prevention OR modified therapeutic community OR motivational interviewing OR psychoeducation* OR psychotherap* OR psychiatry.ti. OR self help OR seeking safety OR strengths based case management OR trauma informed OR (trauma ADJ recovery ADJ2 empowerment) OR TREM OR outpatient commitment OR outpatient treatment OR (treatment ADJ alternatives ADJ2 safer ADJ communities) OR telemental OR telepsychiatry OR telepsychology OR (intervention* OR program* OR rehabilitat* OR service* OR treat* OR therap*).ti.
7	Pharmacologic interventions Subject headings	Exp anxiolytic agent/ OR exp anticonvulsants/ OR exp anticonvulsive agent/ OR exp anticonvulsive drugs/ OR exp antidepressant agent/ OR exp antidepressive agents/ OR exp antidepressant drugs/ OR anti-anxiety agents/ OR antimanic agents/ OR antipsychotic agents/ OR exp benzodiazepine derivative/ OR benzodiazepines/ OR drug therapy/ OR drug therapy.fs. OR exp neuroleptic agent/ OR exp neuroleptic drugs/ OR psychopharmacotherapy/ OR psychotropic agent/ OR psychotropic drugs/
8	Pharmacologic interventions Text words	(drug ADJ (based OR counseling OR therapy OR treatment*)) OR formular* OR medication* OR pharmac* OR psychopharmacologic* OR psychopharmacotherap* OR (substance ADJ abuse ADJ treatment*) OR agonist* OR anticonvulsant* OR anticonvulsive* OR antidepress* OR (anti ADJ depress*) OR antipsychotic* OR (anti ADJ psychotic*) OR benzodiazepine* OR (mood ADJ (stabiliser* OR stabilizer*)) OR psychotropic* OR risperidone OR (serotonin ADJ reuptake ADJ inhibitor*) OR SSRI*

Set #	Concept	Search Statement
9	Benefits	Exp medical assistance/ OR medicaid OR medicare/ OR medical assistance OR medical benefits OR medicaid OR medicare OR supplemental security income OR SSI OR social security disability insurance
10	Combine intervention and benefits sets	OR/5-9
11	Community re-entry population	Discharge planning OR reentry OR re entry OR reentering OR re entering OR reentrance OR re entrance OR reintegration OR re integration OR releas* OR (return ADJ2 society)
12	Key question 1	(((1 OR 2) AND 3) OR 4) AND 10
13	Key question 2	(((1 OR 2) AND 3) OR 4) AND 11
14	Combine	12 OR 13
15	Limit to english language	limit 14 to english language
16	Limit to journals (excludes dissertations, etc. from PsycINFO)	limit 15 to all journals
17	Limit by publication type	16 NOT (book/ OR edited book OR case report/ OR case reports/ OR comment/ OR conference abstract/ OR conference paper/ OR conference review/ OR editorial/ OR letter/ OR news/ OR note/ OR proceeding/ OR (book OR edited book OR case report OR case reports OR comment OR conference abstract OR conference paper OR conference review OR editorial OR letter OR news OR note OR proceeding).pt. OR ("comment/reply" OR editorial OR letter OR review-book).dt.)
18	Limit by publication date	Limit 17 to yr="1990-Current"
19	Limit to Adults in MEDLINE and EMBASE	18 AND (adolescent/ OR child/ OR infant/ OR (adolescen* OR juvenile* OR teen* OR young* OR youth*).ti.)
20		18 AND (Exp adult/ OR adult.ti.)
21		19 NOT 20
22		18 NOT 21
23		22 use EMEZ
24		22 use MESD
25		23 OR 24
26	Limit to Adults in PsycINFO using Empirical Population Limits	Limit 25 to (childhood <birth to 12 years> or adolescence <13 to 17 years>)
27		Limit 25 to adulthood <18+ years>
28		26 NOT 27
29		25 NOT 28
30		29 use PSYF
31	Total Adult studies sets	25 OR 30
32	Limit to studies performed in the United States, Canada, the United Kingdom, Australia, and New Zealand	31 AND (exp africa/ OR exp asia/ OR exp central america/ OR exp eastern hemisphere/ OR exp europe/ OR exp latin america/ OR mexico/ OR exp south america/ OR exp south and central america/ OR (china OR finland OR france OR germany OR india OR iran OR ireland OR Italy OR japan OR malaysia OR mexico OR portugal OR singapore OR spain OR sweden OR taiwan OR thailand OR turkey).ti,in.)
33		31 AND (exp united states/ OR exp canada/ OR exp australasia/ OR exp australia/ and new zealand/ OR exp great britain/ OR exp united kingdom/ OR (america* OR united states OR US OR USA OR canada* OR australia OR new zealand OR england OR great britain OR united kingdom OR UK OR wales OR scotland).ti,in.)
34		32 NOT 33
35		31 NOT 34

Set #	Concept	Search Statement
36	**Eliminate overlap**	**Remove duplicates from 35***

*Note that weeding for desired study types will be done by hand rather than with search limits

Additional Conventions:

PubMed
[tiab] = limit to title or abstract

Cochrane Library
Menu-driven

ProQuest Criminal Justice
* = truncation character (wildcard)
NEAR/*n* = search terms within a specified number (*n*) of words from each other in any order
[SU] = ProQuest subject heading
[TI] = limit to title
[AB] = limit to abstract
[STYPE] = source type (i.e., scholarly journal)

NCJRS
Menu-driven, thesaurus selections also available

Appendix B. Forms Used for Title, Abstract, and Full-length Article Review

Table B1. Questions used for title, abstract, and full-length article review

Review Level	Questions	Answer Choices
Title screening	Does the title of the article address the topic of the report?	Yes
		No
Abstract screening	Does the abstract meet any of the following exclusion criteria?	Off-topic
		Non-English language
		Not a full length article
		Case report (<5 subjects)
		Study of Children
		None of the above
	Was the study conducted in a country of interest?	Yes
		No
		Unsure
	Is this a nonclinical study (narrative or systematic review) but looks like it might be useful anyway?	Yes
		No
		Unsure
		Clinical study
	Is the study a comparative trial with an independent control group?	Yes
		No
		Unsure
		Not applicable
	Does the study consider the efficacy/effectiveness of a treatment/intervention/program?	Yes
		No
		Unsure
		Not applicable
	Is the study population primarily SMI (schizophrenia, schizoaffective disorder, bipolar disorder, or major depression) with or without a dual diagnosis of substance abuse?	Yes
		No
		Unsure
		Not applicable
	Does the study appear to be conducted in one of the CJ settings of interest?	Yes
		No
		Unsure
		Not applicable
	Does the study follow patients for at least 3 months?	Yes
		No
		Unsure
		Not applicable

Review Level	Questions	Answer Choices
Article screening	Is the study published in English?	Yes
		No
	Is the study a peer-reviewed full-length article or from an important gray literature agency?	Yes
		No
	Was the study conducted in a country of interest?	Yes
		No
	Is the study population 18 years or older?	Yes
		No
	Is the study population SMI or SMI plus substance abuse/use disorder?	Yes
		No
	Is the study a comparative trial with an independent control group?	Yes
		No
	Does the study include 5 patients per treatment arm?	Yes
		No
	Does the study consider the efficacy/effectiveness of a treatment/intervention/program?	Yes
		No
		Unsure
	If not randomized, does the study use an analytic method (i.e., baseline matching, propensity scoring, etc.) to address selection bias?	Yes
		No
	Does the study appear to be conducted in one of the CJ settings of interest?	Yes
		No
	Does the study follow patients for at least 3 months?	Yes
		No
	Does the study report on at least one mental health outcome?	Yes
		No
	Are subjective outcomes measured using validated instruments?	Yes
		No
	Other reason for exclusion?	Duplicate
		Out of publication date range
		Other (specify)
	Which Key Question does the study answer?	Key Question 1
		Key Question 2
	What is the primary study population?	SMI
		Dual Diagnosed
		Mixed Population

CJ=Criminal justice; SMI=serious mental illness

Appendix C. Full-length Review Excluded Studies

Not a Comparative Trial With Independent Control Group of Interest

Prevention of jail and hospital recidivism among persons with severe mental illness. Psychiatr Serv 1999 Nov;50(11):1477-80.

A model prison diversion program. Psychiatr Serv 2000 Nov;51(11):1440-2.

Alcock D, White T. Study of the clinical and forensic outcome of admission to a forensic psychiatry day hospital at one, two, and three years. J Forensic Psychiatry Psychol 2009;20(1):107-119.

Arnold EM, Stewart JC, McNeece CA. Enhancing services for offenders: the impact on treatment completion. J Psychoactive Drugs 2001 Jul-Sep;33(3):255-62. PMID: 11718318

Baillargeon J, Black SA, Contreras S, et al. Anti-depressant prescribing patterns for prison inmates with depressive disorders. J Affect Disord 2001 Mar;63(1-3):225-31. PMID: 11246100

Baillargeon J, Penn JV, Knight K, et al. Risk of reincarceration among prisoners with co-occurring severe mental illness and substance use disorders. Admin Policy Ment Health 2010 Jul;37(4):367-74.

Bartels SJ, Teague GB, Drake RE, et al. Substance abuse in schizophrenia: service utilization and costs. J Nerv Ment Dis 1993 Apr;181(4):227-32. PMID: 8473874

Boothroyd RA, Poythress NG, McGaha A, et al. The Broward Mental Health Court: process, outcomes, and service utilization. Int J Law Psychiatry 2003 Jan-Feb;26(1):55-71.

Citrome L, Volavka J. Pharmacological management of acute and persistent aggression in forensic psychiatry settings. CNS Drugs 2011;25(12):1009-1021.

Constantine R, Andel R, Petrila J, et al. Characteristics and experiences of adults with a serious mental illness who were involved in the criminal justice system. Psychiatr Serv 2010 May;61(5):451-57.

Cusack KJ, Steadman HJ, Herring AH. Perceived coercion among jail diversion participants in a multisite study. Psychiatr Serv 2010 Sep;61(9):911-6. PMID: 20810590

Daniel C, Jackson J, Watkins J. Utility of an intensive behavior therapy unit in a maximum security female prison. Behav Ther 2003 Jan;26(1):211-2.

Draine J, Solomon P. Jail recidivism and the intensity of case management services among homeless persons with mental illness leaving jail. J Psychiatr Law 1994;22(2):245-61.

Draine J, Solomon P. Threats of incarceration in a psychiatric probation and parole service. Am J Orthopsychiatry 2001 Apr;71(2):262-7. PMID: 11347368

Drapalski AL, Youman K, Stuewig J, et al. Gender differences in jail inmates' symptoms of mental illness, treatment history and treatment seeking. Crim Behav Ment Health 2009;19(3):193-206. PMID: 19533597

Dvoskin JA, Steadman HJ. “Using intensive case management to reduce violence by mentally ill persons in the community”: Correction. Hosp Community Psychiatry 1994 Oct;45(10):1004.

Feldman HS. Loxapine succinate as initial treatment of hostile and aggressive schizophrenic criminal offenders. J Clin Pharmacol 1982 Aug-Sep;22(8-9):366-70. PMID: 7130427

Felthous AR, Weaver D, Evans R, et al. Assessment of impulsive aggression in patients with severe mental disorders and demonstrated violence: inter-rater reliability of rating instrument. J Forensic Sci 2009 Nov;54(6):1470-1474.

Foley TR, Goldenberg EE, Bartley F, et al. The development of a clozapine treatment program for offenders in a correctional mental health prison. Int J Offender Ther Comp Criminol 1995;39:353-58.

Friedmann PD, Melnick G, Jiang L, et al. Violent and disruptive behavior among drug-involved prisoners: Relationship with psychiatric symptoms. Behav Sci Law 2008;26(4):389-401.

Geelan SD, Campbell MJ, Bartlett A. What happens afterwards? A follow-up study of those diverted from custody to hospital in the first 2.5 years of a metropolitan diversion scheme. Med Sci Law 2001 Apr;41(2):122-8. PMID: 11368392

Gilbert AR, Moser LL, Van Dorn RA, et al. Reductions in arrest under assisted outpatient treatment in New York. Psychiatr Serv 2010 Oct;61(10):996-9. PMID: 20889637

Godley SH, Finch M, Dougan L, et al. Case management for dually diagnosed individuals involved in the criminal justice system. J Subst Abuse Treat 2000 Mar;18(2):137-48. PMID: 10716097

Goodness KR, Renfro NS. Changing a culture: a brief program analysis of a social learning program on a maximum-security forensic unit. Behav Sci Law 2002;20(5):495-506. PMID: 12239708

Goss JR, Peterson K, Smith LW, et al. Characteristics of suicide attempts in a large urban jail system with an established suicide prevention program. Psychiatr Serv 2002 May;53(5):574-9. PMID: 11986506

Greenberg G, Rosenheck RA, Erickson SK, et al. Criminal justice system involvement among people with schizophrenia. Community Ment Health J 2011 Dec;47(6):727-36. PMID: 21113799

Grella CE, Greenwell L, Prendergast M, et al. Diagnostic profiles of offenders in substance abuse treatment programs. Behav Sci Law 2008;26(4):369-88.

Gunter TD, Philibert R, Hollenbeck N. Medical and psychiatric problems among men and women in a community corrections residential setting. Behav Sci Law 2009 Sep-Oct;27(5):695-711.

Gussak D. Effects of art therapy with prison inmates: a follow-up study. Arts Psychother 2006;33(3):188-98.

Gussak D. The effectiveness of art therapy in reducing depression in prison populations. Int J Offender Ther Comp Criminol 2007 Aug;51(4):444-60. PMID: 17652148

Hall DL, Miraglia RP, Lee LW, et al. Predictors of general and violent recidivism among SMI prisoners returning to communities in New York State. J Am Acad Psychiatry Law 2012;40(2):221-31.

Heap M. Differences in the progress of discharged and undischarged patients in a medium secure unit: a pilot study. J Psychiatr Ment Health Nurs 2003 Oct 1;10(5):534-42.

Heilbrun K, Lawson K, Spier S, et al. Community placement for insanity acquittees: a preliminary study of residential programs and person-situation fit. Bull Am Acad Psychiatry Law 1994;22(4):551-60. PMID: 7718928

Herinckx HA, Swart SC, Ama SM, et al. Rearrest and linkage to mental health services among clients of the Clark County mental health court program. Psychiatr Serv 2005 Jul;56(7):853-7. PMID: 16020819

Hodgins S, Muller-Isberner R, Freese R, et al. A comparison of general adult and forensic patients with schizophrenia living in the community. Int J Forensic Ment Health 2007;6:63-75.

Hodgins S, Tengstrom AN, Eriksson A, et al. A multisite study of community treatment programs for mentally ill offenders with major mental disorders: design, measures, and the forensic sample. Crim Justice Behav 2007 Feb;34(2):211-28.

Holcomb WR, Ahr PR. Arrest rates among young adult psychiatric patients treated in inpatient and outpatient settings. Hosp Community Psychiatry 1988 Jan;39(1):52-7. PMID: 3338728

Hornsveld RH, Nijman HL. Evaluation of a cognitive-behavioral program for chronically psychotic forensic inpatients. Int J Law Psychiatry 2005 May-Jun;28(3):246-54. PMID: 15950282

Humber N, Hayes A, Wright S, et al. A comparative study of forensic and general community psychiatric patients with integrated and parallel models of care in the UK. J Forensic Psychiatry Psychol 2011 Apr;22(2):183-202.

Jerrell JM, Ridgely MS. Evaluating changes in symptoms and functioning of dually diagnosed clients in specialized treatment. Psychiatr Serv 1995 Mar;46(3):233-8. PMID: 7796208

Johnson J, Hickey S. Arrests and incarcerations after psychosocial program involvement: clubhouse vs. jailhouse. Psychiatr Rehabil J 1999;23(1):66-9.

Johnstone P, Zolese G. Systematic review of the effectiveness of planned short hospital stays for mental health care. BMJ 1999 May 22;318(7195):1387-90.

Johnson J. Cost-effectiveness of mental health services for persons with a dual diagnosis: A literature review and the CCMHCP. J Subst Abuse Treat 2000 Mar;18(2):119-27.

Kamath J, Temporini H, Quarti S, et al. Best practices: disseminating best practices for bipolar disorder treatment in a correctional population. Psychiatr Serv 2010 Sep;61(9):865-7. PMID: 20810582

Kamath J, Temporini HD, Quarti S, et al. Psychiatric use and utility of divalproex sodium in Connecticut prisons. Int J Offender Ther Comp Criminol 2008 Jun;52(3):358-70. PMID: 17893206

Kamath J, Zhang W, Kesten K, et al. Algorithm-driven pharmacological management of bipolar disorder in Connecticut prisons. Int J Offender Ther Comp Criminol 2011 Nov 24. PMID: 22116961

Kinzie DJ, Hancey J, Wilson W, et al. Paroxetine and offenders: a pilot study. Int J Offender Ther Comp Criminol 1996;40:285-92.

Kleinpeter C, Deschenes EP, Blanks J, et al. Providing recovery services for offenders with co-occurring disorders. J Dual Diagn 2006 Dec 18;3(1):59-85.

Kubiak SP, Zeoli AM, Essenmacher L, et al. Transitions between jail and community-based treatment for individuals with co-occurring disorders. Psychiatr Serv 2011 Jun;62(6):679-81. PMID: 21632740

Ladds B, Convit A, Zito J, et al. Involuntary medication of patients who are incompetent to stand trial: a descriptive study of the New York experience with judicial review. Bull Am Acad Psychiatry Law 1993;21(4):529-45. PMID: 7914440

Loveland D, Boyle M. Intensive case management as a jail diversion program for people with a serious mental illness: a review of the literature. Int J Offender Ther Comp Criminol 2007 Apr;51(2):130-50. PMID: 17412820

Lovell D, Allen D, Johnson C, et al. Evaluating the effectiveness of residential treatment for prisoners with mental illness. Crim Justice Behav 2001;28:83-104.

Lovell D, Johnson C, Jemelka R, et al. Living in prison after residential mental health treatment: a program follow-up. Prison J 2001;81:473-90.

Luettgen J, Chrapko WE, Reddon JR. Preventing violent re-offending in not criminally responsible patients: an evaluation of a continuity of treatment program. Int J Law Psychiatry 1998 Dec;21(1):89-98.

MacKain SJ, Mueser KT. Training in illness self-management for people with mental illness in the criminal justice system. Am J Psychiatr Rehabil 2009;12:31-56.

MacKain SJ, Streveler A. Social and independent living skills for psychiatric patients in a prison setting: innovations and challenges. Behav Modif 1990 Oct;14(4):490-518. PMID: 2252469

McCoy ML, Roberts DL, Hanrahan P, et al. Jail linkage assertive community treatment services for individuals with mental illnesses. Psychiatr Rehabil J 2004 Winter;27(3):243-50. PMID: 14982331

McMurran M, Egan V, Ahmadi S. A retrospective evaluation of a therapeutic community for mentally disordered offenders. J Forensic Psychiatry 1998;9(1):103-13.

McPhail ME, Falvo DR, Burker EJ. Psychiatric disorders in incarcerated women: treatment and rehabilitation needs for successful community reentry. J Appl Rehabil Couns 2012 Spr;43(1):19-26.

Metraux S. Examining relationships between receiving mental health services in the Pennsylvania prison system and time served. Psychiatr Serv 2008 Jul;59(7):800-2. PMID: 18586999

Morgan RD, Fisher WH, Duan N, et al. Prevalence of criminal thinking among state prison inmates with serious mental illness. Law Hum Behav 2010 Aug;34(4):324-36. PMID: 19551496

Morgan RD, Steffan J, Shaw LB, et al. Needs for and barriers to correctional mental health services: inmate perceptions. Psychiatr Serv 2007 Sep;58(9):1181-6. PMID: 17766563

Morris DR, Parker GF. Jackson's Indiana: state hospital competence restoration in Indiana. J Am Acad Psychiatry Law 2008;36(4):522-34. PMID: 19092071

Morris PJ. Compliance profile of Depakote ER compared to Depakote DR and valproic acid in bipolar patients. J Correct Health Care 2008 Oct;14(4):311-7.

Newbill WA, Paul GL, Menditto AA, et al. Social-learning programs facilitate an increase in adaptive behavior in a forensic mental hospital. Behav Interv 2011 Jul;26(3):214-30.

Palacios WR, Urmann CF, Newel R, et al. Developing a sociological framework for dually diagnosed women. J Subst Abuse Treat 1999 Jul-Sep;17(1-2):91-102. PMID: 10435256

Pasic J, Russo J, Roy-Byrne P. High utilizers of psychiatric emergency services. Psychiatr Serv 2005 Jun;56(6):678-84. PMID: 15939943

Pelissier BM, O'Neil JA. Antisocial personality and depression among incarcerated drug treatment participants. J Subst Abuse 2000;11(4):379-93. PMID: 11147234

Pollack LE, Cramer RD, Varner RV. Psychosocial functioning of people with substance abuse and bipolar disorders. Subst Abus 2000 Sep;21(3):193-203. PMID: 12466659

Pomerantz JM. Treatment of the mentally ill in prisons and jails: follow-up care needed. Drug Benefit Trends 2003 Jun;15(6):20-1.

Redlich AD, Steadman HJ, Robbins PC, et al. Use of the criminal justice system to leverage mental health treatment: effects on treatment adherence and satisfaction. J Am Acad Psychiatry Law 2006;34(3):292-9. PMID: 17032951

Rice ME, Harris GT, Cormier CA. An evaluation of a maximum security therapeutic community for psychopaths and other mentally disordered offenders. Law Hum Behav 1992;16(4):399-412. Also available: http://www.springerlink.com/content/pp4307834x343812/.

Rosenheck RA, Neale MS. Therapeutic limit setting and six-month outcomes in a Veterans Affairs assertive community treatment program. Psychiatr Serv 2004 Feb;55(2):139-44. PMID: 14762237

Roskes E, Craig R, Strangman A. A prerelease program for mentally ill inmates. Psychiatr Serv 2001 Jan;52(1):108. PMID: 11141541

Ryba NL. Cognitive-behavioral therapy for offender hopelessness: Lessons from treatment of forensic inpatients. J Contemp Psychother 2008 Jun;38(2):73-80.

Sacks S, Sacks JY, De Leon G. Treatment for MICAs: design and implementation of the modified TC. J Psychoactive Drugs 1999 Jan-Mar;31(1):19-30. PMID: 10332635

Schug RA, Raine A, Wilcox RR. Psychophysiological and behavioural characteristics of individuals comorbid for antisocial personality disorder and schizophrenia-spectrum personality disorder. Br J Psychiatry 2007 Nov;191:408-14. PMID: 17978320

Scott EM. History and treatment efforts for a prison special management unit: III. Prison group therapy with mentally and emotionally disturbed offenders. Int J Offender Ther Comp Criminol 1993 Summer;37(2):131-45.

Seegert CR. Token economies and incentive programs: Behavioral improvement in mental health inmates housed in state prisons. Behav Ther 2003 Jan;26(1):208, 210-1.

Shelton D, Wakai S. A process evaluation of START NOW Skills Training for inmates with impulsive and aggressive behaviors. J Am Psychiatr Nurses Assoc 2011 Mar-Apr;17(2):148-57. PMID: 21659305

Sommers I, Baskin DR. Assessing the appropriateness of the prescription of psychiatric medications in prison. J Nerv Ment Dis 1991 May;179(5):267-73. PMID: 2022954

Steadman HJ, Redlich AD, Griffin P, et al. From referral to disposition: case processing in seven mental health courts. Behav Sci Law 2005;23(2):215-26. PMID: 15818604

Taxman FS, Cropsey KL, Melnick G, et al. COD services in community correctional settings: an examination of organizational factors that affect service delivery. Behav Sci Law 2008;26(4):435-55. PMID: 18683196

Tupin JP, Smith DB, Clanon TL, et al. The long-term use of lithium in aggressive prisoners. Compr Psychiatry 1973 Jul-Aug;14(4):311-7. PMID: 4724658

van den Brink RH, Hooijschuur A, van Os TW, et al. Routine violence risk assessment in community forensic mental healthcare. Behav Sci Law 2010 May-Jun;28(3):396-410. PMID: 19908211

Van Dorn RA, Swanson JW, Swartz MS, et al. The effects of race and criminal justice involvement on access to atypical antipsychotic medications among persons with schizophrenia. Ment Health Serv Res 2005 Jun;7(2):123-34. PMID: 15974158

Van Stelle KR, Blumer C, Moberg DP. Treatment retention of dually diagnosed offenders in an institutional therapeutic community. Behav Sci Law 2004;22(4):585-97. PMID: 15282841

Watson MA, Segal SP, Newhill CE. Police referral to psychiatric emergency services and its effect on disposition decisions. Hosp Community Psychiatry 1993 Nov;44(11):1085-90. PMID: 8288179

Weaver T, Taylor F, Cunningham B, et al. The Bentham Unit: a pilot remand and assessment service for male mentally disordered remand prisoners. II: Report of an independent evaluation. Br J Psychiatry 1997 May;170:462-6. PMID: 9307698

Webster SL, Sheitman BB, Barboriak PN, et al. Integrating forensically and civilly committed adult inpatients in a treatment mall program at a state hospital. Psychiatr Serv 2009 Feb;60(2):262-5. PMID: 19176424

Wiederanders, Mark, Choate, Paul A. Beyond recidivism: measuring community adjustments of conditionally released insanity acquittees. Psychol Assess 1994 Mar;6(1):61-6.

Wiederanders MR. Recidivism of disordered offenders who were conditionally vs. unconditionally released. Behav Sci Law 1992;10(1):141-8.

Wiederanders MR, Bromley DL, Choate PA. Forensic conditional release programs and outcomes in three states. Int J Law Psychiatry 1997 Spring;20(2):249-57.

Wilson S, Attrill G, Nugent F. Effective interventions for acquisitive offenders: an investigation of cognitive skills programmes. Legal Criminol Psychol 2003 Feb;8(1):83-101.

Wix S. Dialectical behaviour therapy observed. Br J Forensic Pract 2003 May;5(2):3-8.

Wolff N, Fabrikant N, Belenko S. Mental health courts and their selection processes: modeling variation for consistency. Law Hum Behav 2011 Oct;35(5):402-12. PMID: 20976534

Wolff N, Frueh BC, Shi J, et al. Trauma exposure and mental health characteristics of incarcerated females self-referred to specialty PTSD treatment. Psychiatr Serv 2011 Aug;62(8):954-8. PMID: 21807837

Wormith JS, Olver ME. Offender treatment attrition and its relationship with risk, responsivity and recidivism. Crim Justice Behav 2002;29(4):447-71.

Yanos PT, Lysaker PH, Roe D. Internalized stigma as a barrier to improvement in vocational functioning among people with schizophrenia-spectrum disorders. Psychiatry Res 2010 Jun 30;178(1):211-3. PMID: 20417973

Young DS. Non-psychiatric services provided in a mental health unit in a county jail. J Offender Rehabil 2002;35(2):63-82.

Young S, Chick K, Gudjonsson G. A preliminary evaluation of reasoning and rehabilitation 2 in mentally disordered offenders (R&2R2M) across two forensic settings in the United Kingdom. J Forensic Psychiatry Psychol 2010;21(3):336.

Not SMI Population

Alemi F, Haack M, Nemes S, et al. Impact of online counseling on drug use: a pilot study. Qual Manag Health Care 2010 Jan-Mar;19(1):62-9. PMID: 20042934

Ashcraft L, Anthony WA. Prisoners thrive with peer support training. Behav Healthc 2011 Nov-Dec;31(8):20-3. PMID: 22283083

Baker A, Lee NK, Claire M, et al. Brief cognitive behavioural interventions for regular amphetamine users: a step in the right direction. Addiction 2005 Mar;100(3):367-78. PMID: 15733250

Ball SA, Cobb-Richardson P, Connolly AJ, et al. Substance abuse and personality disorders in homeless drop-in center clients: symptom severity and psychotherapy retention in a randomized clinical trial. Compr Psychiatry 2005 Sep-Oct;46(5):371-9. PMID: 16122538

Banerjee K, Howard M, Mansheim K, et al. Comparison of health realization and 12-step treatment in women's residential substance abuse treatment programs. Am J Drug Alcohol Abuse 2007 Mar;33(2):207-15.

Bourgon G, Armstrong B. Transferring the principles of effective treatment into a "Real World" prison setting. Crim Justice Behav 2005 Feb;32(1):3-25.

Butzin CA, Martin SS, Inciardi JA. Treatment during transition from prison to community and subsequent illicit drug use. J Subst Abuse Treat 2005 Jun;28(4):351-8. PMID: 15925269

Covington SS, Burke C, Keaton S, et al. Evaluation of a trauma-informed and gender-responsive intervention for women in drug treatment. J Psychoactive Drugs 2008 Nov;Suppl 5:387-98. PMID: 19248396

Czuchry M, Dansereau DF. Drug abuse treatment in criminal justice settings: enhancing community engagement and helpfulness. Am J Drug Alcohol Abuse 2000 Nov;26(4):537-52. PMID: 11097191

Desmond DP, Maddux JF. Compulsory supervision and methadone maintenance. J Subst Abuse Treat 1996 Jan-Feb;13(1):79-83. PMID: 8699547

Easton CJ, Weinberger AH, McKee SA. Cigarette smoking and intimate partner violence among men referred to substance abuse treatment. Am J Drug Alcohol Abuse 2008;34(1):39-46. PMID: 18161642

Ferszt GG, Salgado D, DeFedele S, et al. Houses of healing: a group intervention for grieving women in prison. Prison J 2009 Mar;89(1):46-64.

Flannery RB Jr, Farley E, Rego S, et al. Characteristics of staff victims of psychiatric patient assaults: 15-year analysis of the Assaulted Staff Action Program (ASAP). Psychiatr Q 2007 Mar;78(1):25-37. PMID: 17102934

French MT, McCollister KE, Sacks S, et al. Benefit cost analysis of a modified therapeutic community for mentally ill chemical abusers. Eval Program Plann 2002 May;25(2):137-148.

Garnick DW, Horgan CM, Lee MT, et al. Are Washington Circle performance measures associated with decreased criminal activity following treatment? J Subst Abuse Treat 2007 Dec;33(4):341-52. PMID: 17524596

Guydish J, Chan M, Bostrom A, et al. A randomized trial of probation case management for drug-involved women offenders. Crime Delinq 2011 Mar;57(2):167-98.

Harner H, Burgess AW. Using a trauma-informed framework to care for incarcerated women. J Obstet Gynecol Neonatal Nurs 2011 Jul-Aug;40(4):469-76.

Harris GT, Rice ME, Cormier CA. Psychopaths: is a therapeutic community therapeutic? Ther Communities 1994;15(4):283-99.

Heseltine K, Howells K, Day A. Brief anger interventions with offenders may be ineffective: A replication and extension. Behav Res Ther 2010 Mar;48(3):246-50. PMID: 19896643

Hoff RA, Rosenheck RA, Baranosky MV, et al. Diversion from jail of detainees with substance abuse: the interaction with dual diagnosis. Am J Addict 1999 Summer;8(3):201-10. PMID: 10506901

Hser YI, Evans E, Huang D, et al. Long-term outcomes among drug-dependent mothers treated in women-only versus mixed-gender programs. J Subst Abuse Treat 2011 Sep;41(2):115-23. PMID: 21466942

Hser YI, Evans E, Teruya C, et al. Predictors of short-term treatment outcomes among California's Proposition 36 participants. Eval Program Plann 2007 May;30(2):187-96. PMID: 17689324

Hser YI, Stark ME, Paredes A, et al. A 12-year follow-up of a treated cocaine-dependent sample. J Subst Abuse Treat 2006 Apr;30(3):219-26. PMID: 16616166

Hser YI, Teruya C, Evans EA, et al. Treating drug-abusing offenders. Initial findings from a five-county study on the impact of California's Proposition 36 on the treatment system and patient outcomes. Eval Rev 2003 Oct;27(5):479-505. PMID: 14531316

Hubbard DJ. Getting the most out of correctional treatment: Testing the responsivity principle on male and female offenders. Fed Probat 2007 Jun;71(1):2-8.

Kellett NC, Willging CE. Pedagogy of individual choice and female inmate reentry in the U.S. Southwest. Int J Law Psychiatry 2011 Jul-Aug;34(4):256-63. PMID: 21864909

Kirby S. Ward atmosphere on a medium secure long-stay ward. J Forensic Psychiatry 1997;8(2):336-47.

Kline A. Profiles of criminal-justice clients in drug treatment: implications for intervention. Addict Behav 1997 Mar-Apr;22(2):263-8. PMID: 9113220

Leak GK. Effects of highly structured versus nondirective group counseling approaches on personality and behavioral measures of adjustments in incarcerated felons. J Couns Psychol 1980;27:520-3.

Lowmaster SE, Morey LC, Baker KL, et al. Structure, reliability, and predictive validity of the Texas Christian University correctional residential self-rating form at intake in a residential substance abuse treatment facility. J Subst Abuse Treat 2010 Sep;39(2):180-87.

Lynch SM, Heath NM, Mathews KC, et al. Seeking safety: an intervention for trauma-exposed incarcerated women. J Trauma Dissociation 2012;13(1):88-101. PMID: 22211443

Mateyoke-Scrivner A, Webster JM, Staton M, et al. Treatment retention predictors of drug court participants in a rural state. Am J Drug Alcohol Abuse 2004 Aug;30(3):605-25. PMID: 15540496

Maunder L, Cameron L, Moss M, et al. Effectiveness of self-help materials for anxiety adapted for use in prison - a pilot study. J Ment Health 2009;18(3):262-271.

McGuire J, Rosenheck RA, Kasprow WJ. Health status, service use, and costs among veterans receiving outreach services in jail or community settings. Psychiatr Serv 2003 Feb;54(2):201-7. PMID: 12556601

McNiel DE, Binder RL. Effectiveness of a mental health court in reducing criminal recidivism and violence. Am J Psychiatry 2007 Sep;164(9):1395-403. PMID: 17728425

Melnick G, Coen C, Taxman FS, et al. Community-based co-occurring disorder (COD) intermediate and advanced treatment for offenders. Behav Sci Law 2008;26(4):457-73. PMID: 18683204

Motiuk LL, Blanchette K. Characteristics of administratively segregated offenders in federal corrections. Can J Criminol 2001 Jan;43(1):131-43.

Muzekari LH, Lonigan CJ, Hatton AY, et al. Mental health services in the county jail: a critical partnership? Psychol Rep 1999 Jun;84(3 Pt 2):1099-104. PMID: 10477928

Oser C, Knudsen H, Staton-Tindall M, et al. The adoption of wraparound services among substance abuse treatment organizations serving criminal offenders: The role of a women-specific program. Drug Alcohol Depend 2009 Aug 1;103 Suppl 1:S82-90. PMID: 19181457

Pandiani JA, Ochs WR, Pomerantz AS. Criminal justice involvement of armed forces veterans in two systems of care. Psychiatr Serv 2010 Aug;61(8):835-7. PMID: 20675844

Peat BJ, Winterfree LT. Reducing the intrainstitutional effects of “prisonization”: A study of a therapeutic community for drug-using inmates. Crim Justice Behav 1992 Jun;19(2):206-25.

Pelissier B, Wallace S, O’Neil JA, et al. Federal prison residential drug treatment reduces substance use and arrests after release. Am J Drug Alcohol Abuse 2001 May;27(2):315-37. PMID: 11417942

Polaschek DL. High-intensity rehabilitation for violent offenders in New Zealand: reconviction outcomes for high- and medium-risk prisoners. J Interpers Violence 2011 Mar;26(4):664-82. PMID: 20522892

Prendergast M, Frisman L, Sacks JY, Staton-Tindall M, Greenwell L, Lin HJ, Cartier J. A multi-site, randomized study of strengths-based case management with substance-abusing parolees. J Exp Criminol 2011 Sep;7(3):225-53.

Prendergast ML, Farabee D, Cartier J, et al. Involuntary treatment within a prison setting: impact on psychosocial change during treatment. Crim Justice Behav 2002 Feb;29(1):5-26.

Richards JM, Beal WE, Seagal JD, et al. Effects of disclosure of traumatic events on illness behavior among psychiatric prison inmates. J Abnorm Psychol 2000 Feb;109(1):156-60. PMID: 10740948

Rowan-Szal GA, Joe GW, Simpson DD, et al. During-treatment outcomes among female methamphetamine-using offenders in prison-based treatments. J Offender Rehabil 2009 Jul 1;48(5):388-401. PMID: 19710949

Serin RC, Gobeil R, Preston DL. Evaluation of the persistently violent offender treatment program. Int J Offender Ther Comp Criminol 2009 Feb;53(1):57-73.

Shelton D, Sampl S, Kesten KL, et al. Treatment of impulsive aggression in correctional settings. Behav Sci Law 2009 Sep-Oct;27(5):787-800.

Spiropoulos GV, Spruance L, Van Voorhis P, et al. Pathfinders and problem solving: comparative effects of two cognitive-behavioral programs among men and women offenders in community and prison. J Offender Rehabil 2005;42(2):69-94.

Stoner SC, Wehner Lea JS, Dubisar BM, et al. Impact of clozapine versus haloperidol on conditional release time and rates of revocation in a forensic psychiatric population. J Pharm Technol 2002;18(4):182-86.

Strauss SM, Falkin GP. The first week after drug treatment: the influence of treatment on drug use among women offenders. Am J Drug Alcohol Abuse 2001 May;27(2):241-64. PMID: 11417938

Thanner MH, Taxman FS. Responsivity: the value of providing intensive services to high-risk offenders. J Subst Abuse Treat 2003 Mar;24(2):137-47. PMID: 12745031

Trotman AJ, Taxman FS. Implementation of a contingency management-based intervention in a community supervision setting: clinical issues and recommendations. J Offender Rehabil 2011 Jul;50(5):235-51.

Turley A, Thornton T, Johnson C, et al. Jail drug and alcohol treatment program reduces recidivism in nonviolent offenders: a longitudinal study of Monroe County, New York's, Jail Treatment Drug and Alcohol Program. Int J Offender Ther Comp Criminol 2004 Dec;48(6):721-8. PMID: 15538028

Valentine, PV. Traumatic incident reduction I: traumatized women inmates: particulars of practice and research. J Offender Rehabil 2000;31(3-4):1-15.

Valentine PV, Smith TE. Evaluating traumatic incident reduction therapy with female inmates: a randomized controlled clinical trial. Res Soc Work Pract 2001 Jan;11(1):40-52.

Watson AC, Ottati VC, Draine J, et al. CIT in context: The impact of mental health resource availability and district saturation on call dispositions. Int J Law Psychiatry 2011 Jul;34(4):287-94. PMID: 21820177

Windell PA, Barron N. Treatment preparation in the context of system coordination serves inmates well. J Psychoactive Drugs 2002 Jan-Mar;34(1):59-67. PMID: 12003114

Zlotnick C, Johnson J, Najavits LM. Randomized controlled pilot study of cognitive-behavioral therapy in a sample of incarcerated women with substance use disorder and PTSD. Behav Ther 2009 Dec;40(4):325-36. PMID: 19892078

Not a Criminal Justice Setting of Interest

Ashford JB, Wong KW, Sternbach KO. Generic correctional programming for mentally ill offenders: a pilot study. Crim Justice Behav 2008;35(4):457-73. Also available: http://cjb.sagepub.com/content/35/4/457.abstract.

Boccaccini MT, Christy A, Poythress N, et al. Rediversion in two postbooking jail diversion programs in Florida. Psychiatr Serv 2005 Jul;56(7):835-9. PMID: 16020816

Broner N, Mayrl DW, Landsberg G. Outcomes of mandated and nonmandated New York City jail diversion for offenders with alcohol, drug, and mental disorders. Prison J 2005 Mar;85(1):18-49.

Brown S, Bass N. The psychiatric intensive care unit (PICU): Patient characteristics, treatment and outcome. J Ment Health 2004 Dec;13(6):601-9.

Calsyn RJ, Yonker RD, Lemming MR, et al. Impact of assertive community treatment and client characteristics on criminal justice outcomes in dual disorder homeless individuals. Crim Behav Ment Health 2005;15(4):236-48. PMID: 16575844

Chandler D, Meisel J, Hu TW, et al. Client outcomes in a three-year controlled study of an integrated service agency model. Psychiatr Serv 1996 Dec;47(12):1337-43. PMID: 9117472

Christy A, Poythress NG, Boothroyd RA, et al. Evaluating the efficiency and community safety goals of the Broward County Mental Health Court. Behav Sci Law 2005;23(2):227-43. PMID: 15818603

Clarke GN, Herinckx HA, Kinney RF, et al. Psychiatric hospitalizations, arrests, emergency room visits and homelessness of clients with serious and persistent mental illness: findings from a randomized trial of two ACT programs vs. usual care. Ment Health Serv Res 2000 Sep;2(3):155-64.

Cosden M, Ellens J, Schnell J, et al. Efficacy of a mental health treatment court with assertive community treatment. Behav Sci Law 2005;23(2):199-214. PMID: 15818609

Cosden M, Ellens JK, Schnell JL, et al. Evaluation of a mental health treatment court with assertive community treatment. Behav Sci Law 2003;21(4):415-27. PMID: 12898500

Cusack KJ, Morrissey JP, Cuddeback GS, et al. Criminal justice involvement, behavioral health service use, and costs of forensic assertive community treatment: a randomized trial. Community Ment Health J 2010 Aug;46(4):356-63. PMID: 20217230

DiNitto DM, Webb DK, Rubin A. The effectiveness of an integrated treatment approach for clients with dual diagnoses. Res Soc Work Pract 2002 Sep;12(5):621-41.

Drake RE, McHugo GJ, Clark RE, et al. Assertive community treatment for patients with co-occurring severe mental illness and substance use disorder: a clinical trial. Am J Orthopsychiatry 1998 Apr;68(2):201-15. PMID: 9589759

Essock SM, Mueser KT, Drake RE, et al. Comparison of ACT and standard case management for delivering integrated treatment for co-occurring disorders. Psychiatr Serv 2006 Feb;57(2):185-96. PMID: 16452695

Frailing K. How mental health courts function: outcomes and observations. Int J Law Psychiatry 2010 Sep;33(4):207-13. PMID: 20667593

Frisman LK, Lin HS, Sturges GE, et al. Outcomes of court-based jail diversion programs for people with co-occurring disorders. J Dual Diagn 2006;2(2):5-26.

Frisman LK, Mueser KT, Covell NH, et al. Use of integrated dual disorder treatment via assertive community treatment versus clinical case management for persons with co-occurring disorders and antisocial personality disorder. J Nerv Ment Dis 2009 Nov;197(11):822-8. PMID: 19996720

Gilmer TP, Stefancic A, Ettner SL, et al. Effect of full-service partnerships on homelessness, use and costs of mental health services, and quality of life among adults with serious mental illness. Arch Gen Psychiatry 2010 Jun;67(6):645-52. PMID: 20530014

Hiday VA, Swartz MS, Swanson JW, et al. Impact of outpatient commitment on victimization of people with severe mental illness. Am J Psychiatry 2002 Aug;159(8):1403-11. PMID: 12153835

Hoff RA, Baranosky MV, Buchanan J, et al. The effects of a jail diversion program on incarceration: a retrospective cohort study. J Am Acad Psychiatry Law 1999;27(3):377-86. PMID: 10509937

Hough WG, O'Brien KP. The effect of community treatment orders on offending rates. Psychiatr Psychol Law 2005;12(2):411-23.

Leff J, Dayson D, Gooch C, et al. Quality of life of long-stay patients discharged from two psychiatric institutions. Psychiatr Serv 1996 Jan;47(1):62-7.

LePage JP, Washington EL, Lewis AA, et al. Effects of structured vocational services on job-search success in ex-offender veterans with mental illness: 3-month follow-up. J Rehabil Res Dev 2011;48(3):277-86. PMID: 21480102

Moore ME, Hiday VA. Mental health court outcomes: a comparison of re-arrest and re-arrest severity between mental health court and traditional court participants. Law Hum Behav 2006 Dec;30(6):659-74. PMID: 17053948

Pollack DA, McFarland BH, Mahler JM, et al. Outcomes of patients in a low-intensity, short-duration involuntary outpatient commitment program. Psychiatr Serv 2005 Jul;56(7):863-6. PMID: 16020821

Ries RK, Comtois KA. Managing disability benefits as part of treatment for persons with severe mental illness and comorbid drug/alcohol disorders. A comparative study of payee and non-payee participants. Am J Addict 1997;6(4):330-8. PMID: 9398931

Rivas-Vazquez RA, Sarria M, Rey G, et al. A relationship-based care model for jail diversion. Psychiatr Serv 2009 Jun;60(6):766-71. PMID: 19487345

Rowe M, Bellamy C, Baranoski M, et al. A peer-support, group intervention to reduce substance use and criminality among persons with severe mental illness. Psychiatr Serv 2007 Jul;58(7):955-61. PMID: 17602012

Steadman HJ, Redlich A, Callahan L, et al. Effect of mental health courts on arrests and jail days: a multisite study. Arch Gen Psychiatry 2011 Feb;68(2):167-72. PMID: 20921111

Swanson JW, Borum R, Swartz MS, et al. Can involuntary outpatient commitment reduce arrests among persons with severe mental illness? Crim Justice Behav 2001 Apr;28(2):156-89.

Swartz MS, Swanson JW, Hiday VA, et al. A randomized controlled trial of outpatient commitment in North Carolina. Psychiatr Serv 2001 Mar;52(3):325-9.

Wolff N, Helminiak TW, Morse GA, et al. Cost-effectiveness evaluation of three approaches to case management for homeless mentally ill clients. Am J Psychiatry 1997 Mar;154(3):341-8. PMID: 9054781

No Treatment Tested

Axelson GL, Wahl OF. Psychotic versus nonpsychotic misdemeanants in a large county jail: an analysis of pretrial treatment by the legal system. Int J Law Psychiatry 1992;15(4):379-86. PMID: 1428421

Bloom JD, Williams MH, Bigelow DA. The involvement of schizophrenic insanity acquittees in the mental health and criminal justice systems. Psychiatr Clin North Am 1992;15(3):591-604.

Fisher WH, Dickey B, Normand SL, et al. Use of a state inpatient forensic system under managed mental health care. Psychiatr Serv 2002 Apr;53(4):447-51. PMID: 11919358

Harris GT, Rice ME, Cormier CA. Length of detention in matched groups of insanity acquittees and convicted offenders. Int J Law Psychiatry 1991;14(3):223-36.

Hartwell SW, Fisher WH, Deng X. The impact of regionalization on reentry service outcomes for individuals with severe mental illness. Psychiatr Serv 2009 Mar;60(3):394-7. PMID: 19252055

Hillbrand M, Krystal JH, Sharpe KS, et al. Clinical predictors of self-mutilation in hospitalized forensic patients. J Nerv Ment Dis 1994 Jan;182(1):9-13. PMID: 8277305

Hiller ML, Webster JM, Garrity TF, et al. Prisoners with substance abuse and mental health problems: use of health and health services. Am J Drug Alcohol Abuse 2005;31(1):1-20. PMID: 15768568

Jackson DO, Mrug S, Cook F, et al. Factors predicting substance dependence and psychotropic medication use among offenders in community corrections. Addict Behav 2011 Jul;36(7):755-8. PMID: 21367532

Levitt GA, Vora I, Tyler K, et al. Civil commitment outcomes of incompetent defendants. J Am Acad Psychiatry Law 2010;38(3):349-58. PMID: 20852220

Morrissey JP, Cuddeback GS, Cuellar AE, et al. The role of Medicaid enrollment and outpatient service use in jail recidivism among persons with severe mental illness. Psychiatr Serv 2007 Jun;58(6):794-801. PMID: 17535939

Morrissey JP, Steadman HJ, Dalton KM, et al. Medicaid enrollment and mental health service use following release of jail detainees with severe mental illness. Psychiatr Serv 2006 Jun;57(6):809-15. PMID: 16754757

Nelson EL, Zaylor C, Cook D. A comparison of psychiatrist evaluation and patient symptom report in a jail telepsychiatry clinic. Telemed J E Health 2004;10(Suppl 2):S54-9.

Ray B, Dollar CB, Thames KM. Observations of reintegrative shaming in a mental health court. Int J Law Psychiatry 2011 Jan-Feb;34(1):49-55. PMID: 21122916

Shafer MS, Arthur B, Franczak MJ. An analysis of post-booking jail diversion programming for persons with co-occurring disorders. Behav Sci Law 2004;22(6):771-85. PMID: 15386559

Shah PJ, Greenberg WM, Convit A. Hospitalized insanity acquittees' level of functioning. Bull Am Acad Psychiatry Law 1994;22(1):85-93.

Skegg K, Cox B. Impact of psychiatric services on prison suicide. Lancet 1991 Dec 7;338(8780):1436-8. PMID: 1683429

Steadman HJ, Cocozza JJ, Veysey BM. Comparing outcomes for diverted and nondiverted jail detainees with mental illnesses. Law Hum Behav 1999 Dec;23(6):615-27. PMID: 10633579

Stewart LA. Profile of female firesetters. Implications for treatment. BJP Rev Books 1993 Aug;163:248-56. PMID: 8075918

Weaver T, Taylor F, Cunningham B, et al. Impact of a dedicated service for male mentally disordered remand prisoners in north west London: retrospective study. BMJ 1997 Apr 26;314(7089):1244-5. PMID: 9154028

Zeiss RA, Tanke ED, Fenn HH, et al. Dangerousness commitments: indices of future violence potential? Bull Am Acad Psychiatry Law 1996;24(2):247-53. PMID: 8807164

Less Than 3 Month Followup

Beck-Sander A, Griffiths A, Friel C. A group-based intervention for forensic patients recovering from psychosis. Crim Behav Ment Health 1998 Sep;8(3):193-201.

Brodey BB, Claypoole KH, Motto J, et al. Satisfaction of forensic psychiatric patients with remote telepsychiatric evaluation. Psychiatr Serv 2000 Oct;51(10):1305-7. PMID: 11013332

Clarke AY, Cullen AE, Walwyn R, et al. A quasi-experimental pilot study of the reasoning and rehabilitation programme with mentally disordered offenders. J Forensic Psychiatry Psychol 2010 Aug;21(4):490-500.

Gussak D. The effects of art therapy on male and female inmates: advancing the research base. Arts Psychother 2009 Feb;36(1):5-12.

Jarrett M, Thornicroft G, Forrester A, et al. Continuity of care for recently released prisoners with mental illness: a pilot randomised controlled trial testing the feasibility of a Critical Time Intervention. Epidemiol Psychiatr Sci 2012 Jun;21(2):187-93. PMID: 22789168

Morgan RD, Patrick AR, Magaletta PR. Does the use of telemental health alter the treatment experience? Inmates' perceptions of telemental health versus face-to-face treatment modalities. J Consult Clin Psychol 2008 Feb;76(1):158-62. PMID: 18229993

No Baseline Matching

Broner N, Lattimore PK, Cowell AJ, et al. Effects of diversion on adults with co-occurring mental illness and substance use: outcomes from a national multi-site study. Behav Sci Law 2004;22(4):519-41. PMID: 15282838

Castillo ED, Alarid LF. Factors associated with recidivism among offenders with mental illness. Int J Offender Ther Comp Criminol 2011 Feb;55(1):98-117. PMID: 20181775

Lattimore PK, Broner N, Sherman R, et al. A comparison of prebooking and postbooking diversion programs for mentally ill substance-using individuals with justice involvement. J Contemp Crim Justice 2003 Feb;19(1):30-64.

Livingston JD, Rossiter KR, Verdun-Jones SN. 'Forensic' labelling: an empirical assessment of its effects on self-stigma for people with severe mental illness. Psychiatry Res 2011 Jun 30;188(1):115-22. PMID: 21333361

Swaminath RS, Mendonca JD, Vidal C, et al. Experiments in change: pretrial diversion of offenders with mental illness. Can J Psychiatry 2002 Jun;47(5):450-8. PMID: 12085680

Country

Aho-Mustonen K, Tiihonen J, Repo-Tiihonen E, et al. Group psychoeducation for long-term offender patients with schizophrenia: an exploratory randomised controlled trial. Crim Behav Ment Health 2011 Jul;21(3):163-76. PMID: 20859932

Kerepcic I, Koludrovic M, Jurin M, et al. Clozapine in treatment of schizophrenic heteroaggressive forensic patients. Psychiatria Danubina 1994;6(1-2):105-8.

Schippers GM, Marker N, Fuentasas-Merillas L. Social skills training, prosocial behavior, and aggressiveness in adult incarcerated offenders. Int J Offender Ther Comp Criminol 2001;45(2):244-51.

van den Broek E, Keulen-de Vos M, Bernstein DP. Arts therapies and Schema Focused therapy: a pilot study. Arts Psychother 2011 Nov;38(5):325-332.

No Mental Health Outcome Reported

Friendship C, Blud L, Erikson M, et al. Cognitive-behavioural treatment for imprisoned offenders: an evaluation of HM prison service's cognitive skills programmes. Legal Criminol Psychol 2003 Feb;8(1):103-14.

Kesten KL, Leavitt-Smith E, Rau DR, et al. Recidivism rates among mentally ill inmates: impact of the Connecticut offender reentry program. J Correct Health Care 2012 Jan;18(1)20-8. Epub 2011 Nov 17. PMID: 22095006

Sacks S, Chaple M, Sacks JY, et al. Randomized trial of a reentry modified therapeutic community for offenders with co-occurring disorders: Crime outcomes. J Subst Abuse Treat 2012 Apr;42(3):247-59. Epub 2011 Sept 22. PMID: 21943810

Swinton M, Haddock A. Clozapine in special hospital: a retrospective case-control study. J Forensic Psychiatry 2000;11(3):587-96.

No Validated Instrument Used

Sahota S, Davies S, Duggan C, et al. The fate of medium secure patients discharged to generic or specialised services. J Forensic Psychiatry Psychol 2009;20(1):74-84.

Siberski J. Response of psychiatrically impaired inmates to activity therapy. J Offender Rehabil 2001;33(3):65-73.

Thaut MH. The influence of music therapy interventions on self-related changes in relaxation, affect, and thought in psychiatric prisoner-patients. J Music Ther 1989;26:155-66.

Out of Publication Date Range

Silver SB, Cohen MI, Spodak MK. Follow-up after release of insanity acquittees, mentally disordered offenders, and convicted felons. Bull Am Acad Psychiatry Law 1989;17(4):387-400. PMID: 2605365

Solomon P, Draine J, Meyerson A. Jail recidivism and receipt of community mental health services. Hosp Community Psychiatry 1994 Aug;45(8):793-7. PMID: 7982695

Tellefsen C, Cohen MI, Silver SB, et al. Predicting success on conditional release for insanity acquittees: regionalized versus nonregionalized hospital patients. Bull Am Acad Psychiatry Law 1992;20(1):87-100. PMID: 1576378

Duplicate

Coid J, Kahtan N, Gault S, et al. Medium secure forensic psychiatry services: comparison of seven English health regions. Br J Psychiatry 2001 Jan;178(1):55-61. PMID: 11136211

Sacks JY, Sacks S, McKendrick K, et al. Prison therapeutic community treatment for female offenders: profiles and preliminary findings for mental health and other variables (crime, substance use and HIV risk). J Offender Rehabil 2008;46(3):233-61. Also available: http://www.tandfonline.com/doi/abs/10.1080/10509670802143680.

Appendix D. Risk-of-Bias Assessment for Key Questions 1 and 2

Table D1. Risk-of-bias assessment for Key Question 1

Outcome	Study	Q1. Were pts. randomly assigned to study groups?	Q2. Was the process of assigning patients to groups made independently from physician/mental health care provider and patient preference?	Q3 For nonrandomized trials, did the study employ any other methods to enhance group comparability?	Q4. Was comparison of interest prospectively planned?	Q5. Were all study groups concurrently treated?	Q6 Were those who assessed the patients' outcomes blinded to the group to which the patients were assigned?	Q7 Was the outcome measure of interest objective and was it objectively measured?	Q8 Was the treatment applied consistently across study subjects and over time?	Q9. Was there a treatment(s)?	Q10 Was there for the two groups?	Q11 Did the time point of interest?	Q12 Was there a percentage of patients who provided data at the time point of interest?	Q13 Was funding free of financial interest?	Overall Risk of Bias Category
Psychiatric Symptoms	Rees-Jones et al., 2012[66]	No	Yes	Yes	Yes	Yes	Yes	No	Yes	NR	Yes	No	Yes	NR	medium
	Cullen et al., 2011[67]	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Yes	medium
	Balbuena et al., 2010[68]	No	No	Yes	No	Yes	No	No	Yes	NR	Yes	Yes	Yes	Yes	medium
	Martin et al., 2008[69]	No	No	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	medium
	J. Sacks et al., 2008[64,65]	Yes	Yes	Yes	Yes	Yes	NR	No	Yes	No	Yes	No	Yes	NR	medium

Table D1. Risk-of-bias assessment for Key Question 1 (continued)

Outcome	Study	Q1. Were pts. randomly assigned to study groups?	Q2. Was the process of assigning patients to groups made independently from physician/mental health care provider and patient preference?	Q3 For nonrandomized trials, did the study employ any other methods to enhance group comparability?	Q4. Was comparison of interest prospectively planned?	Q5. Were all study groups concurrently treated?	Q6 Were those who assessed the patients' outcomes blinded to the group to which the patients were assigned?	Q7 Was the outcome measure of interest objective and was it objectively measured?	Q8 Was the treatment applied consistently across study subjects and over time?	Q9. Was there a treatment(s)?	Q10 Was there for the two groups?	Q11 Did 85% of enrolled patients provide data at the time point of interest?	Q12 Was there a percentage of patients who provided data at the time point of interest?	Q13 Was funding free of financial interest?	Overall Risk of Bias Category
	Sullivan et al., 2007[631]	Yes	Yes	Yes	Yes	Yes	NR	No	Yes	NR	Yes	No	Yes	NR	medium
	Tavernor et al., 2000[70]	No	No	Yes	Yes	Yes	NR	No	Yes	Yes	Yes	Yes	Yes	Yes	medium
	Beck et al., 1997[71]	No	NR	Yes	Yes	No	NR	No	Yes	Yes	Yes	Yes	Yes	NR	medium
	Wilson, 1990[72]	Yes	Yes	Yes	Yes	Yes	No	No	Yes	NR	Yes	Yes	Yes	Yes	medium

Table D1. Risk-of-bias assessment for Key Question 1 (continued)

Outcome	Study	Q1. Were pts. randomly assigned to study groups?	Q2. Was the process of assigning patients to groups made independently from physician/mental health care provider and patient preference?	Q3 For nonrandomized trials, did the study employ any other methods to enhance group comparability?	Q4. Was comparison of interest prospectively planned?	Q5. Were all study groups concurrently treated?	Q6 Were those who assessed the patients' outcomes blinded to the group to which the patients were assigned?	Q7 Was the outcome measure of interest objective and was it objectively measured?	Q8 Was the treatment applied consistently across study subjects and over time?	Q9. Was there a ancillary treatment(s)?	Q10 Was there followup for the two groups?	Q11 Did at the time point of interest?	Q12 Was there a the percentage of patients who provided data at the time point of interest?	Q13 Was funding free of financial interest?	Overall Risk of Bias Category
Substance Use/Abuse	J. Sacks et al., 2008[64,65]	Yes	Yes	Yes	Yes	Yes	NR	No	Yes	No	Yes	No	Yes	NR	medium
	Sullivan et al., 2007[62]	Yes	Yes	Yes	Yes	Yes	NR	No	Yes	NR	Yes	No	Yes	NR	medium
Infractions	Balbuena et al., 2010[68]	No	No	Yes	Yes	Yes	No	Yes	Yes	NR	Yes	Yes	Yes	Yes	medium
Dangerousness/ Aggression Toward Others	Beck et al., 1997[71]	No	NR	Yes	Yes	No	NR	No	Yes	Yes	Yes	Yes	Yes	NR	medium

Table D1. Risk-of-bias assessment for Key Question 1 (continued)

Outcome	Study	Q1. Were pts. randomly assigned to study groups?	Q2. Was the process of assigning patients to groups made independently from physician/mental health care provider and patient preference?	Q3 For nonrandomized trials, did the study employ any other methods to enhance group comparability?	Q4. Was comparison of interest prospectively planned?	Q5. Were all study groups concurrently treated?	Q6 Were those who assessed the patients' outcomes blinded to the group to which the patients were assigned?	Q7 Was the outcome measure of interest objective and was it objectively measured?	Q8 Was the treatment applied consistently across study subjects and over time?	Q9. Was there a ancillary treatment(s)?	Q10 Was there for the two groups?	Q11 Did e data at the time point of interest?	Q12 Was there a percentage of patients who provided data at the time point of interest?	Q13 Was funding free of financial interest?	Overall Risk of Bias Category
Recidivism or Re-incarceration	S. Sacks et al., 2004[61]	Yes	Yes	Yes	Yes	Yes	NR	Yes	Yes	NR	Yes	No	No	Yes	Medium
Other Criminal Activity (e.g., self-reported criminal behavior)	J. Sacks et al., 2008[64,65]	Yes	Yes	Yes	Yes	Yes	NR	No	Yes	No	Yes	No	Yes	NR	medium
	S.Sacks et al., 2004[61]	Yes	Yes	Yes	Yes	Yes	NR	No	Yes	NR	Yes	No	No	Yes	Medium

Table D2. Risk-of-bias assessment Key Question 2

Outcome	Study	Q1. Were pts. randomly assigned to study groups?	Q2. Was the process of assigning patients to groups made independently from physician/mental health care provider and patient preference?	Q3 For nonrandomized trials, did the study employ any other methods to enhance group comparability?	Q4. Was comparison of interest prospectively planned?	Q5. Were all study groups concurrently treated?	Q6 Were those who assessed the patients' outcomes blinded to the group to which the patients were assigned?	Q7 Was the outcome measure of interest objective and was it objectively measured?	Q8 Was the treatment applied consistently across study subjects and over time?	Q9. Was there a treatment(s)?	Q10 Was there for the two groups?	Q11 Did the time point of interest?	Q12 Was there a percentage of patients who provided data at the time point of interest? ≤15% difference between groups in the	Q13 Was funding free of financial interest?	Overall Quality Category
Psychiatric Symptoms	Johnson and Zlotnick, 2012[35]	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	low
	Chandler and Spicer, 2006[81]	Yes	Yes	Yes	Yes	Yes	NR	No	Yes	Yes	Yes	No	NR	Yes	medium
	Solomon and Draine, 1995[83]	Yes	Yes	Yes	Yes	Yes	NR	No	No	No	Yes	No	No	Yes	medium

Table D2. Risk-of-bias assessment Key Question 2 (continued)

Outcome	Study	Q1. Were pts. randomly assigned to study groups?	Q2. Was the process of assigning patients to groups made independently from physician/mental health care provider and patient preference?	Q3 For nonrandomized trials, did the study employ any other methods to enhance group comparability?	Q4. Was comparison of interest prospectively planned?	Q5. Were all study groups concurrently treated?	Q6 Were those who assessed the patients' outcomes blinded to the group to which the patients were assigned?	Q7 Was the outcome measure of interest objective and was it objectively measured?	Q8 Was the treatment applied consistently across study subjects and over time?	Q9. Was there a ancillary treatment(s)?	Q10 Was there for the two groups?	Q11 Did the time point of interest?	Q12 Was there a e between groups in the percentage of patients who provided data at the time point of interest?	Q13 Was funding free of financial interest?	Overall Quality Category
Psychiatric Hospitalization	Coid et al., 2007[80]	No	Yes	Yes	No	Yes	NR	Yes	NR	NR	Yes	Yes	Yes	No	medium
	Chandler and Spicer, 2006[81]	Yes	Yes	Yes	Yes	Yes	NR	Yes	Yes	Yes	Yes	No	NR	Yes	medium
	Van Stelle and Moberg, 2004[82]	No	Yes	Yes	No	Yes	NR	Yes	NR	NR	Yes	No	No	Yes	medium

Table D2. Risk-of-bias assessment Key Question 2 (continued)

Outcome	Study	Q1. Were pts. randomly assigned to study groups?	Q2. Was the process of assigning patients to groups made independently from physician/mental health care provider and patient preference?	Q3 For nonrandomized trials, did the study employ any other methods to enhance group comparability?	Q4. Was comparison of interest prospectively planned?	Q5. Were all study groups concurrently treated?	Q6 Were those who assessed the patients' outcomes blinded to the group to which the patients were assigned?	Q7 Was the outcome measure of interest objective and was it objectively measured?	Q8 Was the treatment applied consistently across study subjects and over time?	Q9. Was there a ancillary treatment(s)?	Q10 Was there for the two groups?	Q11 Did the time point of interest?	Q12 Was there a e between groups in the percentage of patients who provided data at the time point of interest?	Q13 Was funding free of financial interest?	Overall Quality Category
Substance Use/Abuse	Johnson and Zlotnick, 201235	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	low
	Van Stelle and Moberg, 200482	No	Yes	Yes	No	Yes	NR	Yes	NR	NR	Yes	No	No	Yes	medium
	Solomon and Draine, 199583	Yes	Yes	Yes	Yes	Yes	NR	No	No	No	Yes	No	No	Yes	medium
Quality of Life	Solomon and Draine, 199583	Yes	Yes	Yes	Yes	Yes	NR	No	No	No	Yes	No	No	Yes	medium
Completed Suicide	Coid et al., 200780	No	Yes	Yes	No	Yes	NR	Yes	NR	NR	Yes	Yes	Yes	No	Medium

Table D2. Risk-of-bias assessment Key Question 2 (continued)

Outcome	Study	Q1. Were pts. randomly assigned to study groups?	Q2. Was the process of assigning patients to groups made independently from physician/mental health care provider and patient preference?	Q3 For nonrandomized trials, did the study employ any other methods to enhance group comparability?	Q4. Was comparison of interest prospectively planned?	Q5. Were all study groups concurrently treated?	Q6 Were those who assessed the patients' outcomes blinded to the group to which the patients were assigned?	Q7 Was the outcome measure of interest objective and was it objectively measured?	Q8 Was the treatment applied consistently across study subjects and over time?	Q9. Was there a ancillary treatment(s)?	Q10 Was there for the two groups?	Q11 Did the time point of interest?	Q12 Was there a e between groups in the percentage of patients who provided data at the time point of interest?	Q13 Was funding free of financial interest?	Overall Quality Category
Service Use	Chandler and Spicer, 2006[81]	Yes	Yes	Yes	Yes	Yes	NR	Yes	Yes	Yes	Yes	No	NR	Yes	medium
	Van Stelle and Moberg, 2004[82]	No	Yes	Yes	No	Yes	NR	Yes	NR	NR	Yes	No	No	Yes	medium
	Theurer and Lovell, 2008[78]	No	Yes	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Yes	medium
	Wenzlow et al., 2011[79]	No	Yes	Yes	No	Yes	NR	Yes	No	No	Yes	Yes	Yes	Yes	medium
	Solomon and Draine, 1995[83]	Yes	Yes	Yes	Yes	Yes	NR	Yes	No	No	Yes	No	No	Yes	medium

Table D2. Risk-of-bias assessment Key Question 2 (continued)

Outcome	Study	Q1. Were pts. randomly assigned to study groups?	Q2. Was the process of assigning patients to groups made independently from physician/mental health care provider and patient preference?	Q3 For nonrandomized trials, did the study employ any other methods to enhance group comparability?	Q4. Was comparison of interest prospectively planned?	Q5. Were all study groups concurrently treated?	Q6 Were those who assessed the patients' outcomes blinded to the group to which the patients were assigned?	Q7 Was the outcome measure of interest objective and was it objectively measured?	Q8 Was the treatment applied consistently across study subjects and over time?	Q9. Was there a ancillary treatment(s)?	Q10 Was there for the two groups?	Q11 Did the time point of interest?	Q12 Was there a e between groups in the percentage of patients who provided data at the time point of interest?	Q13 Was funding free of financial interest?	Overall Quality Category
Infractions	Van Stelle and Moberg, 2004[82]	No	Yes	Yes	No	Yes	NR	Yes	NR	NR	Yes	No	No	Yes	medium
Recidivism or Re-incarceration	Chandler and Spicer, 2006[81]	Yes	Yes	Yes	Yes	Yes	NR	Yes	Yes	Yes	Yes	No	NR	Yes	medium
	Solomon and Draine. 1995[83]	Yes	Yes	Yes	Yes	Yes	NR	Yes	No	No	Yes	No	No	Yes	medium
	Van Stelle and Moberg, 2004[82]	No	Yes	Yes	No	Yes	NR	Yes	NR	NR	Yes	No	No	Yes	medium

Table D2. Risk-of-bias assessment Key Question 2 (continued)

Outcome	Study	Q1. Were pts. randomly assigned to study groups?	Q2. Was the process of assigning patients to groups made independently from physician/mental health care provider and patient preference?	Q3 For nonrandomized trials, did the study employ any other methods to enhance group comparability?	Q4. Was comparison of interest prospectively planned?	Q5. Were all study groups concurrently treated?	Q6 Were those who assessed the patients' outcomes blinded to the group to which the patients were assigned?	Q7 Was the outcome measure of interest objective and was it objectively measured?	Q8 Was the treatment applied consistently across study subjects and over time?	Q9. Was there a ancillary treatment(s)?	Q10 Was there for the two groups?	Q11 Did the time point of interest?	Q12 Was there a e between groups in the percentage of patients who provided data at the time point of interest?	Q13 Was funding free of financial interest?	Overall Quality Category
	Coid et al., 2007[80]	No	Yes	Yes	No	Yes	NR	Yes	NR	NR	Yes	Yes	Yes	No	medium
	Theurer and Lovell, 2008[78]	No	Yes	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Yes	medium

NR=Not reported; pts.=patients

Appendix E. Study, Treatment, and Patient Characteristics for Key Questions 1 and 2

Key Question 1

Table E1. Key Question 1: general study characteristics

Types of Therapies	Study	Study Design	Number of Participants/Facilities	State/Country	*Rural/Urban	Treatment Setting
Pharmacologic Therapies	Balbuena et al., 2010[68]	Nonrandomized comparative trial that employed matching	98 federally sentenced, high needs, high-risk mentally disordered offenders in a forensic hospital	Saskatoon, Canada	Urban	Forensic hospital
	Martin et al., 2008[69]	Nonrandomized comparative trial that employed matching	73 admitted to forensic psychiatric hospital	New South Wales, Australia	Urban	Acute unit of forensic hospital
	Tavernor et al., 2000[70]	Nonrandomized comparative trial that employed matching	50 adults detained in an English Special Hospital	London, UK	Urban	Maximum security hospital for patients considered to be a “grave and immediate danger.”
	Beck et al., 1997[71]	Nonrandomized comparative trial that employed matching	20 adults from hospitalized on 3 forensic treatment wards at a State mental hospital	Fulton, Missouri	Rural	Maximum security unit of State mental hospital

Table E1. Key Question 1: general study characteristics (continued)

Types of Therapies	Study	Study Design	Number of Participants/Facilities	State/Country	*Rural/Urban	Treatment Setting
Psychological Therapies	Rees-Jones et al. 2012[66]	Nonrandomized comparative trial that employed matching	121 male patients from 6 medium secure and 4 low secure forensic facilities	England	NR	Forensic hospital
	Cullen et al., 2011[67]	Multisite RCT	84 men from six medium-secure forensic units	London, UK	Urban	Medium-secure forensic units
	Wilson, 1990[72]	RCT	10 inmates at a large maximum security prison	NR	NR	Maximum security prison
Dual Diagnoses Treatment	J. Sacks et al., 2008[64,65] (Both publications report on the same patients, but the second publication reports a longer-term followup period and includes an additional 154 patients.)	RCT	468 at Denver Women's Correctional Facility	Denver, Colorado	Urban	Medium security prison
	S. Sacks et al., 2004[61] & Sullivan et al., 2007[63] & Sullivan et al., 2007[62] *Each publication reports on same patient population*	RCT	139 at San Carlos correctional facility, which was specifically constructed for male offenders with psychiatric disorders	Pueblo, Colorado	Urban	Maximum security forensic prison

* Urban areas include all urbanized areas (more than 50,000 population) and Urban Clusters (2,500 to 49,999 population) as defined by the Bureau of the Census in the 2000 Decennial Census.

NR=Not reported; RCT=randomized controlled trial

Table E2. Key Question 1: treatment characteristics

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Pharmacologic Therapies	Balbuena et al. 2010[68]	Clozapine (65)	Psychiatrist in a forensic hospital	Clozapine Dosage not reported	Department of Corrections (Canada)	NR	Minimum of 6 weeks	6 months to 3 years	65	NR
		Other antipsychotics (33, quetiapine n=14; olanzapine n=10, risperidone n=9, methotrimeprazine n=2; and chlorpromazine n=2)[a]	Psychiatrist in a forensic hospital	Antipsychotic medications other than clozapine Dosage not reported	Department of Corrections (Canada)	NR	Minimum of 6 weeks	6 months to 3 years	33	NR

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Pharmacologic Therapies	Martin et al. 2008[69]	Clozapine (47)	Psychiatrist in a forensic hospital	Clozapine The mean highest dose was 514 mg daily (range 200 to 900 mg)	NR	NR	Mean length on clozapine was 18 months	Up to 5 years	37	Mood stabilizers 11 (23%), antidepressants: 21 (45%), benzodiazepine 10 (21%), other antipsychotic 12 (26%), methadone 9 (19%)
		Other antipsychotics (26)	Psychiatrist in a forensic hospital	Antipsychotic medications other than clozapine Dosage not reported The average number of antipsychotics prescribed was 4 (range 1 to 8)	NR	NR	NR	Up to 5 years	NR	Mood stabilizers 4 (15%), antidepressants 5 (19%), benzodiazepine 9 (35%), other antipsychotic 8 (27%), methadone 0 (0%)

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Pharmacologic Therapies	Tavernor et al. 2000[70]	High dose chlorpromazine (>1,400 mg, 32)	Psychiatrist in English Special Hospital	>1,400 mg chlorpromazine	NR	Total daily equivalent dose was 2533.1 mg (standard deviation 1101.7 mg)	NR	Up to 8 years	32	14 (44%) on more than 2 antipsychotics, 18 (56) on 2 or fewer antipsychotics, 21 (66%) on procyclidine, and 5 (15%) Authors report that there was no statistically significant difference between the treatment and control group for use of antidepressants, benzodiazepines, or hypnotic use.
		Standard dose chlorpromazine (<1,000 mg, 32)	Psychiatrist in English Special Hospital	<1,000 mg chlorpromazine	NR	Total daily equivalent was 538.1 mg (standard deviation 980.8 mg)	NR	Up to 8 years	32	32 (100%) on 2 or fewer antipsychotics, 19 (59%) on procyclidine, 2 (6.0%) on benzhexol, and 2 (6.0%) on mood stabilizers

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Pharmacologic Therapies	Beck et al. 1997[71]	Risperidone (10)	Psychiatrist in forensic hospital	6 mg of risperidone daily	NR	6 mg once daily	NR	6 months	10	All participated in psychosocial rehabilitation program
		Traditional neuroleptics (10)	Psychiatrist in forensic hospital	Authors report that this group got "traditional neuroleptics," but do not report type or dosage. They do indicate that the average patient was on 2,000 chlorpromazine units (milligrams).	NR	NR	NR	6 months	10	All participated in psychosocial rehabilitation program

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Psychological Therapies	Rees-Jones et al. 2012[66]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 67)	Experienced CBT practitioners with training in delivering this program administered the treatment in a forensic hospital setting	The program was modified for the needs of mentally disordered offenders. It consisted of 16 sessions which included guided individual mentoring between group sessions. The program targets self-control, social skills, interpersonal problem-solving skills, creative thinking, critical reasoning, social perspective taking, values enhancement, emotion management and helper (peer mentor) therapy.	NR	16 sessions with individual mentoring between group sessions	NR	3 months	52	NR

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
		Treatment as usual (36)	Providers included primary nurse, keyworker, and a social supervisor. Setting is forensic hospital.	Pharmacologic treatment, individual and group occupational and psychological therapy, including CBT for psychosis, anxiety, depression, substance misuse and relapse prevention.	NR	16 90-minute sessions	NR	3 month	36	0% (This group was not permitted to receive R&R or any other or other similar cognitive skill interventions)

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Psychological Therapies	Cullen et al. 2011[67]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 36)	Therapist trained in the program	The program covered the following 8 treatment modules: problem solving, assertiveness skills, social skills, negotiation skills, creative thinking, emotion management, values reasoning, and critical reasoning.	NR	36 two-hour sessions	Treatment completers completed 30 or more sessions	12 months	35	Typical antipsychotic 12 (27.3%), atypical antipsychotic 36 (81.8%), CBT10 (23.8%), other psychotherapy 13 (32.5%), group therapy 10 (23.8%)
		Treatment as usual (36)	NR	Participants were free to receive any interventions considered to be part of their usual treatment	NR	NR	NR	12 months	34	Typical antipsychotic 10 (25%), atypical antipsychotic 31 (77.5%), CBT 6 (15.0%), other psychotherapy 13 (32.5), group therapy 6 (15.0%)

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Psychological Therapies	Wilson, 1990[72]	Group cognitive therapy (5)	Trained therapist (author of study) in prison setting	Group sessions were problem-oriented and focused on specific techniques, such as activity planning, recording dysfunctional and functional thoughts, and group interaction. Inmates were given homework assignments to improve mood and teach adaptive skills.	NR	14, 90 minute sessions	14 weeks	9 months	5	NR
		Individual supportive therapy (5)	Trained therapist (author of study) in prison setting	The objective of the individual sessions was to provide a general therapy format and clarify problematic issues via personal reflection. The therapy was designed to be brief and avoided specific cognitive/ behavioral techniques and homework.	NR	4, 30 minute sessions plus weekly check-ins by the therapist or cellblock counselors	Checks continued for 14 weeks	9 months	5	NR

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Dual Disorder Treatment	J. Sacks et al. 2008[64,65] (Both publications report on the same patients, but the second publication reports a longer-term followup period and includes an additional 154 patients.)	Therapeutic community (TC, 257)	Mental health, addictions counselors, and peer counselors. Program takes place in a single floor residential building that is separated from the general prison population.	The *Challenge to Change* TC is a comprehensive program that addresses issues of substance abuse, mental health, criminal behavior, trauma and abuse, parenting, relationships, and employment. Women participate in three facility-wide services: mental health, education, and health care.	Department of Corrections (Colorado)	Program activities take place 5 days a week for 4 hours per day. The remaining 4 hours/day during the week is spent working within the prison.	Study participants remained in the program for on average 6.5 months.	12 months	235	"Proportionately more women in the TC group received in-prison services"

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Dual Disorder Treatment	J. Sacks et al. 2008[64,65] (continued) (Both publications report on the same patients, but the second publication reports a longer-term followup period and includes an additional 154 patients.)	Intensive outpatient program (IOP, 211)	Mental health, addictions counselors, and vocational counselors. Most of the services took place in a classroom setting within the correctional facility.	The IOP program was designed to address substance abuse and criminality, with a focus on prevention and relapse. The substance abuse component consisted of a 90-hour course provided over a 15 week period that utilized elements of cognitive behavior therapy. The women also received a mental health assessment, medication, educational, vocational and parenting training, counseling to address trauma, and community re-integration.	Department of Corrections (Colorado)	Classroom activities took place 2 days per week for 2 hours each day. Inmates participated in work in the correctional industries when not attending class.	Services were received over the course of 6 to 9 months	12 months	192	NR

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Dual Disorder Treatment	S. Sacks et al. 2004[61] & Sullivan et al. 2007[63] & Sullivan et al. 2007[62] *(Each publication reports on the same patient population)*	Prison Modified Therapeutic Community (MTC) plus aftercare (43)	Mental health, addictions counselors, and peer counselors in the prison setting and in the community residential aftercare program	The MTC program is a prison-based residential program that includes psycho-educational classes, cognitive-behavioral protocols, medications and therapeutic interventions directed at both mental health and substance abuse problems. It also involves reliance of mutual peer self-help and uses "community" as a healing agent. The aftercare program is a residential program that focuses on building skills to facilitate integration back into the community.	Department of corrections (Colorado)	Inmates attend the formal MTC program 5 days per week for 4 to 5 hours each day. The average inmate attends formal program activities at the aftercare program 3 to 7 days per week for 3 to 5 hours each during the 6 month tenure.	Planned duration of the MTC program is 12 months, but varies depending on offender's progress in treatment, time required for approval to be placed in a community corrections facility, and available space in the program. The aftercare program lasted 6 months.	12 months	43	NR

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Dual Disorder Treatment	J. Sacks et al. 2004[61] & Sullivan et al. 2007[63] & Sullivan et al. 2007[62] *(Each publication reports on the same patient population)* (continued)	Prison MTC only (32)	Mental health and addictions counselors in the prison setting	The MTC program is a prison-based residential program that includes psycho-educational classes, cognitive-behavioral protocols, medications and therapeutic interventions directed at both mental health and substance abuse problems. It also involves reliance of mutual peer self-help and uses "community" as a healing agent.	Department of Corrections (Colorado)	Inmates attend the formal MTC program 5 days per week for 4 to 5 hours each day.	Planned duration of the MTC program is 12 months, but varies depending on offender's progress in treatment, time required for approval to be placed in a community corrections facility, and available space in the program.	12 months	32	NR

Table E2. Key Question 1: treatment characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Follow up	N at Follow up	N (%) Receiving Ancillary Treatment
Dual Disorder Treatment	S. Sacks et al. 2004[61] & Sullivan et al. 2007[63] & Sullivan et al. 2007[62] *(Each publication reports on the same patient population)* (continued)	Standard mental health interventions (MH, 64)	Mental health and addictions counselors in the prison setting and in community in an outpatient post-prison community mental health facility	The prison based mental health program provides psychiatric services that include medication, weekly individual therapy and counseling, and specialized groups. Services focus on treating both mental health and substance abuse problems. The MH program also includes a range of aftercare services that are provided by a community-based mental health agency.	Department of Corrections (Colorado)	Individual therapy is provided weekly and substance abuse services consist of a 72 hour CBT educational program. MH aftercare in the form of case management is provided twice per week for a total of 4 hours.	Duration of MH services not reported. Duration of substance abuse services is 72 hours and duration of aftercare is not reported.	12 months	64	NR

[a] Some patients on more than one medication, so numbers do not add to 33.

CBT=Cognitive behavior therapy; DOC=Department of Corrections; MH=mental health; N=number; NR=not reported

Table E3. Key Question 1: additional treatment characteristics

Types of Therapies	Study	Treatment Group	Treatment Creator	Provider	Fidelity Rating
Pharmacologic Therapies	Balbuena et al., 2010[68]	Clozapine (65)	NR	NR	NR
		Other antipsychotics (33, quetiapine n=14; olanzapine n=10, risperidone n=9, methotrimeprazine n=2; and chlorpromazine n=2)[a]	NR	NR	NR
Pharmacologic Therapies	Martin et al., 2008[69]	Clozapine (47)	NR	NR	NR
		Other antipsychotics (26)	NR	NR	NR
Pharmacologic Therapies	Tavernor et al., 2000[70]	High dose chlorpromazine (>1,400 mg, 32)	NR	NR	NR
		Standard dose chlorpromazine (<1,000 mg, 32)	NR	NR	NR
Pharmacologic Therapies	Beck et al., 1997[71]	Risperidone (10)	NR	NR	NR
		Traditional neuroleptics (10)	NR	NR	NR

Table E3. Key Question 1: additional treatment characteristics (continued)

Types of Therapies	Study	Treatment Group	Treatment Creator	Provider	Fidelity Rating
Psychological Therapies	Rees-Jones et al., 2012[66]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 67)	NR	Experienced facilitators including a primary nurse, keyworker as well as an experienced clinical and forensic psychologist overseeing treatment	The authors state that treatment fidelity was ensured by the highly structured style of the manualized program, together with supervision provided at regular steering committees and oversight by an experienced psychologist and program author.
		TAU (54)	NR	NR	NR
Psychological Therapies	Cullen et al., 2011[67]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 36)	Developed in Canada by Ross and Fabiano (1985)	Staff providing treatment received training from program developers during intensive 3 to 5 day workshops.	Treatment fidelity was monitored throughout the study by one of the study authors and treatment sessions were recorded and assessed using an objective rating scale provided by the Cognitive Center Foundation in the UK.
		TAU (36)	NR	NR	NR
Psychological Therapies	Wilson, 1990[72]	Group cognitive therapy (5)	Followed framework developed by Hollon and Shaw (1979)	Doctoral student	NR
		Individual supportive therapy (5)	NR	Doctoral student	NR

Table E3. Key Question 1: additional treatment characteristics (continued)

Types of Therapies	Study	Treatment Group	Treatment Creator	Provider	Fidelity Rating
Dual Disorder Treatment	J. Sacks et al. 2008[64,65] (Both publications report on the same patients, but the second publication reports a longer-term followup period and includes an additional 154 patients.) S. Sacks et al., 2004[61] & Sullivan et al., 2007[63] & Sullivan et al., 2007[62]	Therapeutic community (TC, 257)	Therapeutic community programs tailored to the needs of inmates with dual diagnoses were developed by DeLeon and colleges (1995). The author of the present study modified the program to more specifically address the needs of female participants.	Clinically trained mental health and peer counselors	NR
		Intensive outpatient program (IOP, 211)	Utilized the framework developed by Wanburg & Milkman described in *Strategies for Self-Improvement and Change*.	Clinically trained mental health and peer counselors	NR

Table E3. Key Question 1: additional treatment characteristics (continued)

Types of Therapies	Study	Treatment Group	Treatment Creator	Provider	Fidelity Rating
Dual Disorder Treatment	*Each publication reports same patient population*	Prison Modified Therapeutic Community (MTC) plus aftercare (43)	Therapeutic community programs tailored to the needs of inmates with dual diagnoses were developed by Wexler and colleagues (1995). The author of the present study modified the program to more specifically address the needs of female participants.	Clinically trained mental health and peer counselors	NR
		Prison MTC only (32)	Therapeutic community programs tailored to the needs of inmates with dual diagnoses were developed by Wexler and colleagues (1995). The author of the present study modified the program to more specifically address the needs of female participants.	Clinically trained mental health and peer counselors	NR
		Standard mental health interventions (MH, 64)	NR	Clinically trained mental health and peer counselors	NR

NR=Not reported; TAU=treatment as usual

Table E4. Key Question 1: participant characteristics

Types of Therapies	Study	Treatment Group (N)	Mean Age (SD)	Number (%) White	Number (%) Female	N (%) Basic Literacy Skills or Years of schooling (SD)	Number (%) Prior/ Current Felony Conviction	Number (%) Prior/ Current Violent Conviction	Duration of Incarceration or Number (%) Incarcerated ≥5 Years	Number (%) Enrolled in Medicaid at Entry
Pharmacologic Therapies	Balbuena et al., 2010[68]	Clozapine (65)	Mean age at medication start: 34.3 (9.03)	Aboriginal: 37 (57%)	2 (3.1%)	Minimum elementary school: 40 (61.5%)	NR	NR Life sentence: 19 (29.2%)	NR Mean. length of current incarceration: 2.5 years (SD 3.5)	NR
		Other antipsychotics (33)	Mean age at medication start: 37.0 (10.3)	Aboriginal: 16 (48.5%)	2 (6.1%)	Minimum elementary school: 20 (60.1%)	NR	NR Life sentence: 8 (24.2%)	NR Mean. length of current incarceration: 1.7 years (SD 1.8)	NR

Table E4. Key Question 1: participant characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Mean Age (SD)	Number (%) White	Number (%) Female	N (%) Basic Literacy Skills or Years of schooling (SD)	Number (%) Prior/ Current Felony Conviction	Number (%) Prior/ Current Violent Conviction	Duration of Incarceration or Number (%) Incarcerated ≥5 Years	Number (%) Enrolled in Medicaid at Entry
Pharmacologic Therapies	Martin et al., 2008[69]	Clozapine (47)	Mean age at diagnosis: 22.31 (range 14 to 37 years) and mean age at medication start: 30.74 (range 20 to 46 years)	NR	0	NR	NR	Murder: 15 (32%), sexual assault: 4 (9.0%)	NR	NR
		Other antipsychotics (26)	Mean age at diagnosis: 32 (range 20 to 49 years)	NR	0	NR	NR	Murder: 9 (35%), sexual assault: 1 (4.0%)	NR	NR

Table E4. Key Question 1: participant characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Mean Age (SD)	Number (%) White	Number (%) Female	N (%) Basic Literacy Skills or Years of schooling (SD)	Number (%) Prior/ Current Felony Conviction	Number (%) Prior/ Current Violent Conviction	Duration of Incarceration or Number (%) Incarcerated ≥5 Years	Number (%) Enrolled in Medicaid at Entry
Pharmacologic Therapies	Tavernor et al., 2000[70]	High dose chlorpromazine (>1,400 mg, 32)	38.6 years (9.0)	NR	NR	NR	NR	NR	Average length of hospital stay 8 years	NR
		Standard dose chlorpromazine (<1,000 mg, 32)	38.1 years (9.7)	NR	NR	NR	NR	NR	Average length of hospital stay 8 years	NR
Pharmacologic Therapies	Beck et al., 1997[71]	Risperidone (10)	39.30 (4.50)	7 (70%)	0	Years: 10.10 (SD 2.28)	NR	NR	Length of hospitalization: 8.49 years	NR
		Traditional neuroleptics (10)	40.20 (8.39)	3 (30%)	0	Years: 10.70 (SD 1.64)	NR	NR	Length of hospitalization: 12.6 years	NR
Psychological Therapies	Rees-Jones et al., 2012[66]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 67)	34.14 (8.53)	NR	0	NR	Mean previous convictions (NOS): 7.28 (13.47)	63.6% for both groups combined	NR	NA
		TAU (54)	35.56 (10.86)	NR	0	NR	Mean previous convictions (NOS): 8.96 (13.33)	63.6% for both groups combined	NR	NA

Table E4. Key Question 1: participant characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Mean Age (SD)	Number (%) White	Number (%) Female	N (%) Basic Literacy Skills or Years of schooling (SD)	Number (%) Prior/ Current Felony Conviction	Number (%) Prior/ Current Violent Conviction	Duration of Incarceration or Number (%) Incarcerated ≥5 Years	Number (%) Enrolled in Medicaid at Entry
Psychological Therapies	Cullen et al., 2011[67]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 36)	35.4 (11.4)	15 (34.1%)	0	Obtained school-leaving qualifications: 17 (39.5%)	Median number criminal convictions: 5 (range 0 to 31)	NR	NR	NA
		Treatment as usual (36)	35.4 (8.4)	12 (30.0%)	0	Obtained school-leaving qualifications: 16 (40%)	Median number of criminal convictions: 6 (range 0 to 30)	NR	NR	NA
Psychological Therapies	Wilson, 1990[72]	Group cognitive therapy (5)	33.1 (8.0)	NR	NR	NR	NR	NR	Mean length of current incarceration 28.1 years (SD 45.4)	NR
		Individual supportive therapy (5)								
Dual Disorder Treatment	J. Sacks et al., 2008[64,65] (Both publications report on the same patients, but the second publication reports a longer-term followup period and includes an additional 154 patients.)	Therapeutic community (TC, 257)	35.2 (7.8)	48.0%	100%	63.0% of the total sample had high school diploma/GED	100% committed a drug-related crime	One-third of entire sample had committed a violent offense	Lifetime years incarcerated : 1.01 (SD 1.68) (data derived from first publication sample only)	NR
		Intensive outpatient program (IOP, 211)	35.0 (8.0)	46.0%	100%	63.0% of the total sample had high school diploma/GED	100% committed a drug-related crime	One-third of entire sample had committed a violent offense	Lifetime years incarcerated: 1.22 (SD 2.3) (data derived from first publication sample only)	NR

Table E4. Key Question 1: participant characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Mean Age (SD)	Number (%) White	Number (%) Female	N (%) Basic Literacy Skills or Years of schooling (SD)	Number (%) Prior/ Current Felony Conviction	Number (%) Prior/ Current Violent Conviction	Duration of Incarceration or Number (%) Incarcerated ≥5 Years	Number (%) Enrolled in Medicaid at Entry
Dual Disorder Treatment	S. Sacks et al., 2004[61] & Sullivan et al., 2007[63] & Sullivan et al., 2007[62] *Each publication reports same patient population*	Prison Modified Therapeutic Community (MTC) plus aftercare (43)	35.99 (8.33)	29 (51%)	0 All males	Years: 10.58 (SD 1.87)	32 (74%) committed a drug related crime in the year prior to incarceration	22 (52%) committed a violent offense in the year prior to incarceration	NR Mean length of current incarceration 6.1 years (SD 6.4)	NR
		Prison MTC only (32)	35.56 (8.83)	17 (53%)	0 All males	Years: 11.03 (2.04)	17 (53%) committed a drug related crime in the year prior to incarceration	14 (44%) committed a violent offense in the year prior to incarceration	NR Mean length of current incarceration 3.04 years (3.5)	NR
		Standard mental health interventions (MH, 64)	32.51 (8.92)	45	0 All males	Years: 10.45 (1.69)	31 (48%) committed a drug related crime in the year prior to incarceration	37 (58%) committed a drug related crime in the year prior to incarceration	NR Mean length of current incarceration 4.5 years (4.4)	NR

N=Number; NA=not applicable; NOS=not otherwise specified; NR=not reported; SD=standard deviation

Table E5. Key Question 1: additional participant characteristics

Types of Therapies	Study	Treatment Group (N)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) with Co-occurring Personality Disorder or PTSD
Pharmacologic Therapies	Balbuena et al., 2010[68]	Clozapine (65)	Psychosis or related disorders	Two research psychiatrists reviewing the clinical chart and agreeing on the final diagnosis. Diagnosis was based on DSM-IV.	NR	51 (78.5%)	Documented in patient chart	NR
		Other antipsychotics (33)	Psychosis or related disorders	Two research psychiatrists reviewing the clinical chart and agreeing on the final diagnosis. Diagnosis was based on DSM-IV.	NR	30 (91.0%)	Documented in patient chart	NR

Table E5. Key Question 1: additional participant characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) with Co-occurring Personality Disorder or PTSD
Pharmacologic Therapies	Martin et al., 2008[69]	Clozapine (47)	Schizophrenia: 41 (87%) Schizoaffective disorder: 6 (13%)	Documented in patient chart	Substance use/dependence: 47 (100%)	NR	Documented in patient chart	19 (40%) personality disorder
		Other antipsychotics (26)	Schizophrenia: 22 (85%) Schizoaffective disorder: 4 (15%)	Documented in patient chart	Substance use/dependence: 20 (77%)	NR	Documented in patient chart	7 (27%) personality disorder
Pharmacologic Therapies	Tavernor et al., 2000[70]	High dose chlorpromazine (>1,400 mg, 32)	Schizophrenia: 30 (94%) Schizoaffective disorder: 2 (6.2%)	International Classification of Diseases (ICD) classification from patient chart	The authors reported that there were no significant difference between cases and controls for presence of previous substance abuse.	NR	Documented in patient chart	NR
		Control does chlorpromazine (<1,000 mg, 32)	Schizophrenia: 32 (100%)	ICD classification from patient chart		NR	Documented in patient chart	NR
Pharmacologic Therapies	Beck et al., 1997[71]	Risperidone (10)	Schizophrenia: 7 (70%) Schizoaffective disorder: 3 (30%)	Diagnosis was based on DSM-IV	NR	NR	NR	NR
		Traditional neuroleptics (10)	Schizophrenia: 6 (60%) Schizoaffective disorder 4 (40%)	Diagnosis was based on DSM-IV	NR	NR	NR	NR

Table E5. Key Question 1: additional participant characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) with Co-occurring Personality Disorder or PTSD
Psychological Therapies	Rees-Jones et al., 2012[66]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 67)	100% Current diagnosis or history of severe mental illness (schizophrenia, schizoaffective disorder, or bipolar disorder)	NR	NR	NR	NR	NR
		TAU (54)	100% Current diagnosis or history of severe mental illness (schizophrenia, schizoaffective disorder, or bipolar disorder)	NR	NR	NR	NR	NR
Psychological Therapies	Cullen et al., 2011[67]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 36)	Schizophrenia: 35 (79.5%) Schizoaffective disorder: 6 (13.6%) Other psychotic disorder: 3 (6.8%)	Diagnosis was based on DSM-IV or ICD-10	NR	NR	NR	20 (45.5%)
		Treatment as usual (36)	Schizophrenia: 34 (85.0%) Schizoaffective disorder: 4 (10.0%) Other psychotic disorder: 2 (5.0%)	Diagnosis was based on DSM-IV or ICD-10	NR	NR	NR	17 (42.5%)

Table E5. Key Question 1: additional participant characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) with Co-occurring Personality Disorder or PTSD
Psychological Therapies	Wilson, 1990[72]	Group cognitive therapy (5)	Major depression	Structured interview and judgment by trained interviewer (author of study)	NR	NR	NR	NR
		Individual supportive therapy (5)		Structured interview and judgment by trained interviewer (author of study)				
Dual Disorder Treatment	J. Sacks et al., 2008[64,65] (Both publications report on the same patients, but the second publication reports a longer-term followup period and includes an additional 154 patients.)	Therapeutic community (TC, 257)	LT Dx of any Axis 1 mental disorder: 70.6%LT Dx severe Axis I mental disorder: 66.2% LT Dx major depression: 61.2% LT Dx bipolar: 27.9% LT Dx manic/hypomanic: 30.9% LT Dx generalized anxiety disorder: 24.2% LT Number of Dx:1.9 (SD 1.8) (data derived from first publication sample only)	Diagnostic Interview Schedule	NR	LT alcohol use: 98 (60%) LT substance use: 99 (61%) (data derived from first publication sample only)	Items from Center for Therapeutic Community Research (CTCR) Baseline Protocol	LT Dx PTSD: 36.8% LT ADHD: 11.8% (data derived from first publication sample only)

Table E5. Key Question 1: additional participant characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) with Co-occurring Personality Disorder or PTSD
		Intensive outpatient program (IOP, 211)	LT Dx of any Axis 1 mental disorder: 82.2%LT Dx severe Axis I mental disorder: 73.3% LT Dx major depression: 71.1% LT Dx bipolar: 26.7% LT Dx manic/hypomanic: 26.7% LT Dx generalized anxiety disorder: 37.8% LT Number of Dx: 2.2 (SD 1.6) (data derived from first publication sample only)	Diagnostic Interview Schedule	NR	LT alcohol use: 97 (64%) LT substance use: 100 (66%) (data derived from first publication sample only)	Items from CTCR Baseline Protocol	LT Dx PTSD: 52.3% LT ADHD: 6.7% (data derived from first publication sample only)

Table E5. Key Question 1: additional participant characteristics (continued)

Types of Therapies	Study	Treatment Group (N)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) with Co-occurring Personality Disorder or PTSD
Dual Disorder Treatment	S. Sacks et al., 2004[61] & Sullivan et al., 2007[63] & Sullivan et al., 2007[62] *Each publication reports same patient population*	Prison Modified Therapeutic Community (MTC) plus aftercare (43)	Axis I or Axis II disorder: 42 (97%) Axis I mental illness: 35 (81%) Axis I serious mental illness: 29 (67%)	Based on *Diagnostic Interview Schedule*	NR	39 (90%)	Based on *Diagnostic Interview Schedule*	17 (39.5%) with antisocial personality disorder
		Prison MTC only (32)	Axis I or Axis II: 30 (94%) Axis I mental illness: 26 (81%) Axis I serious mental illness: 22 (69%)	Based on *Diagnostic Interview Schedule*	NR	28 (87.5%)	Based on *Diagnostic Interview Schedule*	7 (22%)
		Standard mental health interventions (MH, 64)	Axis I or Axis II: 62 (97%) Axis I mental illness: 48 (75%) Axis I serious mental illness: 36 (56%)	Based on *Diagnostic Interview Schedule*	NR	58 (91%)	Based on *Diagnostic Interview Schedule*	28 (44%)

ADHD=Attention deficit hyperactivity disorder; DSM-IV=Diagnostic and Statistical Manual of Mental Disorders, fourth edition; Dx=diagnosis; LT=lifetime; N=number; NR=not reported; PTSD=Post-traumatic stress disorder; SD=standard deviation

Key Question 2

Table E6. Key Question 2: general study characteristics

Study	Study Design	Number of Participants/Facilities	State/Country	Rural/Urban	Treatment Setting
Johnson and Zlotnick, 2012[35]	RCT	38 female inmates in a state prison with a diagnosis of major depressive disorder who were due to be released in the near future participated in this RCT.	Rhode Island/ United States	NR	Prison to community
Wenzlow et al., 2011[79]	Nonrandomized comparative study using administrative data	686 inmates released from Oklahoma State prisons between 2004 and 2008	Oklahoma/ United States	NR	Prison to community
Theurer and Lovell, 2008[78]	Nonrandomized comparative study using matching	64 State prisoners with SMI and 64 matched controls, and a larger control group of offenders released at a prior time point with serious mental illness	Washington/ United States	Urban	Prison to community
Coid et al., 2007[80]	Nonrandomized comparative study using administrative data	1,061 patients treated in medium-security forensic unit of a psychiatric hospital followed by psychiatric service upon release. The services were either provided by forensic specialists or by generalist MH care providers.	England and Wales/ United Kingdom	Both	Forensic unit of a psychiatric hospital to community
Chandler and Spicer, 2006[81]	RCT	Jail followed by high-fidelity IDDT (N=103) vs. jail followed by TAU	California/ United States	Urban	Jail -to-community
Van Stelle and Moberg, 2004[82]	Nonrandomized comparative study using administrative data; all subjects were eligible for the treatment being studied.	212 prisoners with dual diagnoses were enrolled in the therapeutic community and from October 1997 through September 2001. 66 prisoners with dual diagnoses who had less than 18 months left on their sentence, but who qualified for therapeutic community acted as a comparison group. All prisoners were felons.	Wisconsin/ United States	NR	Prison to community
Solomon and Draine, 1995[83]	RCT	200 inmates of a large urban city jail were randomized. 176 of these were eligible to participate in this RCT.	Pennsylvania/USA	Urban	Jail to community

IDDT=Integrated dual diagnosis treatment; MH=mental health; NR=not reported; RCT=randomized controlled trial; SMI=serious mental illness; TAU=treatment as usual

Table E7. Key Question 2: treatment characteristics

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Followup	N at Followup	N (%) Receiving Ancillary Treatment
Johnson and Zlotnick, 2012[35]	Interpersonal therapy (IPT)	Treatment was provided during incarceration and upon release to the community. Treatment was provided by a PhD level psychologist with experience and training in IPT.	This study used a modified version of IPT. IPT focused on the following areas: disrupted family and friendships, substance use, communication, reactions to loss (e.g., loss of child custody), the aftereffects of any childhood traumas, feelings of isolation. Participants also received treatment as usual, which mainly consisted of abstinence based counseling.	DOC	60-75 minute group sessions 3 times per week for 8 weeks plus pre-, mid-, and post-group individual session while in prison. The participants also received 6 weekly post-release individual sessions	8 weeks during incarceration and 6 weeks post-release for a total of 14 weeks of treatment.	3 months	19	100% received in prison substance abuse treatment and 58% received antidepressant medication.

Table E7. Key Question 2: treatment characteristics (continued)

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Followup	N at Followup	N (%) Receiving Ancillary Treatment
	Psychoeducation	Treatment was provided during incarceration and upon release to the community. A PhD level psychologist with experience treating depression but no experience with IPT and a Bachelor-level substance abuse counselor without experience in treating depression administered psychoeducation.	Attention-matched manualized in-prison and post-release psychoeducation, which described mental health and substance abuse disorders. The stated purpose of this treatment was to make the women informed and empowered mental health care consumers. Participants also received treatment as usual, which mainly consisted of abstinence based counseling.	DOC	60-75 minute group sessions 3 times per week for 8 weeks plus pre-, mid-, and post-group individual session while in prison. The participants also received 6 weekly post-release individual sessions	8 weeks during incarceration and 6 weeks post-release for a total of 14 weeks of treatment.	3 months	19	100% received in prison substance abuse treatment and 68% also received antidepressant medication

Table E7. Key Question 2: treatment characteristics (continued)

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Followup	N at Followup	N (%) Receiving Ancillary Treatment
Wenzlow et al., 2011[79]	Medicaid enrolled (77)	Three discharge managers in 3 different Oklahoma correctional facilities (one medium security for men, one maximum security for women, and the State Penitentiary) each with a large mental health unit. Inmates were released in 2007–2008	Discharge managers identify prisoners with an SMI who are likely to be Medicaid eligible; obtain consent for application assistance; and assist with application completion.	Discharge managers are employed by the State MH agency to work in correctional facilities	Obtained consent at 6-9 months pre-release; application for Federal disability benefits 4 months pre-release and Medicaid application 2 month pre-release.	9 month process	3 months	54 (but author analysis based on all 77)	21 (27) Reentry Intensive Care Coordination Team (RICCT) program
	Medicaid eligible (195)	Same facilities as above but inmates released in 2004–2006	Prisoner must reapply upon discharge	NA	NA	NA	3 months	195	0 (0)
	Other Oklahoma correctional facilities (130)	Other comparable facilities, inmates released 2007–2008	Prisoner must reapply upon discharge	NA	NA	NA	3 months	130	15 (12) RICCT program
	Other Oklahoma correctional facilities (284)	Other comparable facilities, inmates released 2004–2006	Prisoner must reapply upon discharge	NA	NA	NA	3 months	284	0 (0)

Table E7. Key Question 2: treatment characteristics (continued)

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Followup	N at Followup	N (%) Receiving Ancillary Treatment
Theurer and Lovell, 2008[78]	Mentally Ill Offender Community Transition Program (MIOCTP)	Multidisciplinary staff including: MH case manager, psychiatrist, nurse practitioner, registered nurse, substance abuse counselor, community corrections officer, and residential house manager.	Pre-release planning including entitlement application; post-release case management, including individual and group services with MH and correction specialists; close coordination with community corrections officers; housing assistance; co-occurring disorders treatment.	Both	Daily contact if needed, regular bi-monthly home visits.	NR	2 years	64	NR
	Residential MH program residency while in prison; TAU upon release	No description of staff qualifications was provided.	Residential MH program residency while in prison; TAU upon release	Both	Residential MH treatment in prison; as needed in post-release period.	NR	2 years	64	NR

Table E7. Key Question 2: treatment characteristics (continued)

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Followup	N at Followup	N (%) Receiving Ancillary Treatment
Van Stelle and Moberg, 2004[82]	MICA therapeutic community in prison and in community following release from prison	In prison and in community after release or in the general population if followup occurs there	Group meetings throughout the day to cover community-level issues; individual sessions; mental illness and substance abuse treatment groups; structured social activities; daily living skills groups; and health, anger management and relapse prevention groups. Prisoners are isolated from the general prison population. Outreach included monitoring medication compliance; monthly meeting with a staff member; and obtaining community services.	NR	Daily meetings; segregation from general population and treatment as needed in community along with monthly meetings	4 – 2 month residential phases followed by community outreach or institutional outreach if prisoner is not released after completing the incarceration portion of the program.	12 months	130 for intermediate outcome points	NR
	TAU	Not clearly reported but subjects did receive treatment in the community	Not clearly reported but subjects did receive treatment in the community	NR	As needed	9 to 12 months	12 months	59 for intermediate outcome points	NR

Table E7. Key Question 2: treatment characteristics (continued)

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Followup	N at Followup	N (%) Receiving Ancillary Treatment
Chandler and Spicer, 2006[81]	Jail followed by high-fidelity IDDT (103)	Substance abuse or DD experienced staff in California.	Jail component: intensive assessment, medication, discharge planning consultation with jail staff, one-on-one counseling, and crisis intervention.	Advisory committee including MH and CJ administrators	continuous	Maximum of 2.5 years	Maximum of 2.5 years	61 (59%)	NR
	Jail followed by TAU (79)		Jail component: intensive assessment, medication, discharge planning consultation with jail staff, one-on-one counseling, and crisis intervention. Post-jail component: usual services (referral to county-operated service team for case management and medications) plus the availability of up to 60 days post-release grant funded case management and housing assistance.		continuous	Maximum of 2.5 years	Maximum of 2.5 years	NR	

Table E7. Key Question 2: treatment characteristics (continued)

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Followup	N at Followup	N (%) Receiving Ancillary Treatment
Coid et al., 2007[80]	Forensic specialist psychiatric services (409)	Mental health professionals with forensic specialty background.	Standard of care treatment in a medium secure unit of a psychiatric hospital followed by forensic specialist MH services in community.	Forensic specialist	NR	Mean 6.2 years (Range: 1 month to 9.9 years)	Mean 6.2 years (Range: 1 month to 9.9 years)	409	NR
	General adult psychiatric services (652)	Mental health generalist psychiatric services.	Standard of care treatment in a medium secure unit of a psychiatric hospital followed by general MH services in community.	MH generalist	NR	Mean 6.2 years (Range: 1 month to 9.9 years)	Mean 6.2 years (Range: 1 month to 9.9 years)	652	NR

Table E7. Key Question 2: treatment characteristics (continued)

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	MH or DOC Provided Treatment	Number and Time of Treatment	Duration of Treatment	Length of Followup	N at Followup	N (%) Receiving Ancillary Treatment
Solomon and Draine, 1995[83]	Mental health services in jail followed by ACT in community	A leader, 3 case managers, a psychiatric resident and supervising psychiatrist made up the ACT team. The ACT team provided and coordinated services in the community.	ACT intensive case management provides services to clients 24 hours a day, 7 days a week, including: locating resources, assisting clients in daily living, taught coping skills, developed peer support, assisted in reducing reliance on institutions, provided support to family members, and assisted with housing.	NR	24 hours per day/7 day week	1 year	1 year	94	NR
	Forensic mental health services in jail followed by Intensive case management	Experienced forensic specialist case managers brokered services in the community.	Forensic case managers worked independently with a forensic caseload.	NR	As needed	1 year	1 year		NR
	Mental health services in jail followed by referral to a community mental health center (TAU)	Intensive case managers brokered services in the community mental health centers where they were employed.	Individual case managers work for community mental health centers and their role was to broker services for the client at their respective center.	NR	As needed	Minimum 1 year	1 year		NR

ACT=Assertive community treatment; CJ=criminal justice; DD=dual diagnosis; DOC=Department of Corrections; IDDT=integrated dual diagnosis treatment; MH=mental health; MICA=mentally ill chemical abuser (treatment); N=number; NR=not reported; SMI=serious mental illness; TAU=treatment as usual

Table E8. Key Question 2: additional treatment characteristics

Study	Treatment Group (N)	Treatment Creator	Provider Education	Fidelity Rating
Johnson and Zlotnick, 2012[35]	Interpersonal therapy (19)	Wilfrey et al. 2000 with the Weissman et al. 2000 modification	PhD level psychologist with training and experience in applying IPT from a previous research study.	An independent IPT doctoral level psychologist rated adherence and competence for 18% of the group sessions using scales adapted from the National Institute of Mental Health Treatment of Depression Collaborative Research Program. Interrater reliability was 0.99 for adherence and 0.84 for competence.
	Psychoeducation (19)	NR	PhD level psychologist with one year of post-PhD experience and a bachelor level substance abuse counselor with 5 years' experience in treating prisoners with substance abuse issues.	NR

Table E8. Key Question 2: additional treatment characteristics (continued)

Study	Treatment Group (N)	Treatment Creator	Provider Education	Fidelity Rating
Wenzlow et al., 2011[79]	Medicaid enrolled (77)	Oklahoma Stakeholder agencies (including corrections, MH, Medicaid, human services, disability determination, and Social Security)	NR	Authors report that discharge managers had addressed many program implementation issues and the program's effectiveness seemed to be increasing.
	Medicaid eligible (195)	NA	NA	NA
	Other Oklahoma correctional facilities (130)	NA	NA	NA
	Other Oklahoma correctional facilities (284)	NA	NA	NA
Theurer and Lovell, 2008[78]	Mentally Ill Offender Community transition Program (MIOCTP)	Interagency MH/DOC collaboration	Variable, including: BA/BS, nursing, and MD.	Authors note that program outcomes are more impressive if first-year participants are excluded from analysis and that the first year of implementation was one of institutional and clinical adaptation.
	Residential MH program residency while in prison; TAU upon release	NR	NR	NR
Coid et al., 2007[80]	Forensic specialist psychiatric services (409)	NR	NR	NA
	General adult psychiatric services (652)	NR	NR	NA
Chandler and Spicer, 2006[81]	Jail followed by high-fidelity IDDT (103)	New Hampshire Psychiatric Institute	All team members had experience in substance abuse or dual diagnosis programs	Mean SAMHSA "Fidelity Scale" Rating 4.1 and 4.0 (two raters)
	Jail followed by TAU (79)	NA	NR	
Van Stelle and Moberg, 2004[82]	MICA therapeutic community in prison and in community following release from prison	NR	NR	NR
	TAU	NR	NR	NR

Table E8. Key Question 2: additional treatment characteristics (continued)

Study	Treatment Group (N)	Treatment Creator	Provider Education	Fidelity Rating
Solomon and Draine, 1995[83]	ACT	Model based on the Program of Assertive Community Treatment (PACT) implemented in Madison, Wisconsin.	Treatment team led by a psychiatrist.	Author notes there were implementation problems resulting in a lack of fidelity to the experimental model.
	Forensic intensive case management	NR	NR	NR
	TAU	NR	NR	NR

ACT=Assertive community treatment; DOC=Department of Corrections; IDDT=integrated dual diagnosis treatment; MH=mental health; MICA=mentally ill chemical abuser (treatment); N=number; NA=not applicable; NR=not reported; SAMHSA=Substance Abuse and Mental Health Services Administration; TAU=treatment as usual

Table E9. Key Question 2: participant characteristics

Study	Treatment Group (N)	Mean Age (SD)	Number (%) White	Number (%) Female	Reading or Educational Level or Number (%) with Basic Literacy Skills	Number (%) Prior/Current Felony Conviction	Number (%) Prior/Current Violent Conviction	Duration of Incarceration or Number (%) Incarcerated ≥5 years	Number (%) Enrolled in Medicaid at Entry
Johnson and Zlotnick, 2012[35]	Interpersonal therapy (19)	32.9 (7.3)	NR	100%	NR	NR	NR	NR	NR
	Psychoeducation (19)	37.1 (10.5)	NR	100%	NR	NR	NR	NR	NR

Table E9. Key Question 2: participant characteristics (continued)

Study	Treatment Group (N)	Mean Age (SD)	Number (%) White	Number (%) Female	Reading or Educational Level or Number (%) with Basic Literacy Skills	Number (%) Prior/Current Felony Conviction	Number (%) Prior/Current Violent Conviction	Duration of Incarceration or Number (%) Incarcerated ≥5 years	Number (%) Enrolled in Medicaid at Entry
Wenzlow et al., 2011[79]	Medicaid enrolled (77)	≥45: 22 (29%)	39/77 (51)	30/77 (39)	42/77 (67)	55/77 (71)	20/77 (26)	20/77 (26)	7/77 (9.0)
	Medicaid eligible (195)	≥45: 39 (20%)	115/195 (59)	57/195 (29)	122/195 (67)	136/195 (70)	54/195 (28)	51/195 (26)	7/195 (4.0)
	Other comparable facilities, inmates released 2007–2008 (130)	≥45: 31 (24%)	77/130 (59)	29/130 (22)	57/130 (47)	103/130 (79)	41/130 (32)	27/130 (21)	8/130 (6.0)
	Other comparable facilities, inmates released 2004–2006 (284)	≥45: 56 (20%)	173/284 (61)	18/284 (6.0)	148/284 (56)	227/284 (80)	72/284 (25)	55/284 (19)	9/284 (3.0)

Table E9. Key Question 2: participant characteristics (continued)

Study	Treatment Group (N)	Mean Age (SD)	Number (%) White	Number (%) Female	Reading or Educational Level or Number (%) with Basic Literacy Skills	Number (%) Prior/Current Felony Conviction	Number (%) Prior/Current Violent Conviction	Duration of Incarceration or Number (%) Incarcerated ≥5 years	Number (%) Enrolled in Medicaid at Entry
Theurer and Lovell, 2008[78]	Mentally Ill Offender Community transition Program (MIOCTP) (64)	35.9 (NR)	33/64 (51%)	2/64 (42%)	NR	NR	Homicide/ manslaughter: 1 (1.6%) Sex: 5 (8%) Robbery/ other violent: 17 (27%)	NR	NR
	Residential MH program residency while in prison; TAU upon release (64 matched subjects)	36.1 (NR)	NR	23/64 (36%)	NR	NR	NR	NR	NR
Coid et al., 2007[80]	Forensic specialist psychiatric services (409)	32.0 (11.2)	NR	55/409 (13.4)	NR	NR	Prior violent: 175/409 (42.8) Index offense violent: 216/409 (52.9)	NR	NA
	General adult psychiatric services (652)	29.0 (9.9)	NR	97/652 (14.9)	NR	NR	Prior violent: 250/652 (38.3) Index offense violent: 249/652 (38.2)	NR	NA

Table E9. Key Question 2: participant characteristics (continued)

Study	Treatment Group (N)	Mean Age (SD)	Number (%) White	Number (%) Female	Reading or Educational Level or Number (%) with Basic Literacy Skills	Number (%) Prior/Current Felony Conviction	Number (%) Prior/Current Violent Conviction	Duration of Incarceration or Number (%) Incarcerated ≥5 years	Number (%) Enrolled in Medicaid at Entry
Chandler and Spicer, 2006[81]	Jail followed by high-fidelity IDDT (103)	18-25: (12.6%) 26-35: (26.2%) 36-50; (51.5%) 51-78: (9.7%)	24/103 (23.3)	29/103 (28.2)	NR	≥2 jail episodes in the past two years or having spent 90 days in jail	NR	NR	NR
	Jail followed by TAU (79)	18-25: (7.6%) 26-35: (21.5%) 36-50; (60.8%) 51-78: (10.1%)	15/79 (19.0)	22/79 (28.2)	NR	≥2 jail episodes in the past two years or having spent 90 days in jail	NR	NR	NR
Van Stelle and Moberg, 2004[82]	MICA therapeutic community in prison and in community following release from prison (212)	36.4 (NR)	91/212 (43)	0	Mean reading level (TABE): 6.6	212/212 (100%)	Violent/ aggressive: 33% Sexual assault: 11%	Mean: 7.6 years	NR
	TAU (66)	36.0 (NR)	NR	0	reading level (TABE): 6.6	66/66 (100%)	The primary offense was usually a property or violent crime per authors.	NR	NR

Table E9. Key Question 2: participant characteristics (continued)

Study	Treatment Group (N)	Mean Age (SD)	Number (%) White	Number (%) Female	Reading or Educational Level or Number (%) with Basic Literacy Skills	Number (%) Prior/Current Felony Conviction	Number (%) Prior/Current Violent Conviction	Duration of Incarceration or Number (%) Incarcerated ≥5 years	Number (%) Enrolled in Medicaid at Entry
Solomon and Draine, 1995[83]	ACT	35.2 (9.4)	30 (15%)	27 (13.5%)	Non-high school graduate: 118 (62.6%)	NR	NR	Mean: 9.53 months (9.8 months) Range: 13 days to 5 years	NR
	Forensic intensive case management								
	TAU								

ACT=Assertive community treatment; IDDT=integrated dual diagnosis treatment; MICA=mentally ill chemical abuser; N=number; NA=not applicable; NR=not reported; SD=standard deviation; TABE=Tests of Adult Basic Education; TAU=treatment as usual

Table E10. Key Question 2: additional participant characteristics

Study	Treatment Group (n)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) With Co-occurring Personality Disorder or PTSD
Johnson and Zlotnick, 2012[35]	Interpersonal therapy (19)	100% major depressive disorder	Structured Clinical interview for DSM-IV Axis I Disorders of primary (nonsubstance induced) major depressive disorder after at least 4 weeks of abstinence and prison substance abuse treatment plus a minimum score of 18 on the Hamilton Depression Scale	100%: cocaine 63%, alcohol 63%, opiate 21%, marijuana 16%, sedative/hypnotic 21%.	NR	NR	Borderline personality disorder 47%, antisocial personality disorder 32%, PTSD NR
	Psychoeducation (19)	100% major depressive disorder	Structured Clinical interview for DSM-IV Axis I Disorders of primary (not substance induced) major depressive disorder after at least 4 weeks of abstinence and prison substance abuse treatment plus a minimum score of 18 on the Hamilton Depression Scale	100%: cocaine 53%, alcohol 53%, opiate 26%, marijuana 26%, sedative/hypnotic 21%.	NR	NR	Borderline personality disorder 26%, antisocial personality disorder 53%, PTSD NR

Table E10. Key Question 2: additional participant characteristics (continued)

Study	Treatment Group (n)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) With Co-occurring Personality Disorder or PTSD
Wenzlow et al., 2011[79]	Medicaid enrolled (77)	Major depression, bipolar disorder, or a psychotic illness: 100%	C1 mental health service classification	NR	NR	NA	NR
	Medicaid eligible (195)	Major depression, bipolar disorder, or a psychotic illness: 100%	C1 mental health service classification	NR	NR	NA	NR
	Other comparable facilities, inmates released 2007–2008 (130)	Major depression, bipolar disorder, or a psychotic illness: 100%	C1 mental health service classification	NR	NR	NA	NR
	Other comparable facilities, inmates released 2004–2006 (284)	Major depression, bipolar disorder, or a psychotic illness: 100%	C1 mental health service classification	NR	NR	NA	NR
Theurer and Lovell, 2008[78]	Mentally Ill Offender Community transition Program (MIOCTP)	Psychotic disorder: 36 (56%) Depression: 13 (20%) Bipolar disorder: 13 (20%) Other: 2 (3%)	Mental health risk management specialist assessed each candidate	Co-occurring chemical dependence/abuse: 57 (89%)	Co-occurring chemical dependence/abuse: 57 (89%)	Mental health risk management specialist assessed each candidate	Personality disorder: 33 (52%)
	Residential MH program residency while in prison; TAU upon release	NR	Administrative records	NR	NR	Administrative records	NR

Table E10. Key Question 2: additional participant characteristics (continued)

Study	Treatment Group (n)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) With Co-occurring Personality Disorder or PTSD
Coid et al., 2007[80]	Forensic specialist psychiatric services (409)	Upon admission to medium secure unit: Schizophrenia/schizoaffective disorder: 252 (63.2) Personality disorder: 54 (13.5) Mania/hypomania: 24 (6.0) Paranoid delusion: 23 (5.8) Depression: 30 (7.5) Organic brain disorder: 16 (4.0)	Case notes were assessed by a trained psychiatrist using ICD-10 criteria	Alcohol dependence: 105 (25.8) Drug dependence: 117 (28.7)	NR	Case notes	54 (13.5) had a personality disorder as either their primary or co-occurring disorder based on case notes and DSM-III-R Axis II criteria Antisocial personality disorder: 87 (21.3)
	General adult psychiatric services (652)	Upon admission to medium secure unit: Schizophrenia/schizoaffective disorder: 452 (71.4) Personality disorder: 30 (4.7) Mania/hypomania: 72 (11.4) Paranoid delusion: 32 (5.1) Depression: 33 (5.2) Organic brain disorder: 14 (2.2)	Case notes were assessed by a trained psychiatrist using ICD-10 criteria	Alcohol dependence: 140 (21.5) Substance dependence: 192 (29.5)	NR	Case notes	30 (4.7) had a personality disorder as either their primary or co-occurring disorder based on case notes and DSM-III-R Axis II criteria Antisocial personality disorder: 83 (12.7)

Table E10. Key Question 2: additional participant characteristics (continued)

Study	Treatment Group (n)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) With Co-occurring Personality Disorder or PTSD
Van Stelle and Moberg, 2004[82]	MICA therapeutic community in prison and in community following release from prison (212)	No axis I: 4% Schizophrenia: 32% Schizoaffective: 12% Bipolar: 14% Psychotic disorder: 13% Drug-related psychotic disorder; 11% Depressive disorder: 8% Anxiety/mood: 1% Personality disorder: 0% Dementia: 0% Other: 5%	Clinical chart review including complete medical examination by nurse clinician; psychologist administered the Diagnostic Interview Schedule; BSI; Psychiatric Symptom assessment Scale; Hare Psychopathy checklist; among other tools.	Alcohol: 33%: Cocaine: 46% Marijuana: 2% Opiate: 4% Sedative: 1% Hallucinogen: 1% Poly-substance: 1%	Alcohol: 2%: Marijuana: 5% Cocaine: 1% Other diagnoses: 4%	Addiction Severity Index	Personality disorder: 0 PTSD: not reported
	TAU (60)	Majority were schizophrenia, schizoaffective, psychotic disorder, or bipolar disorder. 89% were on psychotropic medication.	Administrative record	Majority were alcohol or poly-substance dependent	NR	Administrative records	Personality disorder: NR PTSD: NR

Table E10. Key Question 2: additional participant characteristics (continued)

Study	Treatment Group (n)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) With Co-occurring Personality Disorder or PTSD
Chandler and Spicer, 1995[81a]	Jail followed by high-fidelity IDDT (103)	Major depressive or other depressive disorder: 28.2% Schizophrenia: 25.2% Schizoaffective disorder: 5.8% Bipolar disorder: 11.6% Psychotic disorder NOS: 23.3%	Staff assigned Axis I. The research associate administered the PRISM for use in a dual diagnosis.	Alcohol and/or substance: 61.2% Any substance: 46.4% Alcohol: 31.1 Cocaine: 30.1 Heroin: 9.7% Cannabis: 11.7% Hallucinogen: 0% Sedative: 1.0 Stimulant: 14.7 Opiate: 3.9	Alcohol and/or substance: 59.2% Alcohol: 34.9% Any substance: 45.6%	The research associate administered a PRISM 12 month substance use disorder diagnosis.	Other (PTSD and anxiety disorders): 5.8% Personality disorders: NR
	Jail followed by TAU (79)	Major depressive or other depressive disorder: 22.8% Schizophrenia: 17.7% Schizoaffective disorder: 5.1% Bipolar disorder: 8.9% Psychotic disorder NOS: 34.2%	Staff assigned Axis I. The research associate administered the PRISM for use in a dual diagnosis.	Alcohol and/or substance: 64.6 Any substance: 48.1% Alcohol: 36.7% Cocaine: 31.6% Heroine: 5.1% Cannabis: 8.9% Hallucinogen: 2.5% Sedative: 2.5% Stimulant: 13.9% Opiate: 6.3%	Alcohol and/or substance: 58.2% Alcohol: 35.4% Any substance: 43.0%	The research associate administered a PRISM 12 month substance use disorder diagnosis.	Other (PTSD and anxiety disorders): 11.4% Personality disorders: NR

Table E10. Key Question 2: additional participant characteristics (continued)

Study	Treatment Group (n)	Mental Health Diagnosis	Method of Mental Health Diagnosis	Number (%) With Substance Use Dependence Diagnosis	Number (%) With Substance Abuse Diagnosis	Method of Substance Use Diagnosis	Number (%) With Co-occurring Personality Disorder or PTSD
Solomon and Draine, 1995[83]	ACT	Schizophrenia: 82.5% Major affective disorder: 10.0%	DSM-III-R diagnosis obtained from clinical files at the jail.	52.0% had substance use involvement		Substance use information taken from clinical files at jail	NR
	Forensic intensive case management						
	TAU						

[a] Author-described population as SMI.

ACT=Assertive community treatment; BSI=Brief Symptom Inventory; DSM-III-R=Diagnostic and Statistical Manual of Mental Disorders, third edition, revised; ICD-10=International Statistical Classification of Diseases and Related Health Problems, 10th Revision; IDDT=integrated dual diagnosis treatment; MH=mental health; MICA=mentally ill chemical abuser (treatment); NA=not applicable; NOS=not otherwise specified; NR=not reported; PRISM=Psychiatric Research Interview for Substance and Mental Disorders; PTSD=Post-traumatic stress disorder; TAU=treatment as usual

Appendix F. Evidence Tables for Key Questions 1 and 2

Key Question 1

Table F1. Key Question 1: psychiatric symptoms

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
Pharmacologic Therapies	Balbuena et al., 2010[68]	Clozapine (65)	Brief Psychiatric Rating Scale (BPRS) total score	42.0 (14.8)	NR	6 months: 38.5 (14.6)	SMD: -0.287 (-0.707 to 0.134) , p=0.182	BPRS scores decreased significantly for both groups after drug treatment, but significantly more so for the nonclozapine group.
		Other antipsychotics (33)		37.8 (12.8)	NR	6 months: 30.4 (5.8)		
Pharmacologic Therapies	Martin et al., 2008[69]	Clozapine (47)	Clinical Global Impression Scale	NR	NR	NR	Odds ratio (very much plus much improved) 0.55 (0.20 to 1.514), p=0.247	12 (25%) very much improved, 14 (29%) much improved, 17 (36%) minimally improved, 3 (6.0%) unchanged, and 1 (2.0%) worse
		Other antipsychotics (26)		NR	NR	NR		9 (35%) very much improved, 9 (35%) much improved, 4 (15%) minimally improved, 4 (15%) unchanged, and 0 (0%) worse

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
Pharmacologic Therapies	Tavernor et al., 2000[70]	High dose chlorpromazine (>1,400 mg, 32)	BPRS total score (number of patients in each group was 25 for this outcome)	NR	NR	36 (9)	0.744 (0.171 to 1.317), p=0.011	The total BPRS score was significantly higher for the high dose group than the standard dose group (p=0.013)
		Standard dose chlorpromazine (<1,000 mg, 32)		NR	NR	30 (7)		

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
Pharmacologic Therapies (continued)	Tavernor et al., 2000[70] (continued)	High dose chlorpromazine (>1,400 mg, 32)	Nurses Observation Scale for Inpatient Evaluation (NOSIE) social interest	NR	NR	29 (10)	0.631 (0.129 to 1.133), p=0.014	The NOSIE score for social interest was significantly higher for the high dose group than the standard group (p=0.035)
		Standard dose chlorpromazine (<1,000 mg, 32)		NR	NR	23 (9)		
		High dose chlorpromazine (>1,400 mg, 32)	NOSIE social competence	NR	NR	45 (11)	0.299 (-0.194 to 0.791), p=0.235	No significant difference between groups on the NOSIE social competence score.
		Standard dose chlorpromazine (<1,000 mg, 32)		NR	NR	48 (9)		
		High dose chlorpromazine (>1,400 mg, 32)	NOSIE personal neatness	NR	NR	8 (5)	0.200 (-0.291 to 0.691), p=0.425	No significant difference between groups on the NOSIE personal neatness score.
		Standard dose chlorpromazine (<1,000 mg, 32)		NR	NR	9 (5)		
		High dose chlorpromazine (>1,400 mg, 32)	NOSIE psychotic depression	NR	NR	8 (4)	0.750 (0.243 to 1.257), p=0.004	The NOSIE score for psychotic depression was significantly higher for the high dose group than the standard group (p=0.023)
		Standard dose chlorpromazine (<1,000 mg, 32)		NR	NR	5 (4)		
		High dose chlorpromazine (>1,400 mg, 32)	NOSIE manifest psychosis	NR	NR	8 (5)	0.883 (0.370 to 1.397), p=0.001	The NOSIE score for manifest psychosis was significantly higher for the

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
		Standard dose chlorpromazine (<1,000 mg, 32)		NR	NR	4 (4)		high dose group than the standard group (p=0.004)
Pharmacologic Therapies (continued)	Tavernor et al., 2000[70] (continued)	High dose chlorpromazine (>1,400 mg, 32)	NOSIE irritability	NR	NR	13 (8)	0.587 (0.087 to 1.088), p=0.021	The NOSIE score for irritability was significantly higher for the high dose group than the standard group (p=0.039)
		Standard dose chlorpromazine (<1,000 mg, 32)		NR	NR	8 (9)		
		High dose chlorpromazine (>1,400 mg, 32)	NOSIE cooperation	NR	NR	8 (4)	0.250 (-0.242 to 0.742), p=0.319	No significant difference between groups on the NOSIE cooperation score.
		Standard dose chlorpromazine (<1,000 mg, 32)		NR	NR	9 (4)		
		High dose chlorpromazine (>1,400 mg, 32)	Global Assessment Scale (GAS)	NR	NR	36 (15)	0.664 (0.161 to 1.167), p=0.010	The mean score on the GAS was significantly lower for the high dose group than the standard dose group (p=0.006)
		Standard dose chlorpromazine (<1,000 mg, 32)		NR	NR	47 (18)		
		High dose chlorpromazine (>1,400 mg, 32)	Social Dysfunction and Aggression Scale (SDAS) general	NR	NR	10 (8)	0.532 (0.034 to 1.031), p=0.036	The general and peak levels of aggression were higher for the high dose group than for the standard-dose group.
		Standard dose chlorpromazine (<1,000 mg, 32)		NR	NR	6 (7)		

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
		High dose chlorpromazine (>1,400 mg, 32)	SDAS peak	NR	NR	18 (9)	0.631 (0.125 to 1.137), p=0.014	The general and peak levels of aggression were higher for the high dose group than for the standard-dose group.
		Standard dose chlorpromazine (<1,000 mg, 32)		NR	NR	12 (10)		

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
Pharmacologic Therapies	Beck et al., 1997[71]	Risperidone (10)	Time-Sample Behavioral Checklist (TSBC)	NR	NR	NR	NR	MANOVA analysis indicated that the group main effect failed to achieve significance (F=1.77, df=16,139, p<0.18), as did the interaction between group and time (F=0.48, df=18,139, p<0.96). The main effect of time was significant (F=3.55, df=18,139, p<0.001).
		Traditional neuroleptics (10)		NR	NR	NR		
Psychological Therapies	Rees-Jones et al., 2012[66]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 67)	Maudsley Violence Questionnaire (MVQ) Total Score	16.25 (12.61)	12.30 (10.10)	11.87 (10.06)	Pre to posttreatment: 0.38 (0.02 to 0.75), 0.04 Pre to followup: 0.38 (0.02 to 0.74), p=0.04	The R&R group scored significantly lower than TAU on MVQ total score and subscales at post-treatment. At the 3 month followup, the R&R group showed persistent significant improvement on the total score and subscale.
		TAU (54)		14.35 (11.28)	14.72 (10.43)	14.24 (10.70)		
Psychological Therapies	Rees-Jones et al., 2012[66]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 67)	Locus of Control (LoC) Scale	16.13 (5.32)	15.76 (5.25)	14.78 (4.57)	Pre to posttreatment: 0.04 (-0.32 to 0.40), p=0.83 Pre to followup: 0.23 (-0.13 to 0.59), p=0.21	There was no significant between group differences on LoC at post-treatment. At the 3 month followup, the R&R group had moved toward a more normal LoC.
		TAU (54)		16.04 (5.51)	15.88 (5.89)	15.90 (5.79)		

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
Psychological Therapies	Cullen et al., 2011[67]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 36)	Social Problem-Solving Inventory (SPSI) total score	12.6 (2.7)	13.4 (2.2)	13.2 (2.5)	Pre to posttreatment: 0.409 (-0.058 to 0.875), p=0.086 Pre to followup: 0.281 (-0.183 to 0.746), p=0.235	Results of regression analysis indicated statistically significant larger improvement in the R&R group compared with the TAU group on the total SPSI score and on the impulsive/carelessness style and avoidant style subscales at posttreatment. At 12 months followup, the R&R group demonstrated significant improvements on the SPSI impulsive/carelessness style and avoidant style subscale.
		TAU (36)		13.6 (2.5)	13.4 (2.3)	13.5 (2.2)		
Psychological Therapies	Cullen et al., 2011[67]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 36)	SPSI: positive problem orientation	12.4 (3.9)	11.9 (3.4)	12.2 (3.6)	Pre to posttreatment: 0.166 (-0.297 to 0.629), p=0.482 Pre to followup: 0.00 (-0.462 to 0.462), p=1.000	
		TAU (36)		11.5 (3.4)	11.6 (3.7)	11.3 (3.6)		

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
Psychological Therapies	Cullen et al., 2011[67]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 36)	SPSI: negative problem orientation	5.8 (5.3)	5.8 (4.2)	6.4 (4.4)	Pre to posttreatment: 0.00 (-0.462 to 0.462), p=1.000	
		TAU (36)		4.8 (4.1)	4.8 (4.0)	4.3 (3.4)	Pre to followup: 0.251 (-0.213 to 0.714), p=0.290	
Psychological Therapies	Cullen et al., 2011[67]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 36)	SPSI: rational problem solving	10.6 (4.3)	11.1 (4.5)	11.6 (4.0)	Pre to posttreatment: 0.351 (-0.114 to 0.817), p=0.139	
		TAU (36)		10.9 (3.8)	9.9 (4.4)	10.9 (4.2)	Pre to followup: 0.245 (-0.219 to 0.708), p=0.3011	

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
Psychological Therapies	Cullen et al., 2011[67]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 36)	SPSI: impulsive/careless style	7.0 (4.3)	4.7 (3.4)	5.4 (4.0)	Pre to posttreatment: 0.612 (0.140 to 1.085), p=0.011	
		TAU (36)		5.0 (3.8)	5.0 (3.3)	5.5 (3.9)	Pre to followup: 0.524 (0.054 to 0.994), p=0.029	
Psychological Therapies	Cullen et al., 2011[67]	Cognitive skills program—Reasoning and Rehabilitation (R&R, 36)	SPSI: avoidant style	4.5 (4.5)	5.0 (3.8)	5.9 (4.3)	Pre to posttreatment: 0.557 (0.086 to 1.028), p=0.020	
		TAU (36)		7.0 (4.5)	5.2 (3.4)	4.8 (3.9)	Pre to followup: 0.834 (0.352 to 1.315), p=0.001	

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
Psychological Therapies	Wilson, 1990[72]*	Group cognitive therapy (5)	Beck Depression Inventory (BDI)	26.60 (12.30)	13.00 (9.69)	NR	0.956 (-0.353 to 2.264), p=0.152	Both groups improved from pre to post-treatment. "A significant main effect for time was obtained across the repeated measures on the [BDI] and a trend towards significance was noted on the Hopelessness Scale." Further analysis indicated significant improvement in depression ratings from pre- to midtreatment assessments on the BDI and between mid- and posttreatment on the MMPI D. No significant change was observed for assessments using the MAACL-D. ECRI's analysis does not include midtreatment assessment scores.
		Individual supportive therapy (5)		21.20 (4.66)	16.20 (6.76)	NR		
		Group cognitive therapy (5)	Multiple Affect Adjective Check List D Scale (MAACL D)	14.00 (7.42)	8.80 (5.26)	NR	0.812 (-0.478 to 2.102), p=0.217	
		Individual supportive therapy (5)		8.40 (6.54)	8.20 (3.49)	NR		
		Group cognitive therapy (5)	Hopelessness Scale	10.00 (6.71)	6.80 (7.59)	NR	0.032 (-1.207 to 1.272), p=0.959	
		Individual supportive therapy (5)		7.20 (5.54)	4.20 (4.14)	NR		
		Group cognitive therapy (5)	MMPI D Scale	82.00 (13.69)	69.80 (14.56)	At 9 months: 61.20 (8.41)	Baseline to post: 0.344 (-0.905 to 1.593), p=0.589 Baseline to followup: 0.200 (-1.043 to 1.443), p=0.753	
		Individual supportive therapy (5)		74.40 (16.99)	57.20 (10.98)	At 9 months: 56.40 (14.22)		

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
Dual Disorder Treatment	Sacks et al., 2008[64,65] (Both publications report on the same patients, but the second publication reports a longer-term followup period and includes an additional 154 patients.)	Therapeutic community (TC), Baseline and 6 month post-prison data is based on the original sample only (N=163); 12 month followup is based on larger sample (N=207)	BDI total score	17.40 (10.74)	NR	At 6 months: 11.84 (11.53) At 12 months: 11.7 (NR)	Baseline to 6 month followup: 0.204 (-0.018 to 0.426), p=0.071 Baseline to 12 month followup: Could not be calculated.	Scores for all three measures of psychological symptoms (BDI, BSI, and PSS) showed statistically significant improvement for both the TC and IOP group from pretreatment to 6 month post-prison follow-up. The authors' calculations show significant differential improvement favoring the TC group in the BDI total score and PSS score. "At 12 months post-prison followup for mental health symptomatology, the comparatively greater effectiveness of TC found 6 months after prison release were attenuated at the 12 month followup. Women in the control group continued to improve long-term (through 12 months
		Intensive outpatient program (IOP)Baseline and 6 month post-prison data is based on the original sample only (N=151); 12 month followup is based on the larger sample (N=163)		17.74 (11.19)	NR	At 6 months: 14.48 (12.11) At 12 months: 13.2 (NR)		

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
		TC Baseline and 6 month post-prison data is based on the original sample only (N=163); 12 month followup is based on larger sample (N=207)	Brief Symptom Inventory (BSI) global severity index	58.77 (10.83)	NR	At 6 months: 53.47 (12.64) At 12 months: 51.3 (NR)	Baseline to 6 month followup: 0.145 (-0.077 to 0.366), p=0.201 Baseline to 12 month followup: Could not be calculated.	post prison) on mental health and arrest, reducing those outcomes to levels approaching the rates of women from the TC and, in those domains, attenuating the differential between the groups.
		IOP Baseline and 6 month post-prison data is based on the original sample only (N=151); 12 month followup is based on the larger sample (N=163)		58.64 (12.17)	NR	At 6 months: 55.10 (12.84) At 12 months post-prison release:53.4 (NR)		
		TC Baseline and 6 month post-prison data is based on the original sample only (N=163); 12 month followup is based on larger sample (N=207)	Posttraumatic Symptom Severity (PSS) Score total score	16.16 (13.01)	NR	At 6 months: 10.22 (11.10) At 12 months post-prison release:10.0 (NR)	Baseline to 6 month followup: 0.21 (-0.01 to 0.43), p=0.060) Baseline to 12 month followup: Could not be	

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
		IOP Baseline and 6 month post-prison data is based on the original sample only (N=151); 12 month followup is based on the larger sample (N=163)		16.29 (14.10)	NR	At 6 months: 13.12 (13.81) At 12 months:11.9 (NR)	calculated.	

Table F1. Key Question 1: psychiatric symptoms (continued)

Types of Therapies	Study	Group	Outcome	Baseline Score Mean (SD)	Post-Treatment Score Mean (SD)	Followup Score Mean (SD)	EPC-Calculated Between-Group Effect Size SMD (95% CI), p-Value	Authors' Reported Results
Dual Disorder Treatment	Sullivan et al., 2007[63]	Modified Therapeutic Community (MTC, 75) vs. Standard Mental Health Program (MH, 64)	BSI global severity index	Combined for both groups: 44.7 (11.1)	NR	At 12 months Combined for both groups: 40.9 (10.1)	NR	Both groups demonstrated a statistically significant decrease in BSI scores from baseline to 12 month followup, but no between group difference was observed at 12 months: Odds ratio (p-value): 0.760 (p=0.47)
			BDI total score	Combined for both groups: 12.8 (10.2)	NR	At 12 months Combined for both groups: 12.7 (12.5)	NR	No significant change in BDI scores were observed for either group from baseline to 12-month followup. Between group difference at 12 months was also not significant: Odds ratio (p-value): 0.615 (p=0.37)
			Manifest Anxiety Scale (MAS)	Combined for both groups: 9.4 (5.0)	NR	At 12 months Combined for both groups: 8.7 (5.2)	NR	No significant change in MAS scores were observed for either group from baseline to 12-month followup. Between group difference at 12 months was also not significant: Odds ratio (p-value): 0.770 (p=0.54)

*Author-reported change in daily mood rating. However, mood was rated using an instrument that had not been validated. Thus, these results are not reported in this report.

CI=Confidence interval; MANOVA=multivariate analysis of variance; MMPI-D=Minnesota Multiphasic Personality Inventory Depression scale; NR=not reported; SD=standard deviation; SMD=standardized mean difference; TAU=treatment as usual

Table F2. Key Question 1: improvement status

Types of Therapies	Study	Group	Pre to Post Improvement Number (%)	Pre to Post Unchanged Number (%)	Pre to Post Deterioration Number (%)	Pre to Post Non-Depressed	Pre to Post Alleviation Number (%)
Psychological Therapies	Wilson, 1990[72]	Group cognitive therapy (5)	4 (80%)	1 (20%)	0	2 (40%)	2 (40%)
		Individual supportive therapy (5)	1 (20%)	4 (80%)	0	2 (40%)	1 (20%)

* Improvement status was based on the reliable change index score (RC) of the Beck Depression Inventory. The RC index is equivalent to the difference score (i.e., posttest minus pretest) divided by the standard error of difference between the two test scores.[72] Patients were classified as improved if the RC index was ≥1.96, unchanged if it was between -1.96 and +1.96, and deteriorated if the RC index was less than -1.96. Patients were classified as nondepressed if they scored below the clinical cut-off of 13 on the Beck inventory. Alleviation was defined as a statistically reliable movement from depressed into the nondepressed range as "measured by a clear pattern of greater improvement among clients receiving group cognitive treatment."[72]

Table F3. Key Question 1: independent functioning

Study	Group	Outcome	N at Pre-Treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author's Reported Results
Balbuena et al., 2010[68]	Clozapine (65)	Increase in pay in institutional employment as a measure independent functioning	NR	38/65 (58.5%) N with increase in pay	OR: 3.24 (1.33 to 7.89) p=0.01	OR: 3.13 (95% CI, 1.3 to 7.5), p=0.01
	Other antipsychotics (33)	Increase in pay in institutional employment as a measure independent functioning	NR	10/33 (30.3%) N with increase in pay		

CI=Confidence interval; N=number; NR=not reported; OR=odds ratio

Table F4. Key Question 1: institutional infractions

Study	Group	Outcome	N at Pre-Treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Authors' Reported Results
Balbuena et al., 2010[68]	Clozapine	Percent offense free	22/55 (40.0%)	One year: 32/47 (68.1%)	(using follow-up Ns only) OR: 1.98 (0.75 to 5.24) p=0.17	Among 19 offenders with life sentences, 11 (58%) on clozapine and 2 (25%) on other medication remained infraction free.
	Other antipsychotics	Percent offense free	6/24 (25.0%)	One year: 14/27 (51.9%)		
Beck et al., 1997[71]	Risperidone (10)	Aggressive incidents	NR	NR	NR	Wilcoxon rank sum and signed rank tests indicated that neither the risperidone nor the traditional neuroleptic group changed significantly in terms of aggression levels during the course of the study, nor did the groups differ significantly when compared at any time during the study.
	Traditional neuroleptics (10)	Aggressive incidents	NR	NR	NR	

CI=Confidence interval; N=number; NR=not reported; OR=odds ratio

Table F5. Key Question 1: mental health and substance abuse service use

Study	Group	Outcome	N (%) Receiving Treatment at Baseline	N (%) Receiving Treatment at Followup	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Authors' Reported Results
Sacks et al., 2008[64,65] (Both publications report on the same patients, but the second publication reports a longer-term followup period and includes an additional 154 patients.)	Therapeutic community (TC, 163)	Mental health treatment	36 (22%)	At 6 months: 65 (40%)	0.926 (0.590 to 1.454), p=0.740	At the 6 month followup: "Individuals in the "[IOP] group were more likely to receive substance abuse treatment in the six months following their release from prison (p=0.03)." Use of mental health treatment, psychiatric medications, and substance abuse treatment was not reported for the 12 month followup.
	Intensive outpatient program (IOP, 151)		50 (33%)	At 6 months: 63 (42%)		
	TC(153)	Currently using psychiatric medication(s)	NR	At 6 months: 50 (33%)	1.023 (0.630 to 1.66), p=0.928	
	IOP(146)[1]		NR	At 6 months: 47 (32%)		
	TC(163)	Substance abuse treatment	72 (44%)	At 6 months: 109 (67%)	0.565 (0.341 to 0.936), p=0.027)	
	IOP(151)		69 (46%)	At 6 months: 118 (78%)		
Sullivan et al., 2007[63]	Modified Therapeutic Community (MTC, 75) vs. Standard Mental Health Program (MH, 64)	Psychiatric medication	Combined percent of both groups: 47.5%	At 12 months Combined percent of both groups: 82.7%	NR	Both groups demonstrated significant increase in medication use from baseline to 12 month followup. But, no significant between group difference was observed at 12 months: Odds ratio (p-value): 0.487 (p=0.09)
		Psychiatric treatment	Combined percent of both groups: 36.7%	At 12 months Combined percent of both groups: 66.2%	NR	Both groups demonstrated significant increase in psychiatric treatment use from baseline to 12 month followup. But, no significant between group difference was observed at 12 months: Odds ratio (p-value): 0.512 (p=0.09)

[1]Sample size is based on consumers' prescribed medication at time of followup.

CI=Confidence interval; N=number; NR=not reported

Table F6. Key Question 1: substance use

Study	Group	Outcome	N (%) Receiving Treatment at Baseline	N (%) Receiving Treatment at Followup	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Authors' Reported Results
Sacks et al., 2008[64,65] (Both publications report on the same patients, but the second publication reports a longer-term followup period and includes an additional 154 patients.)	Therapeutic community (TC, 163)	Alcohol use	86 (53%)	At 6 months: 41 (25%)	1.414 (0.826 to 2.421), p=0.207	Both the TC and IOP groups showed significant reductions in on all measures of substance abuse from baseline to 6 months (p<0.001), with no significant differences between the groups. Further, the magnitude of the reported improvement appears similar for both groups. This outcome was not reported for the 12-month followup.
	Intensive outpatient program (IOP, 151)		75 (50%)	At 6 months: 29 (19%)		
	TC Baseline and 6 month post-prison data is based on the original sample only (N=163); 12 month followup based on a larger sample (N=207)	Substance use	111 (68%)	At 6 months: 36 (22%) At 12 months: 50 24%	Baseline to 6 months: 0.814 (0.484 to 1.368), p=0.438 12 month followup: 0.64 (0.41 to 1.01), p=0.057	For 6 month followup: Both the TC and IOP group showed significant reductions in on all measures of substance abuse from baseline to 6 months (p<0.001), with no significant differences between the groups. Further, the magnitude of the reported improvement appears similar for both groups.
	IOP Baseline and 6 month post-prison data is based on the original sample only (N=151); 12 month followup based on a larger sample (N=163)		95 (63%)	At 6 months: 39 (26%) At 12 months: 54 (33%)		
	TC(163)	Frequency of alcohol use:	Mean (SD)		0.072 (-0.150 to 0.293), p=0.524	----
			4.25 (2.52)	1.22 (2.33)		Both the TC and IOP group showed

Study	Group	Outcome	N (%) Receiving Treatment at Baseline	N (%) Receiving Treatment at Followup	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Authors' Reported Results
	IOP(151)	0=none; 8=more than once/day	4.17 (2.48)	0.97 (2.03)		significant reductions in on all measures of substance abuse from baseline to 6 months (p<0.001), with no significant differences between the groups. Further, the magnitude of the reported improvement appears similar for both groups. This outcome was not reported for the 12-month followup.
	TC(163)	High frequency substance use	5.66 (2.56)	1.09 (2.44)	0.221 (-0.001 to 0.443), p=0.051	Both the TC and IOP group showed significant reductions in on all measures of substance abuse from baseline to 6 months (p<0.001), with no significant differences between the groups. Further, the magnitude of the reported improvement appears similar for both groups. This outcome was not reported for the 12-month followup.
	IOP(151)		5.511 (2.55)	1.51 (2.76)		
Sullivan et al., 2007[62]	Modified Therapeutic Community (75, MTC)	Any substance use	65 (87%)	At 12 months: 23 (31%)	0.344 (0.171 to 0.690), p=0.003	Results of multivariate logistic regression MTC vs. MH controlling for the following several sample characteristics (see table footnote). Log odds: 0.34 (p=0.01)
	Standard Mental Health Program (64, MH)		58 (91%)	At 12 months: 36 (56%)		
	Modified Therapeutic Community (75, MTC)	Any illegal substance use	59 (79%)	At 12 months: 19 (25%)	0.436 (0.213 to 0.894), p=0.023	Results of multivariate logistic regression MTC vs. MH controlling for the following several sample characteristics (see table footnote). Log odds: 0.43 (p=0.05)
	Standard Mental Health Program (64, MH)		55 (86%)	At 12 months: 28 (44%)		
	Modified Therapeutic Community (75, MTC)	Any alcohol use	43 (57%)	At 12 months: 16 (21%)	0.518 (0.243 to 1.102), p=0.088	Results of multivariate logistic regression MTC vs. MH controlling for the following several sample characteristics (see table footnote). Log odds: 0.34 (p=0.02)
	Standard Mental Health Program (64, MH)		35 (55%)	At 12 months: 22 (39%)		

Note: Sullivan et al. (2007) used the following control variables in their regression model: age at baseline, age of first illegal activity, months incarcerated, any employment, stable housing (prior to baseline), attempted suicide, and living with nonparental relative while growing up.

CI=Confidence interval; N=number; SD=standard deviation

Table F7. Key Question 1: criminal justice outcomes

Study	Group	Outcome	N (%) at Pretreatment	N (%) at Posttreatment	N (%) at Followup	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Authors' Reported Results
Sacks et al., 2008[64,65] (Both publications report on the same patients, but the second publication reports a longer-term followup period and includes an additional 154 patients.)	Therapeutic community (TC, 163)	Any arrest	150 (92%)	NR	At 6 months post prison: 42 (26%) At 12 months: NR	Baseline to 6 months:0.642 (0.395 to 1.042), p=0.073	For the 6 month followup: The women in the TC condition showed significantly greater reductions in arrests for crimes other than parole violation as compared with women in the IOP group (Log odds -0.95, p=0.01). "When examining treatment effects in the 12 months after prison release, the following two patterns emerged. The greater experimental group treatment effects for measures of criminal activity and illegal drug use obtained at 6 months were maintained at 12 month followup. For measures of arrest and mental health symptomology, the comparatively greater effectiveness of the experimental group found 6 months after prison release were attenuated at the 12 month followup."
	Intensive outpatient program (IOP, 151)		131 (87%)	NR	At 6 months post prison: 53 (35%) At 12 months: NR		
	TC Baseline and 6 month post-prison data is based on the original sample only (N=163); 12 month followup was based on a larger sample (N=207)	Arrest (not a parole violation)	73 (45%)	NR	At 6 months post prison: 15 (9%) At 12 months: 23 (11%)	Baseline to 6 months:0.377 (0.195 to 0.729), p=0.004 Baseline to 12 months: 1.73 (0.82 to 3.66), p=0.15	

Study	Group	Outcome	N (%) at Pretreatment	N (%) at Posttreatment	N (%) at Followup	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Authors' Reported Results
	IOP Baseline and 6 month post-prison data is based on the original sample only (N=151); the 12 month followup was based on a larger sample (N=163)		68 (45%)	NR	At 6 months post prison: 32 (21%) At 12 months: 11 (7%)		
	TC Baseline and 6 month post-prison data is based on the original sample only (N=163); the 12 month followup was based on a larger sample (N=207)	Criminal activity upon release	150 (92%)	NR	At 6 months post prison: 65 (40%) At 12 months: 72 (35%)	6 month followup: 0.655 (0.418 to 1.024), p=0.063 12 month followup: 0.764 (0.50 to 1.17), p=0.213	
	IOP Baseline and 6 month post-prison data is based on the original sample only (N=151); the 12 month followup was based on a larger sample (N=163)		133 (88%)	NR	At 6 months post prison: 76 (50%) At 12 months: 67 (41%)		

Study	Group	Outcome	N (%) at Pretreatment	N (%) at Posttreatment	N (%) at Followup	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Authors' Reported Results
	TC Baseline and 6 month post-prison data is based on the original sample only (N=163); the 12 month followup was based on a larger sample (N=207)	Reincarceration (any)	NA	NR	At 12 months: 27 (13%)	0.693 (0.392 to 1.225), p=0.207	
	IOP Baseline and 6 month post-prison data is based on the original sample only (N=151); the 12 month followup was based on a larger sample (N=163)		NA	NR	At 12 months: 29 (18%)		
Sacks et al., 2004[61]	Prison Modified Therapeutic Community (MTC) plus aftercare (43)	Reincarceration	NR	NR	At 12 months post prison: 2 (5.0%)	MTC plus vs. MTC: 0.263 (0.048 to 1.457), p=0.126 MTC plus vs. Standard MH: 0.100 (0.022 to 0.453), p=0.003 MTC vs. Standard MH: 0.379 (0.128 to 1.125) p=0.081	The MTC plus aftercare group showed significantly lower reincarceration rates than the standard MH group (5% vs. 33%, p<0.02).
	Prison MTC only (32)		NR	NR	At 12 months post prison: 5 (16%)		
	Standard mental health interventions (MH, 64)		NR	NR	At 12 months post prison: 21 (33%)		
Sacks et al., 2004[61] (continued)	Prison Modified Therapeutic Community (MTC) plus aftercare (43)	Criminal activity upon release	NR	NR	At 12 months post prison: 18 (42%)	MTC plus vs. MTC: 0.635 (0.253 to 1.597), p=0.335 MTC plus vs. Standard MH: 0.352 (0.158 to 0.782), p=0.010 MTC vs. Standard MH: 0.553 (0.232 to 1.319),	The MTC plus aftercare group showed significantly lower rates of other criminal activity than the standard MH group (42% vs. 67%, p<0.05).
	Prison MTC only (32)		NR	NR	At 12 months post prison: 17 (53%)		

Study	Group	Outcome	N (%) at Pretreatment	N (%) at Posttreatment	N (%) at Followup	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Authors' Reported Results
	Standard MH interventions (64)		NR	NR	At 12 months post prison: 43 (67%)	p=0.182	
	Prison MTC plus aftercare (43)	Alcohol or substance offense	NR	NR	At 12 months post prison: 13 (30%)	MTC plus vs. MTC: 0.557 (0.214 to 1.447), p=0.230 MTC plus vs. Standard MH: 0.316 (0.140 to 0.717), p=0.006 MTC vs. Standard MH: 0.568 (0.241 to 1.337), p=0.195	The MTC plus aftercare group showed significantly lower rates of alcohol and substance related offences than the standard MH group (30% versus 58%, p<0.03).
	Prison MTC only (32)		NR	NR	At 12 months post prison: 14 (44%)		
	Standard MH interventions (64)		NR	NR	At 12 months post prison: 37 (58%)		
	Prison MTC plus aftercare (43)	Other type of offense	NR	NR	At 12 months post prison: 9 (21%)	MTC plus vs. MTC: 0.505 (0.179 to 1.423), p=0.196 MTC plus vs. Standard MH: 0.441 (0.181 to 1.077), p=0.072 MTC vs. Standard MH: 0.873 (0.359 to 2.121), p=0.764	No further results reported
	Prison MTC only (32)		NR	NR	At 12 months post prison: 11 (34%)		
	Standard MH interventions (64)		NR	NR	At 12 months post prison: 24 (37.5%)		

CI=Confidence interval; N=number; NR=not reported

Table F8. Key Question 1: time to reincarceration or recidivism

Study	Group	Outcome	Followup Mean Days (SD)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Authors' Reported Results
Sacks et al., 2008[64,65] (Both publications report on the same patients, but the second publication reports a longer-term followup period and includes an additional 154 patients.)	Therapeutic Community (207)	Number of days until re-incarceration	203.8 (NR)	Could not be calculated.	"Time to reincarceration was longer by approximately 20 days for women in the experimental group compared with those in the control group."
	Intensive Outpatient (163)		183.9 (NR)		
Sacks et al., 2004[61]	Prison Modified Therapeutic Community (MTC) plus aftercare (43)	Number of days until re-incarceration	169.5 (60.10)	MTC plus vs. MTC: 0.514 (0.049 to 0.979), p=0.030 MTC plus vs. Standard MH: 0.78 (0.383 to 1.184), p<0.01 MTC vs. Standard MH: 0.169 (-0.256 to 0.594), p=0.437	The pattern for incarceration showed that MH clients were incarcerated earliest (108 days), followed by MTC only (125 days) and MTC + aftercare (170 days)
	Prison MTC only (32)		124.8 (113.56)		
	Standard mental health (MH) interventions (64)		108.43 (87.80)		
	Prison MTC plus aftercare (43)	Number of days until first crime	67.11 (67.99)	MTC plus vs. MTC: 0.206 (-0.253 to 0.664), p=0.380 MTC plus vs. Standard MH: 0.012 (-0.375 vs. 0.398), p=0.958 MTC vs. Standard MH: 0.199 (-0.227 vs. 0.624), p=0.360	No further results reported.
	Prison MTC only (32)		84.06 (98.76)		
	Standard MH interventions (64)		66.19 (85.33)		

CI=Confidence interval; SD=standard deviation

Table F9. Key Question 1: adverse events

Study	Group (Number of Patients)	Adverse Event
Martin et al., 2008[69]	Clozapine (47)	2 (4%) patients developed neutropenia, 3 (6%) had seizures
	Other antipsychotics (26)	NR
Tavernor et al., 2000[70]	High dose chlorpromazine (>1,400 mg, 32)	The authors reported that the high dose group experienced significantly more total (autonomic and neurological) side-effects than the standard dose group (mean score for the high dose group was 6.96, mean for standard group was 4.84, p=0.048).
	Standard dose chlorpromazine (<1,000 mg, 32)	

NR=Not reported

Key Question 2

Table F10. Key Question 2: increase in psychiatric symptoms

Study	Group	Outcome	Mean (SD) Pre-treatment or N at Pre-treatment/ Total N in Group (%)	Mean (SD) at Final Followup or N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size (95% CI), p-Value	Author Reported Results
Johnson and Zlotnick, 2012[35]	IPT (19)	HRSD scores	28.0 (6.0)	15.8 (11.7)	SMD:0.29 (-0.35 to 0.93), p=0.38	By the 3 month followup, both groups had lower HRSD scores than at intake but there was no between group difference. However, at the end of the in-prison portion of the treatment program, IPT participants had significantly lower HRSD scores than Psychoeducation participants.
	Psychoeducation (19)		27.2 (7.5)	12.0 (12.3)		

Table F10. Key Question 2: increase in psychiatric symptoms (continued)

Study	Group	Outcome	Mean (SD) Pre-treatment or N at Pre-treatment/ Total N in Group (%)	Mean (SD) at Final Followup or N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size (95% CI), p-Value	Author Reported Results
Chandler and Spicer, 2006[81]	Jail followed by high-fidelity IDDT (103)	Crisis visits	1.62 (3.56)	2.10 (4.59)	SMD: 0.43 (0.13 to 0.73), p=0.004	Sign rank test: p<0.654
	Jail followed by TAU (79)	Crisis visits	0.58 (1.29)	3.32 (6.95)		Sign rank test: p<0.001
	Jail followed by high-fidelity IDDT (103)	Patients with any crisis (%)	NR	46/103 (45%)	OR: 0.79 (0.44 to 1.42), p=0.42	Logistic multiple regression: z=-0.64, p<0.034
	Jail followed by TAU (79)	Patients with any crisis (%)	NR	40/79 (51%)		
Solomon and Draine, 1995[83]	ACT	BPRS	30	NR	Could not be calculated.	BPRS was dropped from the discriminant analysis as it added very little to the model's predictive power.
	Forensic intensive case management	BPRS	23			
	TAU	BPRS	41			

ACT=Assertive community treatment; BPRS=Brief Psychiatric Rating Scale; CI=confidence interval; HRSD=Hamilton Rating Scale for Depression; IDDT=integrated dual diagnosis treatment; IPT=interpersonal therapy; N=number; NR=not reported; OR=odds ratio; SD=standard deviation; SMD=standardized mean difference; TAU=treatment as usual

Table F11. Key Question 2: psychiatric hospitalization

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size (95% CI), p-Value	Author Reported Results
Coid et al., 2007[80]	Forensic specialist psychiatric services (409)	Any psychiatric hospital readmission	NA	564/2454 person years of followup	OR: 0.84 (0.75 to 0.95) p=0.005	Regression analysis, with potential confounders adjusted for, Incidence Rate Ratio 1.12 (95% CI, 0.90 to 1.38)
	General adult psychiatric services (652)	Any psychiatric hospital readmission	NA	1076/4121 person years of followup		
Chandler and Spicer, 2006[81]	Jail followed by high-fidelity IDDT (103)	Psychiatric hospitalization	Mean: 1.54 (4.59)	1.25 (3.27)	SMD: 0.54 (0.24 to 0.84) p=0.000	Sign rank test: p<0.667
	Jail followed by TAU (79)	Psychiatric hospitalization	Mean: 0.34 (1.40)	5.03 (13.88)		Sign rank test: p<0.001
Van Stelle and Moberg, 2004[82]	MICA therapeutic community in prison and in community following release from prison: (39 graduates and 91 terminators)	Institutional transfer to a MH facility	NR	Graduates: 4 (9%) Terminators: 23 (25%) Total: 27	OR:0.13 (0.07 to 0.26) p=0.000	MICA graduates were more likely to be transferred to a minimum security facility, while terminators and comparison inmates were more likely to be transferred to a medium security facility, a mental health facility, or a maximum security facility.
	TAU (59)	Institutional transfer to a MH facility	NR	25 (43%)		

CI=Confidence interval; IDDT=integrated dual diagnosis treatment; MH=mental health; MICA=mentally ill chemical abuser; N=number; NA=not applicable; NR=not reported; OR=odds ratio; SMD=standardized mean difference; TAU=treatment as usual

Table F12. Key Question 2: level of function

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size (95% CI), p-Value	Author Reported Results
Van Stelle and Moberg, 2004[82]	MICA therapeutic community in prison and in community following release from prison: (103)	Appropriate housing at 3 months based on agent reports	NA	85/103 (83%)	OR: 1.41 (0.62 to 3.22) p=0.41	Sign rank test: p<0.001
	TAU (55)	Appropriate housing at 3 months based on agent reports	NA	43/55 (79%)		
	MICA therapeutic community in prison and in community following release from prison: (103)	Social support system at 3 months based on agent report	NA	78/103 (76%)	OR: 0.97 (0.45 to 2.08) p=0.93	NR
	TAU (55)	Social support system at 3 months based on agent report	NA	42/55 (76%)		
	MICA therapeutic community in prison and in community following release from prison: (103)	Rated as stable	NA	60/103 (58%)	OR: 1.80 (0.93 to 3.49) p=0.08	NR
	TAU (55)	Rated as stable	NA	24/55 (44%)		

CI=Confidence interval; MICA=mentally ill chemical abuser; N=number; NA=not applicable; NR=not reported; OR=odds ratio; SMD=standardized mean difference; TAU=treatment as usual

Table F13. Key Question 2: medication adherence

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	Number at Final Followup/ Total Number in Group (%)	EPC Calculated Between Group Effect Size (95% CI), p-Value	Author Reported Results
Van Stelle and Moberg, 2004[82]	MICA therapeutic community in prison and in community following release from prison: (103)	Took medication consistently based on agent reports	NA	60/103 (58%)	OR 2.64 (1.34 to 5.22) p=0.005	Chi-square or one-way ANOVA significant at p<0.05
	Jail followed by TAU (55)	Took medication consistently based on agent reports	NA	19/55 (34%)		

ANOVA=Analysis of variance; CI=confidence interval; MICA=mentally ill chemical abuser; N=number; NA=not applicable; OR=odds ratio; TAU=treatment as usual

Table F14. Key Question 2: substance use

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Johnson and Zlotnick, 2012[35]	IPT (19)	Substance use relapse	NA	6/19 (32%)	OR: 0.51 (0.14 to 1.92), p=0.32	There was no difference in the rates of relapse by study group.
	Psychoeducation (19)		NA	9/19 (47%)		
Van Stelle and Moberg, 2004[82]	MICA therapeutic community in prison and in community following release from prison: (103)	Abstinence 3 months post release	NA	65/103 (63%)	OR 1.77 (0.91 to 3.44) p=0.09	Chi-square or one-way ANOVA significant at p<0.01
	TAU (55)	Abstinence 3 months post release	NA	27/55 (49%)		
	MICA therapeutic community in prison and in community following release from prison: (103)	Positive urinalysis within 3 months post release	NA	12/103 (12%)	OR: 0.78 (.30 to 2.03) p=0.60	NR
	TAU (55)	Positive urinalysis within 3 months post release	NA	8/55 (15%)		
Solomon and Draine, 1995[83]	ACT	Alcohol scale of the Addiction Severity Index	NA	NR	Could not be calculated	Alcohol scale of the Addiction Severity Index was dropped from the discriminant analysis as it added very little to the model's predictive power.
	Forensic intensive case management	Alcohol scale of the Addiction Severity Index	NA			
	TAU	Alcohol scale of the Addiction Severity Index	NA			

ACT=Assertive community treatment; CI=confidence interval; IPT=interpersonal therapy; MICA=mentally ill chemical abuser; N=number; NA=not applicable; NR=not reported OR=odds ratio; TAU=treatment as usual

Table F15. Key Question 2: quality of life

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Solomon and Draine, 1995[83]	ACT	Subjective Quality of Life measure, Lehman's Quality of Life Interview	NA	NR	Could not be calculated.	The subjective quality of life variables were dropped from the discriminant analysis as they added very little to the model's predictive power.
	Forensic intensive case management	Subjective Quality of Life measure, Lehman's Quality of Life Interview	NA			
	TAU	Subjective Quality of Life measure, Lehman's Quality of Life Interview	NA			

ACT=Assertive community treatment; CI=confidence interval; N=number; NA=not applicable; NR=not reported; TAU=treatment as usual

Table F16. Key Question 2: completed suicide

Study	Group	Outcome	N at Final Followup/ Total N in Group (%)	EPC Calculated Between Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Coid et al., 2007[80]	Forensic specialist psychiatric services (409)	Suicide	10/409 (2.4%)	OR: 0.79 (0.37 to 1.71) p=0.552	Regression analysis, with potential confounders adjusted for, OR: 1.25 (95% CI, 0.50 to 3.12)
	General adult psychiatric services (652)	Suicide	20/652 (3.1%)		

CI=Confidence interval; N=number; OR=odds ratio

Table F17. Key Question 2: service use during incarceration

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	Mean (SD) or N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Theurer and Lovell, 2008[78]	MIOCTP (64)	Total hours in prison	NA	20 hours	Comparison was to larger control group so no effect size was calculated.	MIOCTP participants generally received pre-release services, whereas pre-release services were rare for control subjects.
	Residential mental health program residency while in prison; TAU upon release (287)		NA	0.7 hours		
Van Stelle and Moberg, 2004[82]	MICA therapeutic community in prison and in community following release from prison (39 graduates and 91 terminators)	Institutional mental health service	NA	Graduates: 35 (89%) Terminators: 24 (26%)	OR: 2.05 (1.06 to 3.98) p=0.03	MICA graduates were more likely to receive mental health services through the ITC outreach component, while only one-quarter of terminators and comparison group members received some type of additional mental health service.
	TAU (59)	Institutional mental health service	NA	17 (29%)		
	MICA therapeutic community in prison and in community following release from prison (39 graduates and 91 terminators)	Medication monitoring	NA	Graduates: 35 (89%) Terminators: 90 (99%) Total: 125	OR: 1.82 (0.47 to 7.03) p=0.39	MICA graduates were more likely to receive mental health services through the ITC outreach component, while terminators and comparison group members received only periodic medication monitoring by a psychiatrist.
	TAU (59)	Medication monitoring	NA	55 (94%)		

CI=Confidence interval; ITC=institutional therapeutic communities; MICA=mentally ill chemical abuser; MIOCTP=Mentally Ill Offender Community Transition Program; N=number; NA=not applicable; OR=odds ratio; TAU=treatment as usual

Table F18. Key Question 2: institutional infractions

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Van Stelle and Moberg, 2004[82]	MICA therapeutic community in prison and in community following release from prison (39 graduates and 91 terminators)	% put in segregation	NA	Graduates: 4 (9%) Terminators: 45 (49%) Total: 49	OR: 0.63 (0.34 to 1.17) p=0.14	MICA graduates were significantly less likely to receive segregation time than either terminations or members of the comparison group.
	TAU (59)	% put in segregation	NA	29 (49%)		
	MICA therapeutic community in prison and in community following release from prison (39 graduates and 91 terminators)	Average Days in segregation	NA	Graduates: 3 (NR) Terminators: 55 (NR)	Could not be calculated.	MICA graduates were significantly less likely to receive segregation time than either terminations or members of the comparison group.
	TAU (59)	Average Days in segregation	NA	57 (NR)		
	MICA therapeutic community in prison and in community following release from prison (39 graduates and 91 terminators)	% with minor conduct reports	NA	Graduates: 19 (48%) Terminators: 78 (86%) Total: 97	OR: 1.00 (0.49 to 2.03) p=1.00	MICA graduates were significantly less likely to receive conduct reports than either

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Van Stelle and Moberg, 2004[82] (continued)	TAU (59)	% with minor conduct reports	NA	44 (75%)		
	MICA therapeutic community in prison and in community following release from prison (39 graduates and 91 terminators)	Average number of minor conduct reports	NA	Graduates:1.6(NR) Terminators:7.7 (NR)	Could not be calculated.	MICA graduates who did receive a conduct report received significantly fewer than the other two groups.
	TAU (59)	Average number of minor conduct reports	NA	3.9 (NR)		
	MICA therapeutic community in prison and in community following release from prison (39 graduates and 91 terminators)	% with major conduct reports	NA	Graduates: 7 (17%) Terminators: 57 (63%) Total: 97	OR: 2.02 (1.05 to 3.87) p=0.04	MICA graduates were significantly less likely to receive conduct reports than either terminations or members of the comparison group.
	TAU (59)	% with major conduct reports	NA	35 (60%)		
	MICA therapeutic community in prison and in community following release from prison (39 graduates and 91 terminators)	Average number of major conduct reports	NA	Graduates: 0.2 (NR) Terminators: 2.9 (NR)	Could not be calculated.	MICA graduates who did receive a conduct report received significantly fewer than the other two groups.
	TAU (59)	Average number of major conduct reports	NA	2.5 (NR)		

MICA=Mentally ill chemical abuser; N=number; NA=not applicable; NR=not reported; OR=odds ratio; TAU=treatment as usual

Table F19. Key Question 2: criminal justice outcomes

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Theurer and Lovell, 2008[78]	MIOCTP (64)	New felony	NA	15/64 (23%)	OR 0.42 (95% CI 0.20 to 0.90) p=0.03	McNemar Test:, chi-square=5.5, p=0.01, OR 0.3, 3.4
	Residential mental health program residency while in prison; TAU upon release (64)		NA	27/64 (42%)		
	MIOCTP (64)	Any new offense	NA	25/64 (39%)	OR: 0.41 (0.20 to 0.84) p=0.01	McNemar Test:, p=0.003, OR 0.22, 4.5
	Residential mental health program residency while in prison; TAU upon release (64)		NA	39/64 (61%)		

Table F19. Key Question 2: criminal justice outcomes (continued)

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Chandler and Spicer, 2006[81]	Jail followed by high-fidelity IDDT (103)	Time to first rearrest and percent rearrested	NA	Data presented in survival graph form.	Could not be calculated.	RR: 0.94, (95% CI 0.67 to 1.35) p=0.75
	Jail followed by TAU (79)	Time to first rearrest and percent rearrested	NA	Data presented in survival graph form.		
	Jail followed by high-fidelity IDDT (103)	Total arrests at 20 months	NA	Data presented in graph form.	Could not be calculated.	IDDT participants had a nonsignificant lower sum of arrests than did control participants (z=1.131, p<0.189)
	Jail followed by TAU (79)	Total arrests at 20 months	NA	Data presented in graph form.		
	Jail followed by high-fidelity IDDT (103)	Arrests (per person year)	2.89	2.21	Could not be calculated.	IDDT: Sign rank test of difference within group: -0.68, p<0.01 TAU: Sign rank test of difference within group: -0.23, p≥0.05 Nonsignificant difference between groups
	Jail followed by TAU (79)	Arrests (per person year)	2.84	2.61		
Chandler and Spicer , 2006[81] (continued)	Jail followed by high-fidelity IDDT (103)	Any conviction (per person years)	0.69	0.59	Could not be calculated.	IDDT: Sign rank test of difference within group: -0.10, p<0.05 Nonsignificant difference between groups TAU: Sign rank test of difference within group:0.12, p≥0.05
	Jail followed by TAU (79)	Any conviction (per person years)	0.61	0.73		
	Jail followed by high-fidelity IDDT (103)	Felony conviction (per person years)	0.29	0.31	Could not be calculated.	IDDT: Sign rank test of difference within group: 0.02, p≥0.05

Table F19. Key Question 2: criminal justice outcomes (continued)

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
	Jail followed by TAU (79)	Felony conviction (per person years)	0.25	0.28		TAU: Sign rank test of difference within group: 0.03, p≥0.05 Nonsignificant difference between groups
	Jail followed by high-fidelity IDDT (103)	Jail days (per person years)	96.74	60.71	Could not be calculated.	IDDT: Sign rank test of difference within group: -36.03, p<0.01
	Jail followed by TAU (79)	Jail days (per person years)	79.43	59.39		TAU: Sign rank test of difference within group: -20.05, p<0.01 Nonsignificant between group difference
	Jail followed by high-fidelity IDDT (103)	Mean incarcerations	NA	Mean: 2.2 (NR)	Could not be calculated.	Author statistics: z=1.97, p<0.049
	Jail followed by TAU (79)	Mean incarcerations	NA	Mean: 2.8 (NR)		
	Jail followed by high-fidelity IDDT (103)	Mean jail stay (days)	NA	Mean: 59.4 (NR)	Could not be calculated.	Author statistics: z=1.97, p<0.051
	Jail followed by TAU (79)	Mean jail stay (days)	NA	Mean: 43.3 (NR)		
Solomon and Draine, 1995[83]	ACT (37)	Return to jai within one year	NA	22 (60.0%)	Forensic ICM vs. ACT: 0.46 (0.18 to 1.17) p=0.10 Forensic ICM vs. TAU: 1.17 (0.39 to 3.51) p=0.78	No statistically significant difference
	Forensic ICM (35)	Return to jail within one year	NA	14 (40.0%)		
	TAU (22)	Return to jail within one year	NA	8 (36.0%)		
Coid et al., 2007[80]	Forensic specialist psychiatric services (409)	Any re-offense	NA	477/2078	OR: 0.79 (0.70 to 0.90) p<0.000	Regression analysis, with potential confounders adjusted for, Incidence Rate Ratio 1.16 (95% CI, 0.94 to 1.43)
	General adult psychiatric services (652)	Any re-offense	NA	845/3086		

Table F19. Key Question 2: criminal justice outcomes (continued)

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	N at Final Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Van Stelle and Moberg, 2004[82]	MICA therapeutic community in prison and in community following release from prison: (103)	Arrest within 3 months	NA	29/103 (28%)	OR: 0.63 (0.32 to 1.27) p=0.20	Not significant.
	TAU (55)	Arrest within 3 months	NA	21/55 (38%)		
	MICA therapeutic community in prison and in community following release from prison: (103)	Returned to prison within 3 months of release	NA	21/103 (22%)	OR: 0.49 (0.37 to 0.88) p=0.01	Chi-square or one-way ANOVA significant at p<0.05.
	TAU (55)	Returned to prison within 3 months of release	NA	19/55 (34%)		

ACT=Assertive community treatment; ANOVA=analysis of variance; CI=confidence interval; ICM=intensive case management; IDDT=integrated dual diagnosis treatment; MICA=mentally ill chemical abuser; MIOCTP=Mentally Ill Offender Community Transition Program; N=number; NA=not applicable; NR=not reported; OR=odds ratio; RR=relative risk; TAU=treatment as usual

Table F20. Key Question 2: mental health service use upon release

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	Mean (SD) or N at 3-month Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Theurer and Lovell, 2008[78]	MIOCTP (64)	MH service use in first 90 days post-release (total hours)	NA	92 hours	Comparison was to larger control group so no effect size was calculated.	MIOCTP participants generally received pre-release services and continued service upon release, whereas pre-release services were rare and long delays were common for control subjects.
	Residential MH program residency while in prison; TAU upon release (287)		NA	5.5 hours		
	MIOCTP (64)	Average hours per service month in the first year post-prison	NA	25 hours	Comparison was to larger control group so no effect size was calculated.	Once treatment was started, it was steadier and more intense for the MIOCTP participants than for controls.
	Residential MH program residency while in prison; TAU upon release (287)		NA	2.5 hours		
	MIOCTP (64)	Mean days from release date to first community MH service receipt	NA	2.3 days	Comparison was to larger control group so no effect size was calculated.	MIOCTP participants generally received pre-release services and continued service upon release, whereas pre-release services were rare and long delays were common for control subjects.
	Residential MH program residency while in prison; TAU upon release (2,870)		NA	185 days		

Table F20. Key Question 2: mental health service use upon release (continued)

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	Mean (SD) or N at 3-month Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Wenzlow et al., 2011[79]	Medicaid enrollment on day of discharge or soon thereafter	% using any Medicaid MH service ≤90 days of release (calculations are based on intent-to-treat analysis)	NA	18/77(23%)	Comparison was between pre- and post-intervention periods within the same facilities: 4.27 (1.98 to 9.24) p<0.000	Authors' calculation: program was associated with a 16% increase in service use, p=0.009; adjusting for age, race, ethnicity, gender, Test of Adult Basic Education score (TABE), length of incarceration, and Medicaid status at entry.
	Pre-Medicaid program, same facilities		NA	13/195 (7%)		
	Medicaid enrollment on day of discharge or soon thereafter		13/195 (7)	18/77 (23%)		
	Comparison facilities at same point in time		11/284 (4)	3/130 (2%)		
Wenzlow et al., 2011[79]	Medicaid enrollment on day of discharge or soon thereafter	% using outpatient Medicaid MH service ≤90 days of release (calculations are based on intent-to-treat analysis)	NA	15/77 (20%)	Comparison was between pre- and post-intervention periods within the same facilities: 5.00 (2.08 to 11.99) p<0.000	Authors' calculation: program was associated with a 14% increase in service use, p=0.015; adjusting for age, race, ethnicity, gender, Test of Adult Basic Education score (TABE), length of incarceration, and Medicaid status at entry.
	Pre-Medicaid program		NA	9/195 (5%)		
	Medicaid enrollment on day of discharge or soon thereafter		9/195 (5%)	15/77 (20%)		
	Comparison facilities at same point in time		10/284 (4%)	3/130 (2%)		
Wenzlow et al., 2011[79]	Medicaid enrollment on day of discharge or soon thereafter	% using prescription drug Medicaid MH service ≤90 days of release (calculations are based on intent-to-treat analysis)	NA	11/77 (14%)	Comparison was between pre- and post-intervention periods within the same facilities: 5.25 (1.87 to 14.76) p=0.002	Authors' calculation: program was associated with a 10% increase in service use, p=0.041; adjusting for age, race, ethnicity, gender, Test of Adult Basic Education score (TABE), length of incarceration, and Medicaid status at entry.
	Pre-Medicaid program		NA	6/195 (3%)		
	Medicaid enrollment on day of discharge or soon thereafter		6/195 (3%)	11/77 (14%)		
	Comparison facilities at same point in time		5/284 (2%)	2/130 (2%)		

Table F20. Key Question 2: mental health service use upon release (continued)

Study	Group	Outcome	N at Pre-treatment/ Total N in Group (%)	Mean (SD) or N at 3-month Followup/ Total N in Group (%)	EPC-Calculated Between-Group Effect Size Odds Ratio (95% CI), p-Value	Author Reported Results
Chandler and Spicer, 2006[81]	Jail followed by high-fidelity IDDT (103)	Received engagement related services within 60 days of release	NA	80/103 (77%)	16.15 (7.70 to 33.87) p=0.000	NR
	Jail followed by TAU (79)	Received engagement related services within 60 days of release	NA	14/79 (18%)		
	Jail followed by high-fidelity IDDT (103)	Outpatient medication service received	NA	82/103 (83%) Schizophrenia: 81.0% Major depression: 79.0%	2.39 (1.24 to 4.63) p=0.01	Chi-square=10.76, p<0.001
	Jail followed by TAU (79)	Outpatient medication service received	NA	49/79 (62.0%) Schizophrenia: 64.0% Major depression: 33.0%		

CI=Confidence interval; IDDT=integrated dual diagnosis treatment; MH=mental health; MIOCTP=Mentally Ill Offender Community Transition Program; N=number; NA=not applicable; NR=not reported; SD=standard deviation; TAU=treatment as usual

Appendix G. Guidelines

Table G1. Relevant guidelines

Reference	Scope	Recommendations to Improve Mental Health Outcomes	Recommendations to Reduce Recidivism
National Commission on Correctional Health Care and Applied Clinical Education, 2009[26]	To provide guidance on treating individuals with schizophrenia in correctional facilities.	"Treatments should be tailored to the three phases of schizophrenia: acute phase, stabilization phase and stable phase. Jails are likely to see individuals who are in the acute stage. The goals at this phase are to control disturbed behavior, suppress psychotic symptoms, and reduce anxiety/unrealistic fears, prevent harm to self or others, reintroduce function, ADL, appropriate hygiene and develop a therapeutic alliance. In phase 2, stabilization, the goal is to provide a supportive environment, manage stress, foster social skills, maintain symptom control, and promote psychosocial rehabilitation. In phase 3, stable phase, continue with progress achieved in phase 2 and medication monitoring." Medication is key for symptom control. The principles of drug selection for patients with schizophrenia are the same in the correctional facility as in the community. Generally, no definitive efficacy advantage has been found for atypical antipsychotics over typical agents as a class or for any individual atypical agent over another. However, clozapine is more effective than other antipsychotic in treatment-resistant schizophrenia but requires regular blood monitoring to prevent adverse events. Atypical antipsychotics are often chosen over conventional agents as there is some evidence that they are better at reducing negative symptoms, for relapse prevention, and have a lower incidence of certain serious adverse events. Psychosocial support, in the form of group sessions, is an important adjunct to medication and should provide the patient with motivation, problem-solving skills, adherence, interpersonal communication, improving cognitive deficits, relapse prevention, treatment of comorbid disorders.	NR

Table G1. Relevant guidelines (continued)

Reference	Scope	Recommendations to Improve Mental Health Outcomes	Recommendations to Reduce Recidivism
Federal Bureau of Prisons, 2009[27]	To provide guidelines for identifying and treating Federal inmates with major depressive disorder.	Regarding treatment: Pharmacotherapy (including ECT) is the first line treatment with psychotherapy as an adjunctive treatment only. A physician experienced in treating major depressive disorder should initiate treatment. Treatment occurs in three phases: acute, continuation and maintenance.	NR
Prins and Draper, 2009[28]	To assist policymakers in identify the best strategies for individuals with mental illness under community corrections supervision.	"The following six mental health treatment practices have been shown to effectively improve mental health outcomes for individuals with SMI, although their effectiveness for the SMI under community corrections has not been established: ACT, Illness Self-management and Recovery, integrated mental health and substance abuse services, supported employment, psychopharmacology, and family psychoeducation." Other promising mental health interventions for individuals with SMI and community corrections supervision include supported housing and trauma interventions. These interventions are particularly relevant to this population. Additionally, the evidence for programs that combine community corrections with mental health supervision, such as specialized mental health probation caseloads, looks promising.	"For people with mental illness under community corrections supervision, the following strategies have been found to reduce recidivism and/or increase the use of services: "firm but fair" relationships between the community corrections officer and individuals with mental illness; problem-solving and positive pressure strategies to increase adherence to treatment; and boundary-spanning skills."

ACT=Assertive community treatment; ADL=activities of daily living; ECT=electroconvulsive therapy; NR=not reported; SMI=serious mental illness

Appendix H. Previous Systematic Reviews

Table H1. Previous systematic reviews

Reference	Search Strategy/ Evidence Base	Key Inclusion/ Exclusion Criteria	Participant Characteristics	Outcomes Reported	Method of Assessing Quality	Method of Synthesizing Evidence	Results and/or Authors' Conclusions
Griffiths et al., 2012[22]	AMED, AMI, APAIS Health, CINAHL, CINCH-Health, Cochrane Library, DRUG, emedicine clinical knowledge database, EMBASE, International Pharmaceutical Abstracts, MEDLINE, Proquest 5000 International, PsycINFO, Scopus and Web of Science for qualitative and quantitative studies discussing the use of psychotropic medication in prisoners. Eight Australian State and territorial government correctional services Web sites and one specialized journal, Journal of Correctional Health Care, were searched as well.	Study population was adult prisoners on a psychotropic medication of interest with full text available in English published between January 1999 and October 2009. Article had to be available in full text format.	32 articles were included.	Review reported in a qualitative manner. Authors' opinions on the following five themes were presented: polypharmacy, high dosing, duration of treatment, documentation and monitoring, and environment.	Checklist by Liberati was used for qualitative and quantitative studies and risk of bias was assessed with the Cochrane risk of bias assessment.	Qualitative	Five themes emerged from the included articles: polypharmacy (use of more than one antipsychotic is strongly discouraged but was widespread); high doses (dosages above the maximum recommended daily dose is discouraged as very high doses are no more efficacious and lead to more side effects); duration of treatment (insufficient time is given to initial monotherapy with one antipsychotic before a second supplementary drug was prescribed and therapy with hypnotics and benzodiazepines was too long); documentation and monitoring (generally found to be inadequate); environment (lack of consistency between prescribers and across sites).

Table H1. Previous systematic reviews (continued)

Reference	Search Strategy/ Evidence Base	Key Inclusion/ Exclusion Criteria	Participant Characteristics	Outcomes Reported	Method of Assessing Quality	Method of Synthesizing Evidence	Results and/or Authors' Conclusions
Heilbrun et al., 2012[86a]	NR	Experimental and quasi-experimental studies of community-based interventions (ACT, ICM, and correctional reentry programs) versus treatment as usual for offenders with SMI were the preferred design. Observational studies were also included in this review.	NR	Criminal justice outcomes (any booking, felony booking, any conviction, felony conviction) and quality of life indicators (alcohol problems, global functioning, homelessness, employment)	NR	Qualitative	Generally, individuals in ACT-based and ICM-based programs had better criminal justice outcomes and quality of life than individuals receiving TAU. One study of correctional reentry found that nearly 50% of participants were engaged in community services 3 months after program participation.

Table H1. Previous systematic reviews (continued)

Reference	Search Strategy/ Evidence Base	Key Inclusion/ Exclusion Criteria	Participant Characteristics	Outcomes Reported	Method of Assessing Quality	Method of Synthesizing Evidence	Results and/or Authors' Conclusions
Martin et al., 2011[21]	Searched PsycINFO and Web of Science for articles published no later than 2008. Evidence base consisted of 25 studies published between 1989 and 2008.	Inclusion criteria: 1) article published in peer review journal or have gone through some other peer review process; 2) included comparison group; 3) tested the hypothesis that intervention improves mental health or reduces re-involvement in CJS; 4) had a sample size of at least 5; 5) reported necessary statistics to compute an effect size; and 6) had a sample of adults with mental disorders who were involved in the CJS. Exclusion criteria: 1) substance use, intellectual/cognitive, and/or antisocial personality disorders as sole mental health diagnosis; 2) study considered a sex offender program; 3) comparison group made up of treatment refusal or dropouts; and 4) study included only subjective mental health measures.	NR	CJS outcomes included: number of arrests, violent arrests, jail days, and breach of conditions. Mental health outcomes included: functioning, symptoms, service utilization, and medication use. Moderator outcomes included: study design characteristics (e.g., sample size, quality rating, randomized), intervention characteristics (e.g., treatment location, duration, and whether voluntary), and mental health outcomes (if mental health outcomes were measured).	Quality was assessed by modifying a coding tool developed for sex offender treatment outcome research (Beech et al., 2007). The scale assesses 20 items falling within 7 categories: administrative control of the independent variable, experimenter expectancies, sample size, attrition, equivalence of groups, outcome variables, and correct comparison conducted.	Quantitative The authors used meta-analysis to derive an overall effect of interventions provided to adults with SMI in the CJS on CJS outcomes and mental health outcomes.	The results indicated that combined effect sizes from 25 studies support the effectiveness of interventions for reductions in any CJS involvement. However, interventions had no significant impact on an aggregate mental health outcome, but demonstrated significant improvement on some distinct mental health outcomes, such as functioning. The authors concluded that the "results suggested some relationship between intervention effects on mental health and criminal justice reinvolvement, although future research is needed in this area, especially given the absence of mental health outcome data."

Table H1. Previous systematic reviews (continued)

Reference	Search Strategy/ Evidence Base	Key Inclusion/ Exclusion Criteria	Participant Characteristics	Outcomes Reported	Method of Assessing Quality	Method of Synthesizing Evidence	Results and/or Authors' Conclusions
Mitchell and Braham, 2011[91]	PsycINFO and MEDLINE through present date were searched for psychological treatment needs of deaf mentally disordered offenders residing in high secure settings.	Due to a lack of direct evidence on this topic the authors expanded the inclusion criteria to include low-, medium-secure and prison settings. Any type of article was included (e.g., narrative reviews).	Mentally disordered offenders with all types of hearing loss were included except when combined with blindness. Child studies and nonpsycho-therapeutics (e.g., psychopharma-cological) were also excluded.	A literature synthesis was presented, no predefined outcomes.	NR	Qualitative	When delivering treatment to the deaf mentally disordered offender expectation have to be adjusted, group interventions with deaf peers works best, and extra time and visual aids are required. There is a lack of evidence on effective treatments for deaf sex offenders.
Morgan et al., 2011[20]	Searched PsycINFO, MEDLINE, and SocialSciAbs. Evidence base consisted of 26 articles published between 1973 and 2004. Settings represented in articles include 64% sanction-oriented facilities and 28% treatment-oriented facilities.	Inclusion criteria: 1) study published in English; 2) study evaluated an intervention provided in CJS; 3) participants suffered from a major DSM Axis 1 disorder; 4) the study included some form of control procedure or used a repeated measures design, and 5) study included sufficient data or summary statistics that allowed calculation of an effect size. No exclusion criteria reported.	The total sample across studies included 1,649 offenders, with 1,369 participants in treatment groups and 280 participants in control groups. Forty-two percent of the studies included participants with schizophrenia, 15.4% with a mood disorder, and 19.2% with multiple Axis 1 disorders.	Mental health symptoms, coping, institutional adjustment, behavioral functioning, criminal recidivism, psychiatric recidivism, treatment-related factors, and financial benefit.	Used a portion of the Maryland Scale of Scientific Rigor to evaluate studies on the presence and composition of a comparison group relative to the treatment group.	Calculated individual study effect sizes and conducted meta-analysis on each treatment outcome.	Interventions for offenders with mental disorders reduced mental health symptoms, improved ability to cope with problems, and improved behavioral markers including institutional adjustment and behavioral functioning. Results of meta-analysis were statistically inconclusive about the effects of intervention on recidivism.

Table H1. Previous systematic reviews (continued)

Reference	Search Strategy/ Evidence Base	Key Inclusion/ Exclusion Criteria	Participant Characteristics	Outcomes Reported	Method of Assessing Quality	Method of Synthesizing Evidence	Results and/or Authors' Conclusions
Huband et al., 2010[23]	CENTRAL, MEDLINE, EMBASE, CINAHL, and PsycINFO, metaRegister of Controlled Trials and ClinicalTrials.gov through April 2009. Cochrane Schizophrenia Group register of trials on aggression, National Research Record and hand searches.	Prospective, placebo controlled trials of antiepileptic drugs taken regularly by individuals with recurrent aggression to reduce the frequency or intensity of aggressive outbursts.	Studies included a wide array of subjects in a variety of settings, including but not limited to: children and adolescent with conduct disorder or pervasive developmental disorder, outpatient adult males with impulsive aggression, impulsively aggressive adults with cluster B personality disorder, women with borderline personality disorder, male prisoners with personality disorders	Aggression, impulsivity, hostility, anger, anger-hostility, noncompliance, and adverse events.	Two authors independently completed the Cochrane Collaborations' tool for assessing risk of bias.	Quantitative when possible	One study included in this systematic review found diphenylhydantoin 300 mg/day to be superior to diphenylhydantoin 24 mg/day for treating aggression and associated impulsivity in male prisoners at an institution for dangerous and emotionally unstable recidivists.

Table H1. Previous systematic reviews (continued)

Reference	Search Strategy/ Evidence Base	Key Inclusion/ Exclusion Criteria	Participant Characteristics	Outcomes Reported	Method of Assessing Quality	Method of Synthesizing Evidence	Results and/or Authors' Conclusions
Nagi and Davies, 2010[24]	To describe and present evidence for psychological interventions intended to address offending behavior in individuals with offending histories cared for in low secure forensic mental health services.	Articles (reviews, systematic reviews) on what works including gray literature (reports on the Home Office Web site, papers and posters at conferences); hand searches; and prominent author searches published in English since 1990 were included. Articles specific to women or learning disabled populations were excluded.	Varied offender groups	Reoffending	NR	Qualitative	CBT is most effective and is the dominant treatment category being offered internationally, based on consensus opinion. Risks, needs and responsivity principles are only now starting to influence the treatments being offered. More research is needed in the low secure forensic mental health service area.
Sacks et al., 2010[25]	Single-investigator meta-analysis	Studies performed by one investigator which assessed the effectiveness of modified therapeutic community versus standard of care for clients with co-occurring substance use and mental disorders to determine the consistency of effect across studies.	Adults with co-occurring substance abuse and mental disorders in the following settings: homeless population, offenders, outpatients or with HIV/AIDS.	Substance abuse, mental health, crime, HIV-risk behavior, employment and housing	NR	Quantitative when possible	Modified therapeutic community was superior to standard of care in reducing substance abuse and crime and improving mental health, employment and housing across a variety of settings.

Table H1. Previous systematic reviews (continued)

Reference	Search Strategy/ Evidence Base	Key Inclusion/ Exclusion Criteria	Participant Characteristics	Outcomes Reported	Method of Assessing Quality	Method of Synthesizing Evidence	Results and/or Authors' Conclusions
Khalifa et al., 2008[29]	MEDLINE, EMBASE, PsycINFO, Association of Telehealth Service Providers (ATSP online) and Telemedicine Information Exchange (TIE) published between 1998 to 2006 were searched for the use of videoconferencing in forensic settings. This search was supplemented by hand searches.	24 articles of any design were included. Videoconferencing was broken down into three categories: for clinical and forensic applications, including determining competence to stand trial; for use in court; and for legal and ethical issues.	Those involved in the CJS including youth, rural victims of domestic violence, prison inmates with and without an SMI	Cost, inmate preference, number of hospital referrals, telemedicine utilization in prison	NR	Qualitative	There is preliminary evidence that videoconferencing is effective in forensic settings. However, the available evidence is limited by lack of control group, small sample size, and limited outcome reporting.

Table H1. Previous systematic reviews (continued)

Reference	Search Strategy/ Evidence Base	Key Inclusion/ Exclusion Criteria	Participant Characteristics	Outcomes Reported	Method of Assessing Quality	Method of Synthesizing Evidence	Results and/or Authors' Conclusions
Duncan et al., 2006[92]	Searched CINAHL, EMBASE, MEDLINE, and Psych Info for articles published between 1980 and 2002. Evidence base consisted of 20 studies that met inclusion criteria (8 used a control or comparison group design). 10 studies conducted in British high security hospital, 6 in British medium security hospital, and 4 in Canada or the U.S. (security level not specified).	Inclusion criteria: 1) study evaluated the efficacy/effectiveness of structured single-form group interventions specifically for offenders with mental disorders; 2) study evaluated the efficacy/effectiveness of structured complex group interventions specifically for offenders with mental disorders; and 3) published in English. No exclusion criteria reported.	19 studies included only males and 1 included only females. Patient diagnoses: Not specified (6 studies), Axis I (3 studies), personality disorder (4 studies), psychotic disorder (1 study), borderline personality disorder (1 study), sex offender (1 study), mentally ill (1 study), antisocial (1 study), and schizophrenia (1 study).	Studies were categorized by the focus of the intervention: problem solving skills, anger/aggression management, deliberate self-harm, or other. Outcomes focused on improvements in those categories (e.g., improved problem solving skills, anger management, etc.).	NR	When possible, individual study effect sizes calculated. Meta-analysis was not possible due to heterogeneity of study populations, small sample size and lack of comparable data.	Individual effect size calculations indicate positive effects, with a medium to high effect observed for self-harm interventions. The authors conclude that more rigorous and consistent research be applied, including an agreement on common outcome measures and development of networks to improve individual study sample sizes.

[a] This review mainly covered diversion settings. Parts of the review that were at least partially relevant to this report are detailed above.

ACT=Assertive community treatment; AIDS=acquired immune deficiency syndrome; AMED=Allied and Complementary Medicine Database; AMI=Australian Medical Index; APAIS Health=Australian Public Affairs Information Service; CBT=cognitive behavior therapy; CINCH-Health: Health Issues in Criminal Justice (within CINCH, the Australian Criminology Database); CINAHL=Cumulative Index to Nursing and Allied Health Literature; CJS=criminal justice system; DRUG=DRUG Database; DSM=Diagnostic and Statistical Manual; ICM=intensive case management; HIV=human immunodeficiency virus; NR=not reported: SMI=serious mental illness; TAU=treatment as usual

Appendix I. Ongoing Clinical Trials

Table I1. Ongoing clinical trials

Clinicaltrials.gov Identifier or Other Identifier	Sponsor	Design	Purpose	Start Date (month/year)	Expected Completion Date (month/year)	Estimated Enrollment
Evaluating effectiveness of a statewide public mental health re-entry program[93,94] NIH Challenge Grant/NIMH 1RC1MH088716-01	National Institute of Mental Health	Comparative trial	To assess the effectiveness of the Massachusetts Department of Mental Health's Forensic Transition Team on for incarcerated individuals returning to the community.	09/2009	08/2012	NR
Critical Time Intervention (CTI) for men with mental illness leaving prison[95]	National Institute of Mental Health	RCT	To determine if CTI is more effective than enhanced reentry from prison planning in reducing recidivism and increasing community reintegration for men with mental illness.	07/2010	06/2012	352
CT01685294	Brown University	RCT	To examine the effect of interpersonal psychotherapy for male and female prisoners with major depressive disorder.	12/2011	12/2014	180
NCT00249756	National Institute on Drug Abuse	RCT	To examine the transition from prison to community for offenders with both mental illness and chemical abuse (MICA). Modified therapeutic community (reentry MTC) will be compared with case management and parole supervision.	08/2005	07/2011 Ongoing but not recruiting	332

Table I1. Ongoing clinical trials (continued)

Clinicaltrials.gov Identifier or Other Identifier	Sponsor	Design	Purpose	Start Date (month/year)	Expected Completion Date (month/year)	Estimated Enrollment
NCT01313052	University of Rochester	RCT	To compare the efficacy of FACT with enhanced outpatient treatment (close outpatient followup without judicial monitoring) for individuals with a psychotic disorder who are facing charges but who have not yet been sentenced.	05/2008	05/2014 Enrollment is by invitation only	53
NCT01157351	Janssen Scientific Affairs, LLC	RCT	To compare the efficacy of paliperidone palmitate to oral antipsychotic treatments in delaying time to treatment failure for individuals with schizophrenia who have been incarcerated.	4/2010	10/2013 Currently recruiting participants	442

FACT=Forensic assertive community treatment; NIH=National Institute of Health; NIMH=National Institute of Mental Health; NR=not reported; RCT=randomized controlled trial