Residential Treatment for Individuals With Substance Use Disorders: Assessing the Evidence

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Objective: **Residential treatment is a commonly used direct intervention for individuals with substance use or co-occurring mental and substance use disorders who need structured care. Treatment occurs in nonhospital, licensed residential facilities. Models vary, but all provide safe housing and medical care in a 24-hour recovery environment. This article describes residential treatment and assesses the evidence base for this service.** ***Methods:*** **Authors evaluated research reviews and individual studies from 1995 through 2012. They searched major databases: PubMed, PsycINFO, Applied Social Sciences Index and Abstracts, Sociological Abstracts, and Social Services Abstracts. They chose from three levels of evidence (high, moderate, and low) and described the evidence of service effectiveness.** ***Results:*** **On the basis of eight reviews and 21 individual studies not included in prior reviews, the level of evidence for residential treatment for substance use disorders was rated as moderate. A number of randomized controlled trials were identified, but various methodological weaknesses in study designs—primarily the appropriateness of the samples and equivalence of comparison groups—decreased the level of evidence. Results for the effectiveness of residential treatment compared with other types of treatment for substance use disorders were mixed. Findings suggested either an improvement or no difference in treatment outcomes.** ***Conclusions:*** **Residential treatment for substance use disorders shows value and merits ongoing consideration by policy makers for inclusion as a covered benefit in public and commercially funded plans. However, research with greater specificity and consistency is needed. (*Psychiatric Services* 65:301–312, 2014; doi: 10.1176/appi.ps.201300242)**

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People with substance use disorders have a wide variety of needs across the range of symptom severity. To address these needs, a continuum of care that includes intensive treatment services is in place. Recognition is growing that safe and stable living environments are important in the recovery process for individuals with substance use disorders who need structured care. Residential treatment is a structured, 24-hour level of care that enables a focus on intensive recovery activities. It aims to help people with substance use disorders and a high level of psychosocial needs become stable in their recovery before engagement in outpatient settings and before return to an unsupervised environment, which may otherwise be detrimental to their recovery process. This article describes residential treatment and assesses the evidence base for this service.

This article reports the results of a literature review that was undertaken as part of the Assessing the Evidence Base Series (see box on next page). For purposes of this series, the Substance Abuse and Mental Health Services Administration (SAMHSA) has described residential treatment for substance use disorders as a direct service with multiple components that is delivered in a licensed facility used to evaluate, diagnose, and treat the symptoms or disabilities associated with an adult's substance use disorder. SAMHSA

About the AEB Series

The Assessing the Evidence Base (AEB) Series presents literature reviews for 13 commonly used, recovery-focused mental health and substance use services. Authors evaluated research articles and reviews specific to each service that were published from 1995 through 2012 or 2013. Each AEB Series article presents ratings of the strength of the evidence for the service, descriptions of service effectiveness, and recommendations for future implementation and research. The target audience includes state mental health and substance use program directors and their senior staff, Medicaid staff, other purchasers of health care services (for example, managed care organizations and commercial insurance), leaders in community health organizations, providers, consumers and family members, and others interested in the empirical evidence base for these services. The research was sponsored by the Substance Abuse and Mental Health Services Administration to help inform decisions about which services should be covered in public and commercially funded plans. Details about the research methodology and bases for the conclusions are included in the introduction to the AEB Series (8).

has defined three levels of clinically managed residential services. All provide 24-hour care, but they offer treatment with varying intensity and focus depending on the resident's needs. Table 1 presents a description of the components of this service.

Examination of the effectiveness of residential treatment for people with substance use disorders and for various subgroups is challenged by lack of a clear definition of service methods, treatment duration, and treatment standards. The objectives of this review were to describe models and components of residential treatment for substance use disorders, rate and discuss the level of evidence (that is, methodological quality) of existing studies, and describe the effectiveness of the service on the basis of the research literature. We focus on treatment for substance use disorders, although individuals in treatment may also have co-occurring mental disorders. Effectiveness studies primarily compared residential treatment for substance use disorders to other levels of care (for example, intensive outpatient treatment). Outcomes measured included drug and alcohol use, psychiatric symptoms, and other measures of psychosocial functioning.

Description of residential treatment

Residential treatment for substance use disorders is a setting in which services occur, rather than a discrete treatment intervention. A variety of therapeutic interventions may be implemented across different residential treatment settings; however, a common defining characteristic of residential treatment is that it provides housing for individuals who are in need of rehabilitation services.

Residential treatment occurs in nonhospital or freestanding residential facilities. Treatment for substance use disorders typically takes place in facilities that are licensed by each state's Single State Agency for Substance Abuse Services. Residential treatment is part of the primary rehabilitation phase of treatment and may be preceded by detoxification, if warranted. Residential treatment should be followed by less intensive treatment and aftercare services within a continuum of care. A separate article in this series addresses intensive outpatient programs for substance use disorders (1).

Residential treatment for substance use disorders is used for a wide range of populations with a range of sociodemographic characteristics. For example, residential treatment is appropriate for individuals who have co-occurring mental and substance use disorders because of the challenges associated with having multiple disorders and their common need for intensive treatment in a safe environment. Residential treatment is also appropriate for individuals who are homeless, particularly because of the environmental challenges of achieving and maintaining sobriety or other aspects of recovery without stable housing.

The American Society of Addiction Medicine (ASAM) has spearheaded the complex task of developing specifications for addiction treatment at various levels of care and criteria to identify which individuals are most appropriate for which types of services (2,3). The ASAM patient placement criteria (ASAM PPC-2R) (2) consist of six dimensions: intoxication/withdrawal, medical conditions, mental health conditions, stage of change/motivation, recovery/relapse risks, and the recovery environment. Assessments on these dimensions are often used to place people into the level of care that matches their particular needs and provides a framework for treatment planning.

The ASAM PPC-2R (2) states that "the defining characteristic of all [residential] Level III programs is that they serve individuals who need safe and stable living environments in order to develop their recovery skills." Individuals are considered appropriate for residential treatment, in particular, if they demonstrate a need for medical care, safe and stable housing, or a structured 24-hour recovery environment. Residential treatment services include a live-in setting that is housed in or affiliated with a permanent facility; organization and staffing by addiction and mental health personnel; a planned regimen of care with defined policies, procedures, and clinical protocols; and mutual- and self-help group meetings. The ASAM criteria informed the service-level definitions that are presented in Table 1. Residential treatment programs have specific programmatic and staffing requirements from the states in which they are licensed, which frequently (but not always or wholly) coincide with ASAM criteria.

ASAM describes most residential programs as clinically managed, meaning that they have a structured environment with skilled treatment staff but no on-site physician. Individuals are recommended for residential care if their withdrawal and biomedical needs are minimal, meaning that they did not experience acute withdrawal symptoms or they have already concluded the physical withdrawal process and no longer have a health risk related to withdrawal. Residents may have

moderate psychiatric and general medical needs and significant challenges in the areas of treatment readiness, relapse potential, recovery skills, and environmental stability. The length of stay in nonhospital residential treatment has shortened considerably over time; most planned stays now range from weeks to months, depending on the program and the person's needs.

Most studies of residential treatment use an acute care model in which outcomes are evaluated after treatment, rather than a chronic care model in which outcomes are evaluated during ongoing treatment—as is the case for a chronic condition such as hypertension or other medical comorbidity (4). Evaluations of treatment effectiveness for chronic disorders take place during the continuing care phase of treatment while patients are still receiving supportive care (albeit while living in the community), and permanent change is not expected in the absence of ongoing care. A continuum-of-care model for substance use treatment is critical whereby, after completion of residential treatment, participants are engaged continuously in less intensive forms of treatment to promote smooth transitions to self-management in the community (5,6).

Residential treatment models vary widely and have evolved over the years; this evolution presents challenges to efforts to compare research outcomes. The traditional "Minnesota model" was a planned 28-day residential treatment approach that is fairly rare today, as is the traditional hospital inpatient program with which residential treatment frequently has been compared.

A specific type of residential treatment setting is a therapeutic community. Therapeutic communities and other social model programs generally have a consistent approach, in which all aspects of the residential community are used as part of the treatment experience. The National Institute on Drug Abuse defines care within a therapeutic community as provided 24 hours per day in a nonhospital setting, with planned lengths of stay of six to 12 months. Treatment focuses on social and psychological causes and consequences of addiction. Treatment is structured and comprehensive, to "focus on the 're-socialization' of the individual and use the program's entire community—including other residents, staff, and the social context—as active components of treatment . . . [in] developing personal accountability and responsibility as well as socially productive lives" (7). A social model residential approach is similar to a therapeutic community.

Leaders in substance abuse and mental health policy arenas need information about the effectiveness of residential treatment for substance use disorders as they determine which interventions should be included as covered benefits in public and commercially funded health plans and as they make policy decisions about treatment interventions. This review aimed to provide state behavioral health directors and their staff, purchasers of health services, policy officials, and community health care administrators with an accessible summary of the evidence for residential treatment for substance use disorders and a discussion of areas needing further research.

Table 1

Description of residential treatment for substance use disorders

Feature	Description
Service definition	Residential treatment for individuals with substance use disorders is a direct service with multiple components delivered in a licensed facility used to evaluate, diagnose, and treat the symptoms or disabilities associated with an adult's substance use disorder.
	Levels of service intensity:
	Low: Clinically managed, low-intensity residential services provide 24-hour supportive care in a structured environment to prevent or minimize a person's risk of relapse or continued substance use. This level of care may include services such as interpersonal and group-living skills training, individual and group therapy, and intensive outpatient treatment.
	Medium: Clinically managed, medium-intensity residential services provide 24-hour care and treatment for persons with co-occurring substance use and mental disorders who also have significant temporary or permanent cognitive deficits. This level of care includes services that are slowly paced and repetitive; services that are focused primarily on preventing relapse, continued problems, or continued substance use; and services that promote reintegration of the person into the community.
	High: Clinically managed, high-intensity residential services provide 24-hour care and treatment. This level of care is designed for persons who have multiple deficits that prevent recovery, such as criminal activity, psychological problems, and impaired functioning. This level of care includes services that reduce the risk of relapse, reinforce prosocial behaviors, assist with healthy reintegration into the community, and provide skill building to address functional deficits.
Service goal	Provide individuals with safe and stable living environments in which to develop their recovery skills and aid in their rehabilitation from substance use disorders
Populations	Individuals with substance use disorders; individuals with co-occurring mental and substance use disorders; individuals who are homeless
Settings for service delivery	Nonhospital residential facilities; therapeutic communities

Methods

Search strategy

To provide a summary of the evidence for and effectiveness of residential treatment for substance use disorders, we conducted a literature search of

articles published from 1995 through 2012. We searched major databases: PubMed (U.S. National Library of Medicine and National Institutes of Health), PsycINFO (American Psychological Association), Applied Social Sciences Index and Abstracts, Sociological Abstracts, and Social Services Abstracts. We used combinations of the following search terms: residential treatment, substance use, substance abuse, dual diagnosis.

Inclusion and exclusion criteria

The following types of articles were included: randomized controlled trials (RCTs), quasi-experimental studies, and review articles such as meta-analyses and systematic reviews; U.S. and international studies in English; studies that focused on residential treatment for adults with substance use disorders or co-occurring mental health and substance use disorders; and studies that included outcomes such as measures of substance use.

Studies were excluded that examined residential treatment solely with adolescent populations and that examined residential treatment in criminal justice settings. Clients treated within the criminal justice system are likely to have other motivators for success (for example, to remain out of jail or prison), and thus the services and outcomes examined in these studies are not directly comparable to residential treatment services and outcomes examined elsewhere. Also excluded were studies that focused only on cost-effectiveness, did not have a comparison group, measured only length of stay or other effects that occurred during treatment, or used only pre-post analyses without statistical controls for baseline differences.

Existing review articles were given priority in this summary of the evidence. Individual articles are detailed here only if they were not previously included in a published review.

Strength of the evidence

The methodology used to rate the strength of the evidence is described in detail in the introduction to this series (8). The research designs of the identified studies were examined to determine that they met the inclusion criteria. Three levels of evidence (high, moderate, and low) were used to indicate the overall research quality of the collection of studies. Ratings were based on predefined benchmarks that took into account the number of studies and their methodological quality. In rare instances when the ratings were dissimilar, a consensus opinion was reached.

In general, high ratings indicate confidence in the reported outcomes and are based on three or more RCTs with adequate designs or two RCTs plus two quasi-experimental studies with adequate designs. Moderate ratings indicate that there is some adequate research to assess the service, although it is possible that future research could influence reported results. Moderate ratings are based on the following three options: two or more quasi-experimental studies with adequate design; one quasi-experimental study plus one RCT with adequate design; or at least two RCTs with some methodological weaknesses or at least three quasi-experimental studies with some methodological weaknesses. Low ratings indicate that research for this service is not adequate to draw evidence-based conclusions. Low ratings indicate that studies have nonexperimental designs, there are no RCTs, or there is no more than one adequately designed quasi-experimental study.

We accounted for other design factors that could increase or decrease the evidence rating, such as how the service, populations, and interventions were defined; use of statistical methods to account for baseline differences between experimental and comparison groups; identification of moderating or confounding variables with appropriate statistical controls; examination of attrition and follow-up; use of psychometrically sound measures; and indications of potential research bias. The evidence was rated as stronger when service and population definitions were clear and appropriate, statistical controls were used to account for baseline differences, and potential confounding variables and research bias (including attrition) were minimized.

Effectiveness of the service

We described the effectiveness of the service—that is, how well the outcomes of the studies met the goals of residential treatment. We compiled the findings for separate outcome measures and study populations, summarized the results, and noted differences across investigations. We evaluated the quality of the research design in our conclusions about the strength of the evidence and the effectiveness of the service. Although meta-analytic techniques would be valuable to assess the evidence across studies, the wide heterogeneity of the studies precluded this approach.

Results and discussion

Overall, we found a moderate level of evidence in the literature for the effectiveness of residential treatment for substance use disorders. Numerous RCTs and quasi-experimental studies were identified, but there were many methodological challenges within these studies. However, on the whole, the reviews and individual studies that were conducted found that residential treatment is an effective service for some types of patients. The level of evidence and the effectiveness of the service are described further below.

Level of evidence

The literature search identified eight research reviews published since 1995 that largely overlapped in the studies they included. The reviewed studies focused on adult participants with co-occurring mental and substance use disorders (9–11), inpatient populations (12,13), and therapeutic communities (14–16). We further evaluated seven individual RCTs that compared some version of residential treatment to a control condition (17–23) and 14 quasi-experimental studies (24–37). Table 2 and Table 3 summarize the features of the studies included in this review and their findings. The level of evidence for residential treatment for substance use disorders was graded as moderate, because this service met the criteria of having two or more RCTs with methodological weaknesses.

The studies lacked rigorous experimental design or quasi-experimental methods that controlled for patient characteristics. A focus on selected populations (for example, male veterans) and on a limited number of treatment sites limited the generalizability of several studies. Most effectiveness studies

Table 2

Review articles of residential treatment for substance use disorders included in the review[a]

Study	Focus of review	N of studies reviewed	Main outcomes reported	Summary of findings	Comments
Finney et al., 1996 (12)	Inpatient treatment for alcohol abuse (residential settings)	14 studies: 12 experimental, 2 naturalistic	Drinking, employment	Seven of 14 studies found significant effects for at least 1 drinking variable, but the direction varied; likely moderators are discussed.	Studies had methodological limitations. Inpatient settings were very different from current approaches. Many studies excluded individuals with more severe disorders or those who required housing.
Brunette et al., 2004 (9)[b]	Residential programs for people with co-occurring severe mental and substance use disorders; mostly therapeutic communities	10 studies: 2 RCTs, 8 quasi-experimental	Substance use, housing	Nine of 10 studies supported integrated residential treatment for individuals with co-occurring mental and substance use disorders. Four studies found no differences in substance use outcomes.	Studies had methodological limitations, and settings, services, and populations varied.
Smith et al., 2006 (15)	Therapeutic communities	7 RCTs	Substance use, treatment completion, problem severity	Insufficient evidence was found that therapeutic communities are better than other residential treatment.	Studies had methodological limitations. Variation across studies prevented meta-analysis.
Drake et al., 2008 (11)[b]	Residential treatment for people with dual disorders; mostly integrated programs (review article also addressed other services)	12 studies: 1 RCT, 11 quasi-experimental	Substance use, mental health	Seven of 12 studies showed improvements; longer-term studies showed consistent improvements in substance use and other outcomes; 2 of 10 studies found improved mental health outcomes; 11 of 12 studies found improved outcomes in other areas.	Studies had methodological limitations, and settings, services, and populations varied.
Cleary et al., 2009 (10)[b]	Residential programs for people with co-occurring severe mental illness and substance misuse (review article also addressed other services)	9 studies: 1 RCT, 8 quasi-experimental	Substance use, mental state	Six of 9 studies showed reduced substance use; 4 studies showed improved mental state.	Studies had methodological limitations, and settings, services, and populations varied.
Finney et al., 2009 (13)	Inpatient and residential treatment	Approximately 80 studies overall; number varies by specific topic	Varied by topic and study	Evidence was found to support matching patients to various treatment settings. Evidence supports residential treatment for individuals with few social resources or with a living environment that is a serious impediment to recovery.	Details of most studies were not provided.
De Leon, 2010 (16)	Therapeutic communities	21 studies: 4 field studies, 3 single-site studies, 7 RCTs, 1 quasi-experimental, 6 meta-analyses (8 studies are criminal justice based)	Substance use, criminal justice	A consistent relationship was found between retention in therapeutic communities and outcomes. Improved outcomes were noted in therapeutic communities across RCTs and quasi-experimental studies. Meta-analyses showed mixed findings.	The review was not comprehensive and included criminal justice–based therapeutic communities. Studies without comparison groups were included, and methods, settings, and populations varied widely across studies.
Malivert et al., 2012 (14)	Therapeutic communities	12 studies: 7 RCTs, 2 retrospective, 3 quasi-experimental	Substance use	Substance use decreased during treatment, but relapse was frequent after therapeutic community treatment. Outcomes were better if the participant completed treatment. No impact of psychiatric comorbidities was noted.	Studies had methodological limitations. Variation across studies prevented meta-analysis.

[a] Articles are in chronological order. Abbreviation: RCT, randomized controlled trial

[b] These review articles largely overlapped in the individual studies they included.

Table 3

Individual studies of residential treatment of substance use disorders included in the review[a]

Study	Design and population	Outcomes measured	Summary of findings	Comments
RCT				
Burnam et al., 1995 (17)	Social model residential versus social model nonresidential versus no intervention; homeless individuals had a dual diagnosis of substance dependence and either schizophrenia or major affective disorder; mostly male	Substance use, severity of mental illness symptoms, housing	At 3-month follow-up, no group differences were found except for housing; residential treatment had a positive effect if the analysis also accounted for services received outside the RCT.	Contamination with outside services was noted, although outside service use was tracked. Differential participation rates and high attrition were also noted.
McKay et al., 1995 (21)	VA inpatient addiction rehabilitation versus VA day treatment; male alcoholic veterans; excluded those with unstable residence, drug dependence, severe medical problems, recent psychosis, schizophrenia	Substance use, other problems	No main effects were found across groups.	The groups were not equivalent despite statistical controls, and many exclusion criteria were used.
Guydish et al., 1998 (20)[b]	Therapeutic community versus therapeutic community model day treatment; excluded homeless individuals, those with severe psychiatric problems, those clinically judged appropriate only for residential treatment	ASI composite scores, psychiatric symptoms, social support	Both groups improved in employment, legal problems, substance use problems, and depressive symptoms. Residential treatment participants also improved in medical and social problems, psychiatric symptoms, and social support.	Exclusions eliminated many individuals likely to be most appropriate for residential treatment. High dropout was noted in the 2 weeks after randomization.
Guydish et al., 1999 (19)[b]	Therapeutic community versus therapeutic community model day treatment; excluded homeless individuals, those with severe psychiatric problems, those clinically judged appropriate only for residential treatment	ASI composite scores, psychiatric symptoms, social support	Both groups improved over time. Those in residential treatment had better ASI social composite scores and fewer psychological symptoms.	Exclusions eliminated many individuals likely to be most appropriate for residential treatment. High dropout was noted in the 2 weeks after randomization.
Rychtarik et al., 2000 (22)	Freestanding residential versus intensive outpatient versus outpatient treatment; participants with alcohol use disorders; excluded homeless individuals, those with addiction treatment in past 30 days, those with serious psychiatric symptoms	Abstinence, substance use	Abstinence improved across groups. Interactions were found for setting for those with higher alcohol involvement and poorer cognitive functioning at baseline; they showed more improvement in a residential setting.	Few differences were noted between groups at baseline. Exclusions eliminated many individuals likely to be most appropriate for residential treatment.
Greenwood et al., 2001 (18)[b]	Therapeutic community versus therapeutic community model day treatment; excluded homeless individuals, those with severe psychiatric problems, those clinically judged appropriate only for residential treatment	Substance use	Abstinence improved in both groups. The day treatment group had a higher relapse rate at 6 months but not at 12 or 18 months.	Exclusions eliminated many individuals likely to be most appropriate for residential treatment. High dropout was noted in the 2 weeks after randomization.
Witbrodt et al., 2007 (23)	Social model residential versus social model day hospital; also examined clients not randomly assigned to each setting; part of health plan system; no random assignment if individual had high environmental risk for relapse or more than minimal medical or psychological problems	Abstinence	Abstinence was noted for about two-thirds of each group at 6 months. No difference was found by setting in adjusted models for either randomly assigned or self-selected (not randomly assigned) clients.	Significant differences were found across groups in various measures of severity. The authors adjusted for these measures in regression models. Differential attrition was noted at follow-up.

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Table 3

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Study	Design and population	Outcomes measured	Summary of findings	Comments
Quasi-experimental				
Moos et al., 1996 (33)	VA community-based residential versus VA hospital-based residential; male veterans discharged from acute inpatient care for substance use disorders	Inpatient readmission (for mental or substance use disorder)	A lower probability of readmission was noted for participants in community residential programs compared with hospital-based programs.	Baseline differences between groups were found for psychiatric diagnosis and inpatient care but not for demographic characteristics. Additional treatment was documented only if received in VA.
Hser et al., 1998 (27)[c]	Short-term inpatient and long-term residential versus outpatient treatment; DATOS study: patients treated in participating community treatment programs	Substance use	Inpatient and residential programs were best for non-daily cocaine and heroin users.	There was no control for baseline patient characteristics aside from pretreatment drug use. Data were collected after 1 week in treatment, which introduced potential bias by excluding early dropouts.
Harrison and Asche, 1999 (26)	Inpatient, mostly Minnesota model, and a few therapeutic communities versus outpatient; excluded those with cognitive impairment that precluded consent	Abstinence	No difference in abstinence was found by group.	Group differences were noted in sociodemographic characteristics. Analyses controlled for many baseline variables, but group placement was based on very different individual characteristics.
Pettinati et al., 1999 (35)	Inpatient versus outpatient; alcohol-dependent but not drug-dependent patients; excluded those with severe withdrawal or serious medical problems	Drinking status	No effect by group was found on return to significant drinking. Survival analysis showed a steeper initial rate of return to drinking for the outpatient group.	Analyses controlled for baseline severity but no other patient characteristics.
Schildhaus et al., 2000 (36)[d]	Residential (mostly therapeutic communities) versus inpatient treatment; SROS study: participants treated in community treatment facilities	Substance use, criminal behavior	No difference in outcomes was found for participants in residential and inpatient settings.	This 5-year follow-up study controlled for many variables before, during, and after treatment using retrospective data.
McKay et al., 2002 (31)	"Full continuum" of residential before outpatient treatment versus "partial continuum" of intensive outpatient treatment as entry point; no exclusions noted	Substance use, ASI composite scores	Both groups improved over time on all outcomes. A significant severity × modality interaction was found, with larger improvements for those with high alcohol severity scores in the full continuum compared with those in the partial continuum.	Baseline differences were noted between groups, including severity scores. Groups had differential issues with recruitment. High attrition was noted.
Mojtabai and Zivin, 2003 (32)[d]	Residential (mostly therapeutic communities) versus inpatient and outpatient; SROS study: participants treated in community treatment facilities	Abstinence, substance use	Overall, no difference was found between residential and outpatient treatment. Some effects were seen with propensity score matching.	This 5-year follow-up study used a propensity score approach to control for baseline characteristics, but control for other characteristics during follow-up, such as additional treatment, was unclear.
Hser et al., 2004 (28)	Residential versus outpatient treatment without methadone; no exclusions noted	Treatment success (includes drug use, ASI drug severity score, criminal activity, residence in community)	Those in residential treatment were more likely to complete treatment and had longer stays, which in turn predicted better outcome.	This study used path analysis with statistical controls. Nearly half of the sample had missing data, and these participants were excluded from analyses.

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Table 3

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Study	Design and population	Outcomes measured	Summary of findings	Comments
Ilgen et al., 2005 (30)[e]	VA "inpatient" (inpatient, residential, or therapeutic community–like domiciliary) versus "outpatient" (outpatient or intensive outpatient); veterans, no substance abuse treatment in past 90 days; mostly male	Abstinence; suicide attempts; ASI alcohol, drug, and psychological composite scores	At 6 months, inpatient groups had lower alcohol and drug composite scores than outpatient groups. An interaction effect was found such that individuals with a recent suicide attempt were more likely to be abstinent if treated as inpatients.	Analyses controlled only for baseline ASI measures and not for other patient characteristics. Control variables were not specified. "Inpatient" combined several very different types of care.
Brecht et al., 2006 (24)	Residential versus outpatient treatment as usual; methamphetamine users	Methamphetamine use, criminal activity, employment	Reduced methamphetamine use and crime were noted in the residential group. No difference was found for employment.	Data were collected retrospectively.
Ilgen et al., 2007 (29)	Residential versus outpatient community settings; no exclusions noted	Suicidal behavior	The residential setting was associated with fewer suicide attempts during treatment. No difference between groups was found in the year after treatment.	Baseline differences between groups were noted, but analyses used statistical controls. Substance use outcome was not measured.
Tiet et al., 2007 (37)[e]	VA "inpatient" (inpatient, residential, or therapeutic community–like domiciliary treatment) versus "outpatient" treatment (outpatient or intensive outpatient); veterans; mostly male	Substance use severity	No main effect was found for treatment setting. Some small interaction effects were noted: those with a higher severity of substance use at baseline had better outcomes in inpatient and residential than in outpatient settings.	Significant group differences were noted at baseline, but regression models controlled for them. Differential attrition and nonresponse bias were noted.
De Leon et al., 2008 (25)[c]	Long-term residential; matched undertreated and overtreated patients; DATOS study: patients treated in participating community treatment programs	Substance use, arrests	Patients had better outcomes if they were matched to residential treatment than if they were appropriate for residential treatment but undertreated in an outpatient setting. Similar outcomes were noted in residential treatment if patients were matched or overtreated (appropriate for outpatient treatment but treated in a residential setting).	Data were collected after 1 week in treatment, which introduced potential bias by excluding early dropouts.
Morrens et al., 2011 (34)	Integrated treatment for patients with schizophrenia and co-occurring substance use disorder in a residential setting versus treatment as usual; both groups recruited from inpatient psychiatric hospitals and continued with outpatient care; psychotic disorder for at least 2 years and substance use disorder; aged 18–45 years only	Substance use, psychiatric symptoms	At 3 months, the integrated residential group had reduced substance use, improved psychiatric symptoms, and higher quality of life and functioning compared with the treatment-as-usual group.	No baseline differences were noted, but differential dropout limited analyses to 3 months. Some tentative conclusions were drawn for 6- and 12-month follow-ups. Dropout rates varied between groups.

[a] Articles are in chronological order by type of research design. Abbreviations: ASI, Addiction Severity Index; DATOS, Drug Abuse Treatment Outcome Study; RCT, randomized controlled trial; SROS, Services Research Outcomes Study; VA, Veterans Affairs

[b–e] Articles with the same superscript reported some aspects of the same study.

described here evaluated patients who chose or were referred by clinicians to a specific treatment modality. RCTs that evaluated specific treatment modalities for substance use disorders were rare because treatment providers had concerns about randomly assigning individuals in need of treatment to a no-treatment condition or to a lower level of care than was clinically appropriate. Some RCTs were conducted with a large limitation: the researchers required

individuals in the intervention group to be appropriate for the outpatient care that was received by the comparison group, to avoid undertreating individuals who might not be treated safely if randomly assigned to outpatient care. This design created a false comparison, because individuals appropriate for residential treatment (and thus not appropriate for outpatient care) were excluded. Clients with more severe needs (for example, individuals without stable living arrangements or individuals with general medical or psychiatric diagnoses) were often excluded from the intervention group, despite the possibility that they were likely to benefit from residential services.

Many studies that suggested improved outcomes after residential treatment were excluded from this review because they lacked a comparison group or used pre-post measurement without statistical controls. Other methodological concerns in the literature included retrospective data collection, lack of control for the amount of treatment received, and lack of detailed descriptions of the service components. Comparison groups often varied by characteristics of the setting (for example, type of setting or treatment duration) and by treatment content (for example, services or theoretical approach), thereby confounding the comparisons. Each of these limitations influenced the conclusions that could be drawn.

Effectiveness of the service

The effects of residential treatment services were mixed, with some studies indicating positive findings and others showing no significant differences in outcomes between clients in residential treatment settings and those in other types of treatment. For example, the Walden House residential therapeutic community was compared with a therapeutic community model that used a day treatment program (18–20). At six months, both groups had reliable improvement in drug and alcohol use and employment. The Walden House group also had significant improvements in medical and social problems, psychiatric symptoms, and social support. Most outcomes seen at six months were maintained through 18 months (19); the day treatment group had a higher likelihood of relapse at six months but not at 12 or 18 months (18). In quasi-experimental studies, individuals receiving residential treatment had less methamphetamine use and crime (24), higher treatment completion rates and longer treatment stays (28), and reduced suicide attempts during treatment (29) compared with individuals receiving outpatient treatment. Individuals in inpatient residential treatment had lower alcohol and drug severity scores at six months than those in outpatient treatment, after control for baseline severity (30). De Leon and colleagues (25) found some evidence supporting treatment matching; clients matched to long-term residential care had better one-year outcomes than those undertreated in outpatient drug-free settings. Individuals with co-occurring mental and substance use disorders in integrated residential treatment settings had reduced illicit drug and alcohol use, improved psychiatric domains, higher reported quality of life, and improved social and community functioning than those in treatment as usual (9–11,15).

Reflecting the inconsistency in the literature, other studies showed no significant differences between individuals receiving residential treatment and those receiving treatment in comparison conditions on outcomes such as abstinence from drug use, psychosocial variables, reduced drug use, criminal activity, arrest rates, or rates of returning to prison (21–23,26,27,32,35–37). In an RCT, researchers compared treatment in a residential social model and in a nonresidential social model for homeless individuals with co-occurring mental and substance use disorders (17). No significant differences, aside from housing, were found between residential and nonresidential treatment groups at the three-month follow-up. When the analysis controlled for total services accessed, the residential group had significantly fewer days of alcohol use at the three-month follow-up, but no other significant effects were found.

The inconsistency in findings is documented by the literature reviews we examined. Published reviews of residential treatment reported on studies that had serious methodological limitations, resulting in the need for "an RCT with a well-defined population, a standardized program, and a blind assessment of outcomes" (9). Finney and colleagues (12,13) conducted two reviews that summarized the evidence on treatment settings—the first in 1996 and the second in 2009. The 1996 review included research on "inpatient" treatment compared with outpatient treatment or detoxification only (12). Although comprehensive at the time, the review was confounded for our purposes by the inclusion of both hospital inpatient approaches and nonhospital residential approaches and the exclusion of individuals with severe problems or without stable housing. In addition, many approaches described in the review article are no longer commonly used in the field; thus the article is not discussed further here. The 2009 review by Finney and colleagues (13) found evidence supporting the effectiveness of treatment that matched patients to different treatment settings, such as via the ASAM PPC-2R. However, the review provided little information about methods used in the included studies.

Three reviews examined the effects of therapeutic communities on substance use outcomes (14–16). A Cochrane Collaboration review indicated that insufficient evidence exists to state that therapeutic communities are more effective than other levels of care; however, methodological limitations tempered the researchers' conclusions (15). High attrition was a common limitation in the reviewed studies. Some evidence suggested that specific populations, such as homeless individuals with co-occurring mental disorders or individuals in prisons, had better outcomes in therapeutic communities than control groups. The second review found that individuals in therapeutic communities demonstrated improved outcomes compared with individuals in control conditions; however, the findings were limited by various methodological issues, such as overlap between the treatment and comparison conditions and inconsistent program fidelity (16). The third review found significant decreases in substance use

Evidence for the effectiveness of residential treatment for substance use disorders: moderate

Overall mixed results suggest either an improvement or no difference in outcomes such as:

- Drug and alcohol use
- Employment
- Medical and social problems
- Psychiatric symptoms
- Social support

while individuals were in therapeutic communities but indicated that methodological problems tempered the extent to which conclusions could be drawn about the long-term effects of therapeutic communities (14). Similar to other reviews, the third review found that therapeutic communities may provide a better treatment option for individuals with severe psychosocial problems, depending on the length of stay in the program.

Three reviews (9–11) focused on populations with co-occurring mental and substance use disorders. The experimental group usually received integrated residential treatment (for individuals with co-occurring disorders), and control groups received "treatment as usual" with less intense or nonintegrated residential treatment. These reviews found that individuals with co-occurring mental and substance use disorders can be treated successfully in residential settings, whether or not treatment is integrated. At minimum, integrated treatment was equally as effective as standard treatment for this population, and most of the studies found that integrated treatment was more effective than standard treatment in regard to substance use, mental health, and other outcomes.

Conclusions

This review found a moderate level of evidence for the effectiveness of residential treatment (see box on this page). Despite the prevalence of methodological concerns—primarily the appropriateness of the samples and equivalence of comparison groups—some evidence indicates that residential treatment is effective for some types of patients. Further, much of the literature suggests that residential treatment is equally as effective as comparison modalities, and a few studies suggest that it is more effective. However, until research with more rigorous methods is conducted, these conclusions remain tentative.

We echo the call of others for further research to better determine which clients benefit from residential treatment, what duration of treatment confers positive effects, and what types of effective clinical interventions are provided within the program. Further studies should examine the components of residential treatment that might relate to effectiveness, such as types of clinical staff, use of peer support, number of beds, or lengths of stay currently used. To attain ideal outcomes, it is essential for new evaluations of residential treatment for substance use disorders to take a chronic care approach to ensure that a treatment modality is not evaluated in a vacuum and that continuing care is an outcome as well as an essential part of the treatment episode.

Any new research in this area must be methodologically rigorous and use appropriate comparison groups to ensure that conclusions are valid. Systematic, rigorously conducted studies are essential for policy makers to make decisions about the inclusion of residential treatment in health plans and the allocation of resources to residential treatment activities.

Specifically, research needs to identify which individuals respond best to residential treatment programs. Studies should use appropriate control groups. Future research needs to reflect current approaches to residential treatment and examine the role of treatment factors (such as staffing and length of stay) in contemporary approaches to residential treatment. Research must include posttreatment variables, such as mutual-help participation, when evaluating outcomes. Examining effective treatments for individuals with substance use disorders requires furthering our understanding of how to improve treatment retention, length of stay, treatment completion, and participation in aftercare.

Finally, it is important to determine whether treatment services are equally effective for different populations. Given the significance of health disparities in access to and receipt of substance use treatment, implementing effective and culturally responsive care is essential. Most studies described the demographic characteristics of the sample, and some studies controlled for these characteristics in analyses. However, no studies specifically analyzed race or ethnicity through interaction terms, stratification, or other approaches. Examining the effectiveness of treatment across different groups requires analyses comparing outcomes of specific subgroups within and across treatment types. Additional work should analyze the role of culture-specific approaches—for example, multilingual staff. We encourage researchers to incorporate such analyses as we continue to evaluate this treatment modality.

In addition to calling for rigorous research on the current system, we note that the moderate level of evidence for the effectiveness of residential treatment of substance use disorders has relevance for consumers and their families as well as for policy makers. Consumers have a wide range of needs, and they would benefit from a variety of services to address those needs. Residential treatment for substance use disorders fills a niche for consumers who require stable living environments that incorporate therapeutic treatments to help them move toward a life in recovery. Similarly, to reduce the likelihood of treatment failure, policy makers should ensure that a full range of treatments is available to meet consumer needs. With research demonstrating a moderate level of evidence, policy makers can highlight the benefit of including residential treatment as a key service in the continuum of care.

As the treatment system for substance use disorders continues to evolve,

particularly within the current context of broader health care system change, it is essential to understand the role and effectiveness of treatment options. Residential treatment has been used for substance use disorders for many years, and there are clear indications for continuing these services. However, for policy makers and payers (for example, state mental health and substance use directors, managed care companies, and county behavioral health administrators) to be able to make recommendations about which services to cover and include in a treatment continuum, they must be able to evaluate those services as they currently exist. Residential treatment shows value for ongoing inclusion and coverage as part of the continuum of care, but additional rigorous research is necessary to understand how and for whom it best fits.

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Submissions Invited for Column on Integrated Care

The integration of primary care and behavioral health care is a growing research and policy focus. Many people with mental and substance use disorders die decades earlier than other Americans, mostly from preventable chronic medical illnesses. In addition, primary care settings are now the gateway to treatment for behavioral disorders, and primary care providers need to provide screening, treatment, and referral for patients with general medical and behavioral health needs.

To stimulate research and discussion in this critical area, *Psychiatric Services* has launched a column on integrated care. The column focuses on service delivery and policy issues encountered on the general medical–psychiatric interface. Submissions are welcomed on topics related to the identification and treatment of (a) common mental disorders in primary care settings in the public and private sectors and (b) general medical problems in public mental health settings. Reviews of policy issues related to the care of comorbid general medical and psychiatric conditions are also welcomed, as are descriptions of current integration efforts at the local, state, or federal level. Submissions that address care integration in settings outside the United States are also encouraged.

Benjamin G. Druss, M.D., M.P.H., is the editor of the Integrated Care column. Prospective authors should contact Dr. Druss to discuss possible submissions (bdruss@emory.edu). Column submissions, including a 100-word abstract and references, should be no more than 2,400 words.