



# Effective Health Care Program

## Interventions for Adult Offenders With Serious Mental Illness

### 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.<sup>1-3</sup> 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.<sup>4</sup> 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.<sup>5</sup> The National Commission on Correctional Health Care reported the following prevalence estimates of mental illness within State prisons:<sup>5</sup>

- 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.<sup>6</sup>

#### Effective Health Care Program

The Effective Health Care Program was initiated in 2005 to provide valid evidence about the comparative effectiveness of different medical interventions. The object is to help consumers, health care providers, and others in making informed choices among treatment alternatives. Through its Comparative Effectiveness Reviews, the program supports systematic appraisals of existing scientific evidence regarding treatments for high-priority health conditions. It also promotes and generates new scientific evidence by identifying gaps in existing scientific evidence and supporting new research. The program puts special emphasis on translating findings into a variety of useful formats for different stakeholders, including consumers.

The full report and this summary are available at [www.effectivehealthcare.ahrq.gov/reports/final.cfm](http://www.effectivehealthcare.ahrq.gov/reports/final.cfm).

Jails and prisons have a constitutional obligation to provide treatment to inmates with serious medical and psychiatric conditions.<sup>7</sup> The case of *Ruiz v. Estelle* set forth minimum requirements for providing mental health services in the U.S. correctional system.<sup>8</sup> To receive



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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.<sup>8,9</sup>

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).<sup>10</sup> 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.<sup>11</sup> According to Baillargeon and colleagues, the primary barrier to improving mental health treatment in adult correctional facilities is inadequate State funding.<sup>8</sup>

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.<sup>12</sup> 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.<sup>13</sup>

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.<sup>13</sup> 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).<sup>14</sup> 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.<sup>14</sup>

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.<sup>15</sup>

## 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?**

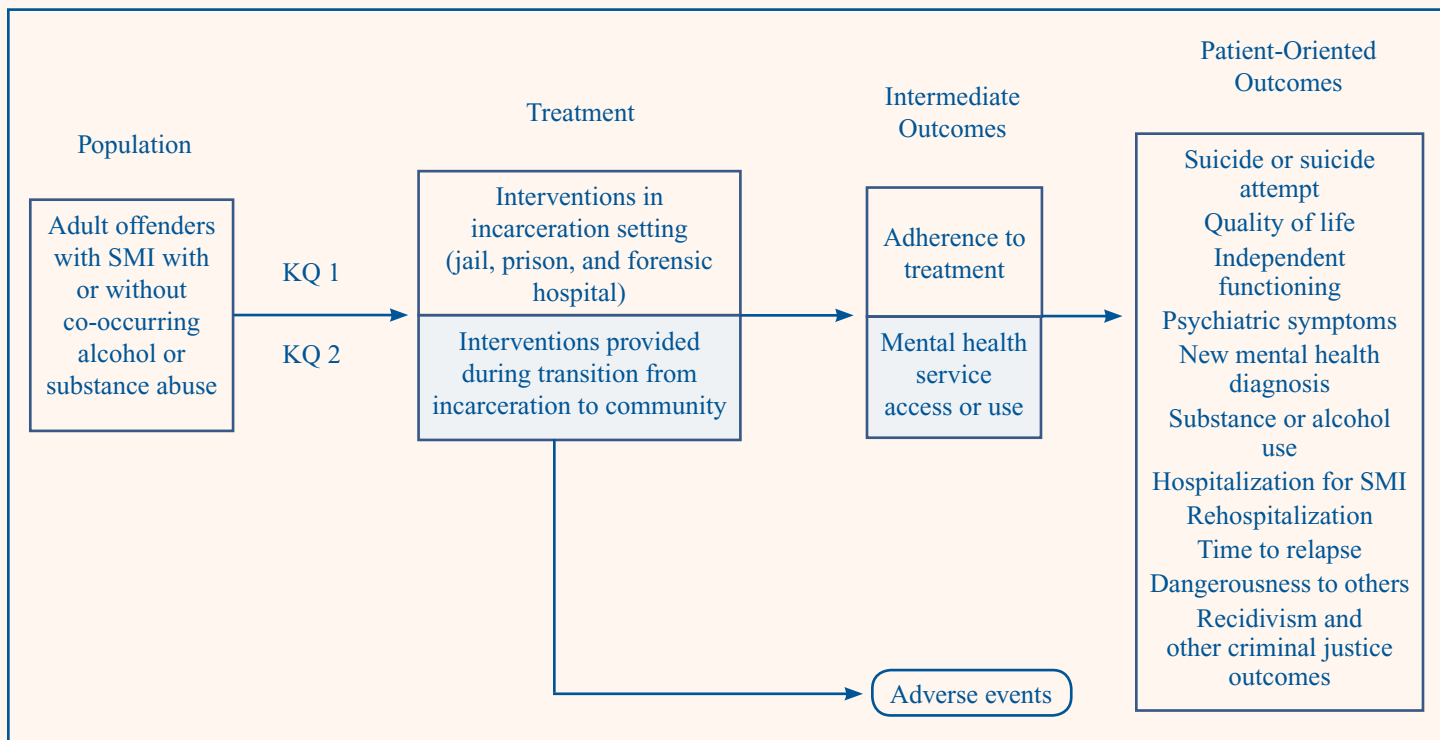
**Key Question 2. What is the comparative effectiveness of incarceration-to-community transitional interventions for adults with SMI (schizophrenia, schizoaffective disorder, bipolar disorder, or major depression) with or without a co-occurring alcohol/substance abuse diagnosis? Is there a difference 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).<sup>16</sup>

## 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).<sup>17</sup> 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.<sup>18</sup> 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.”<sup>19</sup> 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).<sup>20,21</sup>

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.<sup>22</sup> 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.<sup>23</sup> 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.<sup>24</sup> 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.<sup>25</sup> 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.<sup>26</sup> 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.<sup>27</sup> 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.<sup>28</sup>

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

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

Comparison	Outcome	Risk of Bias	Consistency	Precision	Directness	SOE Grade
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
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 <sup>a</sup>	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

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

<b>Comparison</b>	<b>Outcome</b>	<b>Risk of Bias</b>	<b>Consistency</b>	<b>Precision</b>	<b>Directness</b>	<b>SOE Grade</b>
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 <sup>a</sup>	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 <sup>a</sup>	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 <sup>a</sup>	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
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

<sup>a</sup> 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.<sup>29</sup> 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.

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## Full Report

This executive summary is part of the following document:  
Fontanarosa J, Uhl S, Oyesanmi O, Schoelles KM.  
Interventions for Adult Offenders With Serious Mental Illness. Comparative Effectiveness Review No. 121.  
(Prepared by the ECRI Institute Evidence-based Practice Center under Contract No. 290-2007-10063-I.) AHRQ Publication No. 13-EHC107-EF. Rockville, MD: Agency for Healthcare Research and Quality; August 2013.  
[www.effectivehealthcare.ahrq.gov/reports/final.cfm](http://www.effectivehealthcare.ahrq.gov/reports/final.cfm).



AHRQ Pub. No. 13-EHC107-1-EF  
August 2013