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A Systematic Review of Interventions to Increase Mental Health Service Use

by

Jennifer Greene

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science in Public Health  
Department of Community and Family Health  
College of Public Health  
University of South Florida

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Date of Approval:  
March 20, 2012

Keywords: pre-treatment interventions, out-patient services, medication adherence,  
psychotherapy, depression, schizophrenia

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## **Abstract**

Relatively few pre-treatment interventions to increase out-patient mental health (MH) service use have been created and experimentally tested. Therefore, not only is there limited availability of these interventions, it is uncertain whether existing interventions are effective. Moreover, it is unclear which components of the interventions are effective. To address these gaps in knowledge, a systematic review of pre-treatment interventions was conducted, using the Cochrane Review methodology. Three primary outcomes were evaluated: attendance at any type of out-patient MH visit; number of appointments of any type of out-patient MH visit; and/or initiation and adherence to psychotropic medication. PubMed and PsycINFO databases were thoroughly searched for studies that met the inclusion criteria. A data extraction form was designed and employed to systematically extract data from all included studies. In the 15 included studies, 18 different active interventions were evaluated. The interventions ranged in duration of interaction from one mailed flyer to ten 90-minute psychoeducation sessions. Most studies (n = 11) included one intervention group, compared with one control, or usual care, group. The interventions were categorized by the type of barriers they aimed to address, resulting in six broad categories: MH knowledge; MH knowledge/attitudes; MH knowledge/attitudes/logistical barriers; MH knowledge/family involvement; care management; and home visits. All included studies received a quality assessment rating of “good” or “fair.” The main finding of this thesis is that all categories of interventions increased at least two of the three primary outcomes. The care management interventions measured and increased

all three outcomes; these interventions also had some of the highest quality ratings.

Therefore, care management interventions appear most effective at increasing out-patient

MH service use. Implications for practice and research are discussed.

## **Chapter 1: Introduction**

A small percentage of people with mental health (MH) issues utilize MH services (Pescosolido & Boyer, 1999). This would seem contradictory given the increasing understanding of mental disorders, their high prevalence and associated disability and distress (Kessler, et al., 2005). In order to understand this under-utilization, many empirical studies have been conducted to identify predictors of MH service use. Such predictors include, for example, demographic factors, need, and attitudes toward MH services. Several theories of help-seeking behavior have been proposed to explain the decision making process of using MH services (Pescoslido & Boyer, 1999). These theories explore how people interpret their MH symptoms and decide how to act on them.

Building upon this empirical and theoretical literature, some researchers have developed pre-treatment interventions. These interventions aim to engage individuals in MH treatment and increase treatment initiation and retention by addressing various predictors of and barriers to MH service use, such as helping individuals overcome practical barriers like transportation or providing education about MH services to reduce stigma. These interventions may include psychoeducational sessions and materials, meetings with study staff and other MH professionals, and aspects of psychotherapy, such as rapport building. However, it is important to note that pre-treatment interventions are not psychotherapy. Rather, they occur independently of psychotherapy and/or medication treatment, with the goal of engaging the individual in the selected treatment.



It is the goal of this thesis to conduct a systematic review of pre-treatment interventions that have been empirically studied, using the Cochrane Review methodology. The specific aims of this thesis are to: a) identify effects of these pre-treatment interventions on three primary outcomes: attendance at any type of MH visit; number of appointments of any type of MH visit; and/or initiation and adherence to psychotropic medication; and b) identify characteristics of pre-treatment interventions that are most closely associated with increased MH service use. The long-term goal of this study is to identify essential components of a pre-treatment intervention that will most effectively and efficiently increase MH service use.

The systematic review will begin by defining the MH services focused upon in this study, reviewing theories of MH service use, and reviewing empirical research on predictors of MH service use. The methods of the review are drawn from the Cochrane Handbook for Systematic Reviews of Interventions (version 5.1.0), which is the official document published by the Cochrane Collaboration detailing the process of conducting a systematic review of healthcare interventions.

### **History of MH Service Use Research**

Early seminal work by Dunham (1959) and Hollingshead and Redlich (1958) first showed that poor individuals had higher rates of psychiatric hospital admissions than wealthy individuals (Dunham, 1959) and that once hospitalized, poorer patients were more likely to be given more serious diagnoses (Hollingshead & Redlich, 1958). At this time, it was unclear whether these differences reflected differences in need, rate of diagnosis, or resources to access MH services.

### **Definition of MH Services**

Pescosolido and Boyer (1999) defined MH services as including the formal system of care (both specialty mental health care and medical care); the lay system such as friends, family and self-help groups; the folk system of religious leaders and alternative medicine; and the human-social system of clergy, police, and teachers. Generally, studies of MH service use predictors focus on how people use the formal system of care. The formal system includes specialty mental health care, such as psychiatrists, psychologists, social workers, inpatient psychiatric units, and out-patient mental health programs. The formal system also includes general medical care such as primary care physicians (PCPs), hospitals, and nursing homes.

In the current study, the focus is on use of the formal system of care, specifically three indicators of service use: attendance at any type of out-patient MH visit; number of appointments of any type of out-patient MH visit; and/or initiation and adherence to psychotropic medication. A MH visit is defined as any visit to a provider concerning MH. The provider can be a primary care physician or a MH specialist such as a psychiatrist, psychologist or MH counselor. This study focuses on use of formal MH services, as opposed to lay and other networks, because formal MH services are the only type of service with a strong empirical base for treating a wide variety of mental disorders (Seligman, 1995). Additionally, formal services have been thoroughly examined in large, nationally representative samples (Kessler et al., 2004) and reported on in annual reports by the Centers for Disease Control and Prevention (National Center for Health Statistics, 2010).

### **Theoretical Perspectives**

Several theories of health behavior, and MH service use specifically, have been proposed and researched. This review focuses on the dominant theories that have guided empirical research and existing pre-treatment interventions: the health belief model (HBM), theory of planned behavior (TPB), the behavioral model of health service use, and the network episode model (NEM).

**Health belief model (HBM).** This model posits four types of health beliefs that affect an individual's health behavior, in this case, the decision to seek MH services: perceived susceptibility, perceived severity, perceived barriers, and perceived benefits (Janz, Champion, & Strecher, 2002). An individual's perceived susceptibility to the condition refers to how susceptible the individual feels to the condition (on a low to high continuum). The perceived severity of the condition refers to whether the condition is perceived to have serious consequences (morbidity and mortality). Perceived barriers refer to whether these benefits of taking action outweigh the barriers to taking action. Barriers can include lack of time, transportation, convenience and any other factor that affects an individual's decision to take action. Perceived benefits refer to whether a specific action is expected to reduce the risk of acquiring the condition or the consequences of the condition. Individuals weigh both benefits and barriers, which help them decide whether to act. In the case of MH service use, individuals would be more likely to decide to use services if they perceived themselves as susceptible to a mental disorder, that mental disorders have serious consequences, and that benefits of using services outweigh barriers.

**Theory of planned behavior (TPB).** This theory focuses on factors that influence an individual's intention to perform a health behavior (Ajzen, 1991). Intention

is determined by three factors: attitude toward the behavior, subjective social norms, and perceived behavioral control. Attitude in this case would refer to an individual's attitude toward seeking treatment and can range from very positive to very negative on a continuum. Subjective social norms refer to an individual's perception of how his or her reference group feels about the behavior. An example would be societal stigma regarding mental illness. Perceived behavioral control refers to an individual's assessment of how difficult it will be for him or her to perform the behavior. In the case of MH service use, for example, negative past experiences with the MH service system and its current lack of cohesiveness can lead to an individual to perceive low behavioral control to navigate the fragmented and complex system.

**Behavioral model of health services use.** The behavioral model of health service use was developed by Andersen and Newman (1973) to explain health service use. It is a multilevel model that includes societal determinants (technology and norms), the health services system (resources and organizations), and individual determinants (predisposing characteristics, enabling resources and illness level). Andersen and Newman (1973) further divided predisposing factors into a demographic category (age, sex, marital status, past illness), social structure (race, ethnicity, education, occupation, religion, family size, residential mobility), and beliefs (values concerning health and illness, attitudes toward health services, knowledge of disease). These predisposing factors affect an individual's tendency to seek care. Enabling factors are the knowledge and means to access treatment and are divided into a family category (income, health insurance, type and access to a regular source of care) and a community category (number of health facilities per population, price of services, region of the country, urbanicity). Illness level pertains to

both the individual's perceived illness (such as level of disability, symptoms, diagnosis, general state of health) as well as the evaluation of the illness by a health professional (symptoms, diagnosis). These individual determinants have been often studied in the research literature as correlates of MH service use. Andersen revised this model in 1995 to include environmental factors (health care and insurance policies), personal health behaviors, and outcomes (perceived health status, satisfaction with service; Andersen, 1995). Many other researchers have applied this model to MH service use (e.g., Binitie, 2006; Bruce, Wells, Miranda, Lewis, & Gonzalez, 2002; Elhai, Voorhees, Ford, Min, & Frueh, 2009).

**Network-Episode model (NEM).** Based on the models described previously, the underlying assumption is that individuals make a rational decision about whether to access MH services based on their beliefs about the illness and weighing the costs and benefits of treatment and the options available to them (Pescosolido, 1992). However, Pescosolido and Boyer (1999) noted that this is not the case for most people receiving MH services and that past models may be incomplete. They argue that people may not consciously weigh these factors and may be influenced by factors not included in previous models.

To expand upon past models, Pescosolido and Boyer (1999) proposed the network-episode model (NEM) to account for the vastly different experiences of individuals entering care. It consists of four inter-related parts, the illness career, social support system, treatment system, and social context. The illness career describes an individual's efforts over time to cope with mental health problems, such as patterns of care over time. The illness career can be affected by an individual's social support

system. If the network generally has a positive attitude toward MH service use, the individual is more likely to use services. It is also possible that the network can deter service use or have no effect at all. The individual also necessarily interacts with the treatment system, and all of these interactions take place within the larger social context.

### **Summary**

These theories, though different, all focus on similar categories of predictors of MH service use. These categories of predictors include individual level factors, social factors, and service system factors, which will be examined in more detail in the next section describing empirical studies of service use predictors. Most theories and research have focused on individual-level factors; across these theories, these factors include demographic variables (age, gender, socioeconomic status, and race/ethnicity), perceptions of need, past treatment experience, and MH knowledge and attitudes. Social factors include social support and context (focused on primarily in the NEM). System-level factors identified include the various structures, content and functions of the complex treatment network.

Much of what we know about predictors of MH service use presented in these next sections comes from the National Co-Morbidity Study (NSC; Kessler et al., 1994) (n = 5877) and the National Co-morbidity Study Replication (NSC-R, Kessler et al., 2005) (n = 4320), providing the most nationally representative, current data on prevalence of MH conditions and service use. The NCS, which surveyed people ages 15 to 54, was the first nationally representative survey of MH prevalence and correlates. The NCS-R surveyed people ages 18 and older in 2001-2002, replicating and expanding on topics covered in the NCS.

## **Individual Level Predictors of MH Service Use**

Individual predictors of MH service use include demographic factors such as age, socioeconomic status (SES), health insurance status, race/ethnicity, education, and gender. Also included are illness factors (perceived illness/need, professionally evaluated illness/need) and past treatment experience. Individuals also have certain knowledge about MH, called MH literacy, as well as attitudes and beliefs about mental illness and services.

**Age.** Younger and older adult age groups consistently have the lowest rates of MH service use (Shapiro et al., 1984; Wang et al., 2005). Research in the UK suggests that for older adults, part of the problem may be age discrimination. A report by Beecham and associates (2008) notes that older adults over age 65 are receiving less MH services than younger adults. In the Royal College of Psychiatrists' position statement (2009), they suggest that cultural attitudes to aging are associated with this lack of care. In terms of young adult mental health, Perlick, Hofstein, and Michael (2010), propose a model including normative influence barriers (stigma concerns, skepticism of treatment, lack of recognition of problems) and logistical barriers (limited finances, time commitment, transportation issues) that prevent treatment.

**Gender.** Women are generally more likely to use MH services than men. This could be due to a number of factors. The differences may reflect the higher prevalence of mental disorders in women but also women's tendency to recognize and report symptoms as well as clinicians' bias in diagnosing women with mental disorders (Kessler et al., 1994). Pescosolido and Boyer (1999) noted that, because women tend to visit primary care physicians more than men, mental health issues are more likely to be addressed in

this setting. In addition, data from the national Epidemiologic Catchment Area (ECA) study suggested that when seeking services, men are more likely to turn to the specialty sector than a primary care physician (Shapiro et al., 1984). This finding was replicated in the NCS-R, which showed that women were consistently more likely than men to obtain any kind of treatment and that when men did use services, they were most likely to use specialty services (Uebelacker, Wang, Berglund, & Kessler, 2006).

**Socioeconomic status and health insurance.** Socioeconomic status (SES) is a construct that defines an individual's relative social position. It can be measured by one's income, education, occupation, or a combination of these measures (Coreil, 2010). In both the NCS and NCS-R cohorts, higher level of education was associated with MH service use, particularly the use of specialty MH services, as opposed to seeking MH services through a primary care physician (Elhai & Ford, 2007). The research literature on income is less clear. Lower income is associated with poorer mental health and consequently higher rates of service use. However, higher income is associated with greater access to the health care system, such as having increased access to private and employment-derived health insurance, and greater access to healthcare providers (Elhai et al., 2009). A study by Amone-P'Olak and colleagues (2010) found that higher SES (a combined measure of family income, occupation and education) predicted MH service use in a sample of Dutch adolescents, after controlling for the severity of the MH problem.

**Race and ethnicity.** Regardless of level of symptoms and distress, minority groups such as African Americans, Hispanics and Asians receive fewer MH services than Caucasians, even when controlling for SES (Neighbors et al., 2007). Data from the



National Latino and Asian American Study found immigration and acculturation issues to be strong predictors of service use. US born Asian Americans had higher utilization rates than immigrants. Second generation individuals (children of immigrants) had less service use than third generation individuals, suggesting acculturation led to increased service use (Abe-Kim et al., 2007).

**Need.** As mentioned earlier, illness level pertains to both the individual's perceived illness (such as level of disability, symptoms, diagnosis, general state of health) as well as the evaluation of the illness by a health professional (symptoms, diagnosis). These two categories are generally referred to as subjective/perceived need and objective need, respectively. Perceived need is influenced by an individual's knowledge and attitudes about MH and past treatment experience (Pescosolido & Boyer, 1999; Anderson, 1995). Perceived need for treatment was measured in the NCS with the question "Was there ever a time when your family or you, yourself, believed that you should see a doctor or professional about mental health problems?" Those endorsing the question were more likely to have recently used MH services and higher intensity of treatment use (more contacts with services; Katz et al., 1997). However, perceived need was less related to treatment use than objective need (Katz et al., 1997; Elhai & Ford, 2007). Yet, objective needs determined by professionals may not be met because the individual may disagree that there is a need (Wing, Brewin, & Thornicroft, 2001). Therefore, both subjective and objective need are important predictors of service use.

**Past treatment experience.** A study by Jorm and associates (2000a) found that past treatment for depression was associated with general and specific beliefs about the helpfulness of different types of interventions. Those who had MH treatment in the past

were less likely to find family helpful in their situation. They believed medical interventions (i.e. psychotropic medications), particularly antidepressants, to be more helpful than lifestyle interventions (i.e. engaging with family and friends, physical activity). Those who had not sought treatment felt lifestyle interventions were more helpful.

**Individual knowledge, attitudes and beliefs.** Research has shown that positive attitudes towards MH treatment are associated with seeking MH services. They are more strongly associated with seeking specialty care rather than general care from a primary care physician (PCP). Attitudes vary with a number of demographic factors such as age, gender, race/ethnicity and previous treatment. A study by Gonzalez and colleagues (2011) analyzed the NCS-R data to determine how these demographic factors interacted with attitudes toward MH treatment to predict treatment seeking. They focused on three attitudes toward MH services: level of comfort talking to a professional, willingness to seek professional help, and perceived efficacy of treatment. They found that greater comfort was associated with increased service use in all groups; willingness to seek professional help was associated with increased use of general medical care but not MH service use. Higher perceived efficacy increased MH treatment in African Americans only. A similar study by ten Have and associates (2010) also found that individuals were more likely to seek services if they endorsed that they would seek professional help in case of a serious emotional problem, would feel comfortable talking about personal problems, would not be embarrassed if friends knew about professional help and perceived professional help as effective. They found that women under the age of 65 with mood disorders and a history of mental health service use most often held these attitudes.

**Mental health literacy.** Mental health literacy is defined as “knowledge and beliefs about mental disorders which aid their recognition, management or prevention” (p. 182, Jorm, et al., 1997). This can include knowledge of symptoms, disorders, risk factors and causes, knowing how to seek MH information and services and help-seeking attitudes. Much research has been done on this topic by Jorm and colleagues in Australia. In a national Australian sample, Jorm and colleagues (1997) found that most people were able to recognize that a mental disorder was present in a vignette presented to them. Participants felt that general practitioners and counselors would be most helpful for a mental disorder, whereas standard treatments such as antidepressant and antipsychotic medication, admission to psychiatric unit and electroconvulsive therapy were viewed as more harmful than helpful. These negative attitudes may lead to lack of adherence to advice given by MH professionals (Jorm, et al., 1997.) In another study, interventions by MH professionals were rated by participants as likely to be very helpful to them, but were actually rarely used. For example, counseling was the most endorsed intervention on the baseline survey; when participants were asked what interventions they were actually using at follow-up, it was 17th on the list (Jorm, et al., 2000b). Simpler, easily accessible interventions such as having an occasional drink, taking pain killers and physical activity were at the top of the list. Beliefs of helpfulness only predicted use of antidepressants. Far less research has been done in the US to date. A recent study done in the US replicated the findings of Jorm and colleagues (1997) in a sample of US students (Olsson & Kennedy, 2010).

### **Social Level Predictors of Mental Health Service Use**

Social level predictors of MH service use include an individual's social support and social network, particularly the attitudes about MH services that the social network holds.

**Social support/social network.** Social support is defined as “information from others that one is cared for, loved, esteemed, and part of a mutually supportive network” (p. 300, Cobb, 1976). The social network is interconnected structure of individuals and organizations that provide each other this support. In a systematic review of the literature by Albert, Becker, McCrone, and Thornicroft (1998) most studies found that small networks or low social support were associated with increased inpatient MH service use. On the other hand, some studies found that increased attendance at out-patient MH services was associated with having a larger number of people in the network with whom the individual could discuss private matters (Albert, Becker, McCrone, & Thornicroft, 1998). Although research suggests that social relationships can have positive effects, negative effects on health cannot be ignored. Social networks can model and help to perpetuate positive health behaviors but also negative ones such as smoking, alcohol and drug use (Uchino, 2004). Individuals in social networks also provide advice that may encourage or discourage MH service use; for example, in one study advice encouraging MH service use was associated with greater service use over a six month period for depressed older adults (Gum et al., 2011). In sum, social support, modeling, and advice are three ways by which social networks may either facilitate or hinder MH service use. Therefore, it is not the size of the network but the attitudes of that network that influences MH service use.

### **Service system**

Service system factors include a variety of organizational and policy level variables. Pescosolido and Boyer (1991) defined three aspects of the treatment system, the treatment network structure, treatment network content, and treatment network functions. Network structure refers to the social network of the treatment system the patient enters and participates in during an illness episode. Network content refers to treatment efficacy, modalities, diagnostic capacity, technology and staff attitude and culture toward MH, patients, the community and their organization. Network functions refer to the functions the treatment system should be providing, such as information, advice, regulation, and emotional and tangible support.

Related to network structure, fragmentation of the general medical and mental health service systems has been identified as a major barrier to individuals' ability to access services. Thus, integrated medical and mental health care models have been shown to dramatically improve service use and outcomes (Unützer et al., 2002). As another example, health insurance policies related to copayments affect service use (Norquist & Wells, 1991). Service system factors have been less studied and not often incorporated into pre-treatment interventions, which generally focus on individual level factors. Therefore, this thesis will not review service system factors in depth.

To summarize from the empirical studies of service use predictors, these factors are often interrelated and influence each other and a person's ability and willingness to seek services. Researchers have used those findings to develop pre-treatment interventions designed to facilitate MH service use, such as providing psychoeducation to increase MH literacy or beliefs regarding helpfulness of treatment options. In addition, factors related to service use allows us to target groups most in need of pre-treatment

intervention to facilitate their entry into MH services, such as individuals with less treatment experience or older adults. The remainder of this thesis is focused on pre-treatment interventions designed to address identified individual and social level factors associated with MH service use.

### **Goals and Aims**

The goal of this thesis is to conduct a systematic review of pre-treatment interventions to increase attendance at any type of out-patient psychotherapy; number of appointments of any type of out-patient psychotherapy; and/or initiation and adherence to psychotropic medication. Relatively few interventions to increase MH service use have been created and experimentally tested. Therefore, not only is there limited availability of these interventions, it is uncertain whether these interventions are effective. Moreover, it is unclear what components of the interventions are effective. To address these gaps in knowledge, I aim to examine the following areas in each pre-treatment intervention:

1. Target population and sample
2. Empirical target of the intervention (what predictors of service use does the intervention attempt to address)
3. Theoretical model, if any, informing the intervention
4. Outcomes measured (attendance at any type of out-patient psychotherapy; number of appointments of any type of out-patient psychotherapy; and/or initiation and adherence to psychotropic medication).

Implications for practice and future research to inform the development of more efficacious and effective pre-treatment interventions will be discussed.

## Chapter 2: Methods

The methods for this thesis were based on guidelines developed by the Cochrane Collaboration and published in the Cochrane Handbook for Systematic Reviews of Interventions (Cochrane Collaboration, 2008).

### Criteria for Considering Studies for This Review

**Types of studies.** All studies that compared two or more groups (i.e., intervention vs. usual care, intervention A vs. intervention B, or intervention vs. no intervention) were included in this systematic review. This includes randomized controlled trials, quasi-experimental designs and pre-post intervention studies. Studies were not excluded due to their risk of bias, sample size or length of follow-up period. Studies were excluded if they were not reported in the English language; did not measure attendance at any type of out-patient psychotherapy, number of appointments of any type of out-patient psychotherapy, and/or initiation and adherence to psychotropic medication; and did not intend to increase out-patient service use (i.e., focusing on reducing inpatient service use). Studies that changed the structure of care, such as collaborative care models (Jackson et al., 1993; Jaycox et al., 2003; Vera et al., 2010; Unützer et al., 2002), were also excluded. These interventions have been shown to increase service use, but individual and social level factors, rather than structural factors, are the focus of this thesis.

**Types of participants.** Adults, ages 18 and older, with any type of MH problem (both diagnosed and undiagnosed), living in the community, were included. Studies were

excluded if the participants had a primary diagnosis of substance abuse. The review also excluded studies of interventions delivered in inpatient settings that were designed to reduce inpatient MH service use.

**Types of interventions.** Any intervention that attempted to increase use and/or retention of out-patient MH services was included in this review. Each study delivered an intervention to the experimental group and also monitored the control group. During the follow-up period, comparisons were made between the groups on outcome variables such as service use initiation (i.e., attending at least one MH visit), number of service visits, and medication initiation and adherence. All included studies featured at least one contact with study staff (in person or over the telephone) and/or study materials such as brochures and mailings.

**Types of outcome measures.** Studies that measured any of the following service use and retention variables were included in this review:

1. attendance at any type of out-patient psychotherapy
2. number of appointments of any type of out-patient psychotherapy
3. initiation and adherence with psychotropic medication

### **Search Methods for Identification of Studies**

**Electronic bibliographic databases.** PubMed and PsycINFO databases were thoroughly searched for studies that met the inclusion criteria. PsycINFO was searched on December 15, 2011 using combinations of “mental health services,” “service initiation,” and “service retention,” with “interventions,” and “service use.”

**Reference lists.** All reference lists of included studies were examined for additional relevant studies.



**Correspondence.** An email including a list of known studies was sent to the corresponding authors of included studies to inquire whether they were aware of any other relevant published or unpublished studies.

### **Data Collection and Analysis**

**Selection of studies.** All abstracts were reviewed in relation to the inclusion/exclusion criteria. Unless the abstract clearly described one or more exclusion criteria, the full article was then examined to determine if it still met the inclusion criteria. A record was made of all studies examined, excluded and reasons for exclusion. Excluded studies were discussed with a faculty advisor, and consensus was reached regarding the decision to exclude.

**Data extraction and management.** A data extraction form was designed and employed to systematically extract data from all included studies. Data extracted included:

1. sample size;
2. study groups;
3. delivery method;
4. duration of intervention;
5. MH problem addressed;
6. target of the intervention;
7. specific factors addressed by each intervention;
8. theoretical perspective (if applicable);
9. outcomes measured (attendance, number of visits and/or medication adherence) and;

## 10. results

All included studies are referred to by the first author's last name for conciseness. Some studies include more than one type of intervention; in this case, the interventions were labeled by the first author's last name followed by a number (e.g., Simon 1, Simon 2).

**Assessment of risk of bias in included studies.** Risk of bias was assessed and reported for each included study using a rating table developed by Newell, Sanson-Fisher and Savolainen (2002) to assess the methodological quality of psychological and behavioral interventions. Each study was rated on ten indicators of internal validity: concealment of allocation, random selection of participants, blinding of participants to study group, blinding of care-providers, equivalent treatments except for the active intervention, monitoring of care-provider adherence to protocol, loss to follow-up information, percentage of participants not included in analysis, intention-to-treat analyses, and objective measures/subjective measures with blinded raters. Each study was classified and assigned points: entirely fulfilled (3 points), mostly fulfilled (2 points), mostly not fulfilled (1 point), not at all fulfilled (0 points), or as lacking sufficient information to make a judgment (0 points). Therefore, a study could reach a total of 30 points, with a score of over 20 indicating a quality rating of "good," a score of 11-20 indicating "fair" and less than 11 indicating "poor."

### **Methods of analysis**

A meta-analysis was not undertaken due to the diverse samples, measured outcomes, and methods of pre-treatment interventions. The Cochrane Handbook warns against combining "apples with oranges" as this will cause real differences to be obscured (Cochrane Collaboration, 2008). They note particular challenges analyzing

behavioral and public health interventions, noting the diversity in samples, methods, and outcome measures. Instead, the interventions were categorized by the type of barriers they are aimed to address (Cochrane Collaboration, 2008). A count was conducted of the number of interventions in each category that increased each outcome to determine which types of interventions were effective.

## **Chapter 3: Results**

### **Results of the Search**

A search of PsycINFO on December 16, 2011 yielded 528 abstracts. Thirty two full reports were examined, of which six met all inclusion criteria. A search of PubMed on December 17, 2011, with the same search terms, yielded 1,262 abstracts, but no additional included studies that had not been identified in PsycINFO. One eligible study was found based on the recommendation of a research colleague. Twelve studies were found from the reference lists of already included studies, nine of which were included. No additional studies were found based on correspondence with included study authors.

### **Included Studies**

A total of 15 studies met the inclusion criteria. All studies included participants 18 years and older (except Van Heeringen et al., 1995; 15 years and older). The interventions addressed a variety of MH problems, including depression (n = 7), schizophrenia (n = 2), post-traumatic stress disorder (PTSD, n = 1), and suicidal ideation (n = 1). Four studies did not require a specific diagnosis, but rather patient reported mental distress.

### **Interventions**

In the 15 included studies, 18 different active interventions were evaluated. Eleven of the interventions were delivered to the participant in person, four by telephone, one in person with telephone follow-up, one with written materials and telephone follow-up, and one with written materials only. The interventions ranged in duration from one mailed flyer to

ten 90-minute psycho-education sessions. Most studies (n = 11) included one intervention group, compared with one control, or usual care, group. Three studies included two different intervention groups compared with a control group. One study compared the intervention group to national statistics. Refer to Appendix A (Tables A1 and A2) for detailed information about each included intervention

### **Theoretical Perspectives**

None of the studies explicitly stated the theoretical basis of their intervention. Often they simply built their case for the intervention based on previous literature on predictors and described how these types of interventions have worked in other populations. For example, Sherrill (1997) noted that “our review of the literature provided the conceptual framework for the development of the [intervention]” (p. 77).

### **Categorization of interventions**

All interventions were categorized by the target of the intervention, i.e., the predictor of MH service use the intervention attempted to change. See Appendix A Table A2 for the categorization of each intervention. This resulted in six broad categories. First, the MH knowledge category, containing six interventions, addressed participant MH knowledge. Second, the MH knowledge/attitudes category, with three interventions, addressed both participant MH knowledge and attitudes towards MH. Third, the MH knowledge/attitudes/logistical barriers category, with two interventions, addressed participant knowledge and attitudes as well as logistical barriers that may affect their ability to initiate or continue treatment. Fourth, the MH knowledge/family involvement category, with two interventions, addressed MH knowledge in the participant and family members; these interventions also encouraged family involvement in the participants’

treatment. Fifth, two interventions were categorized as care management interventions. Sixth, in three interventions, the intervention occurred in the participants' home, making it the locus of care.

### **Excluded studies**

Twenty-seven studies were excluded. Refer to Table 1 for the details of specific excluded studies. Most were excluded because they were not measuring MH out-patient treatment initiation or retention (n = 7), they were focused on reducing in-patient care (n = 7), or did not intend to increase out-patient care (n = 3). Several studies focused on the in-patient setting only (n = 2). Five were excluded because the interventions were based on collaborative care models. One was excluded because the intervention did not focus on increasing MH services in the participants, rather other social services. An additional two were excluded because they were focused on the family members of those with a mental health problem.

Table 1: Excluded studies

Study First Author (n = 27)	Reason Excluded
Acosta Badger Bernstein Ciechanowski Marchinko Jones Smith	did not measure MH treatment initiation, retention or medication adherence
Bjorkman Dyck Goldberg Killaspy McDonnel Puschner Slade	aimed to reduce inpatient care
Blondell Levin	inpatient setting
Solomon McCallion	intervention was with family members of those with MH problems
Cusack Evans Russell	did not intend to increase out-patient MH service use
Domino Jackson Jaycox Vera Unützer	collaborative care models
Stover	intervention addressing domestic violence

**Risk of bias in included studies**

See Appendix A, Table A3 for details on each quality indicator and for the total score of each study. All studies received a methodological rating of “good” (n = 4) or “fair” (n = 11). Total points assigned ranged from 12 to 24 points (M = 17.06, SD = 3.84). Most studies (n = 10, 66.7%) adequately concealed allocation of participants and

systematically sampled the participant population. None of the studies were able to blind participants to their treatment group, by the nature of the types of interventions under examination. All studies included equivalent treatment groups, where applicable, except for a single study in which the nature of the treatment as usual group was unclear. All studies included objective measures and/or blinded subjective raters; however, in one study, there were also unblinded subjective ratings included. Those providing the intervention were monitored in four studies (26.7%) to ensure that the intervention was delivered with fidelity. In terms of analyses, nine studies (56.3%) provided detailed loss to follow-up information, such as both the number lost and reasons for attrition given by group. Four studies (25%) gave only some of this information. Six studies (40%) lost less than 10% of participants to follow-up; three (18.8%) lost 21 - 50%. Only four studies (25%) included an intention-to-treat analysis.

### **Risk of bias by category**

The scores of all studies in each category were averaged to achieve an average quality score for each category. The care management category had the overall highest quality score (22.5); the home visit category had the lowest (13). See Table 2 below for quality scores by category.

Table 2: Quality Score by Category

Category	Score (M)	Quality
Care management	22.5	Good
MH knowledge/attitudes/logistical barriers	19.5	Fair
MH knowledge	17.2	Fair
MH knowledge/attitudes	16.3	Fair
MH knowledge/attitudes/family involvement	14	Fair
Home visit	13	Fair



## **Effects of interventions**

**Outcome 1: Attendance at any type of out-patient MH visit.** Table 3 displays the outcome measured and results for each intervention. Nine studies measured this outcome. All types of interventions, except for the MH knowledge and attitude category, showed a significant increase in the number of participants in the intervention groups who attended any type of MH out-patient visit compared to the control condition. Two of the three home visit interventions (66.7%) increased attendance.

Table 3: Intervention Effect on Attendance at Any Type of Out-patient MH Visit

Study	Category	Follow-up Period	Outcome Measured	Results
Azocar	MH knowledge	1 year	% of participants who attended at least one out-patient MH visit	Intervention: 15.2* Control: 9.28
Alvidrez	MH knowledge/attitudes	3 months	% of participants who attended at least one out-patient MH visit	Intervention: 75 Control: 76
Katon	MH knowledge/attitudes	1 year	% of participants who attended at least one out-patient MH visit (outside PC clinic)	Intervention: 27 Control: 31
			% of participants who attended at least one out-patient MH visit (at PC clinic)	Intervention: 3 Control: 11
McFall	MH knowledge/attitudes/logistical barriers	6 months	% of participants scheduled an intake appointment	treated:27.5*** control:7.1
			% of participants attended the intake	treated:22.6*** control:7.1
			% of participants enrolled in treatment	treated:19.4*** control:5.8
Sherill	MH knowledge/family involvement	unclear	% of dropout during continuation treatment	Intervention: 5 * Control: 20
Wang	Care management	6 months	% of participants who attended at least one out-patient MH visit (at PC clinic)	Intervention: 17.6* Control: 24.1
			% of participants who attended at least one out-patient MH visit (at MH specialist clinic)	Intervention: 34.8* Control: 27.3
		12 months	% of participants who attended at least one out-patient MH visit (at PC clinic)	Intervention: 14.9 Control: 21.0
			% of participants who attended at least one out-patient MH visit (at MH specialist clinic)	Intervention: 25.0 Control: 19.0
Dyches	Home visit	3 months	% of participants who attended at least one out-patient MH visit	Intervention: 45.1 ** Control: 37.4
Stoleru	Home visit	unclear	% of participants who attended at least one out-patient MH visit	Intervention: 100 Control: 25
Van Heeringen	Home visit	1 year	% of participants who attended at least one out-patient MH visit	Intervention: 51.2** Control: 39.8

\* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001, PC = primary care

**Outcome 2: Number of appointments of any type of out-patient MH visits.**

Table 4 displays the outcome measured and results for each intervention. Five studies measured the number of appointments with out-patient MH professionals. MH knowledge/attitudes/logistical barriers and care management increased the number of visits that participants made to MH services. However, of the two MH knowledge/attitudes interventions, only one intervention (50%) increased visits. The MH knowledge intervention did not significantly increase visits.

**Outcome 3: Initiation and adherence with psychotropic medication.** Table 5 displays the outcome measured and results for each intervention. Thirteen interventions measured psychotropic medication initiation and adherence. None of the interventions in the MH knowledge/attitudes/logistical barriers category measured this outcome. Of the interventions that did, all types of interventions increased adherence. However, of the six MH knowledge studies, only three (50%) significantly increased adherence. Of the two MH knowledge with family involvement studies, only one (50%) significantly increased adherence and only one (50%) care management study significantly increased adherence.

Table 4: Intervention Effect on Number of Out-patient MH Visits

Study	Category	Follow-up Period	Outcome Measured	Results
Simon (1)	MH knowledge	6 months	mean N of out-patient MH visits attended	Intervention: 1.94 Control: 1.89
			mean N of out-patient MH visits attended (to prescribing provider)	Intervention: 0.13 Control: 0.12
			mean N of out-patient MH visits attended (to non-prescribing provider)	Intervention: 0.80 Control: 1.02
Alvidrez	MH knowledge/attitudes	3 months	mean N of out-patient MH visits attended	Intervention: 3.5 * Control: 1.9
Katon	MH knowledge/attitudes	1 year	mean N of out-patient MH visits attended	Intervention: 4.5 Control: 3.7
Sirey	MH knowledge/attitudes/logistical barriers	3 months	proportion remaining in treatment <sup>1</sup>	More intervention participants remained in treatment than control participants*
		6 months	proportion remaining in treatment	More intervention participants remained in treatment than control participants*
			mean N of pharmacotherapy visits attended	No differences between groups (p=0.59)
			mean N of psychotherapy sessions attended	No differences between groups (p=0.94)
Wang	Care management	6 months	mean N of out-patient MH visits attended (at PC clinic)	Intervention: 0.4 Control: 0.6
			mean N of out-patient MH visits attended (at MH specialist clinic)	Intervention: 2.8 Control: 2.1
		12 months	mean N of out-patient MH visits attended (at PC clinic)	Intervention: 0.3* Control: 0.5
			mean N of out-patient MH visits attended (at MH specialist clinic)	Intervention: 1.9 Control: 1.7

<sup>1</sup> Percentages and mean N not published

\* p < 0.05, PCP = primary care provider

Table 5: Intervention Effects on Psychotropic Medication Initiation/Adherence

Study	Category	Follow-up Period	Outcome Measured	Results
Azocar	MH knowledge	1 year	consistency of antidepressant medication (ADM) use (number of days used, # of gaps in coverage, length of ADM gap)	Intervention: 260 days, 1.11 gaps*, 69.3 days Control: 251 days, 1.32 gaps, 79.1 days
		First 6 months	% of participants using full course of ADM	Intervention: 37 Control: 37
		Second 6 months	% of participants using full course of ADM	Intervention: 27.9 Control: 8.3
Azrin (1)	MH knowledge	2 months	% of participants adhering to prescribed medication, within groups (pre, post)	Intervention: 69.52, 92.01**
			% of participants adhering to prescribed medication, between groups	Intervention: 92.01** Control: 73.62
Boczkowski (1)	MH knowledge	3 months	% of participants with adherence with prescribed medication over 80%	Intervention: 66.7* PE: 25 Control: not significantly different from PE <sup>1</sup>
			% of participants with 100% adherence to prescribed medication	Intervention: 8.3* PE: 0 Control: not significantly different from PE
Boczkowski (2)	MH knowledge	3 months	% of participants with adherence with prescribed medication over 80%	Intervention: 25 Control: not significantly different from intervention <sup>1</sup>
			% of participants with 100% adherence to prescribed medication	Intervention: 0 Control: not significantly different from intervention
Ruoff	MH knowledge	9 months	% of participants adhering to prescribed medication	Intervention: 66 Control: 33 <sup>2</sup>
Simon (1)	MH knowledge	6 months	% of participants taking low dose of ADM for at least 90 days	Intervention: 43 Control: 39
			% of participants taking moderate dose of ADM for at least 90 days	Intervention: 22 Control: 18
Hornung	MH knowledge/ attitudes	1 year	% of participants adhering to prescribed medication	Intervention: 91 * Control: 76.1

Katon	MH knowledge/ attitudes	1 month	% of participants receiving adequate dosage of ADM (participants with major depression)	Intervention: 87.8 *** Control: 57.1
			% of participants receiving adequate dosage of ADM (participants with minor depression)	Intervention: 88.1 *** Control: 47.8
		3 months	% of participants receiving adequate dosage of ADM (participants with major depression)	Intervention: 75.5 ** Control: 50
			% of participants receiving adequate dosage of ADM (participants with minor depression)	Intervention: 79.7*** Control: 40.3
Azrin (2)	MH knowledge/ family involvement	2 months	% of participants adhering to prescribed medication, within groups (pre, post)	Patient + family guidelines: 76.24, 95.03*
			% of participants adhering to prescribed medication, between groups	Patient + family guidelines (PF): 95.03* Psychoeducation (C): 73.62
Sherill	MH knowledge/ family involvement	unclear	% of participants with two or fewer incidences of nonadherence <sup>3</sup>	Intervention: 60 Control: 71
Simon (2)	Care management	6 months	% of participants taking low dose of ADM for at least 90 days	Intervention: 47 Control: 39
			% of participants taking moderate dose of ADM for at least 90 days	Intervention: 30* Control: 18
Wang	Care management	6 months	% of participants initiating prescribed medication	Intervention: 30.4 Control: 35.1
		12 months	% of participants initiating prescribed medication	Intervention: 30.5 Control: 34.1
Dyches	Home visit	upon completion of training	% of participants adhering to prescribed medication	Intervention: 91* Control: 76.1

<sup>1</sup> Control % not reported

<sup>2</sup> Control group based on national statistic reported in: Bull SA, Hu XH, Hunkeler EM, et al. Discontinuation of use and switching of anti-depressants: Influence of patient-physician communication. JAMA 2002; 288:1403-1409.

<sup>3</sup> Nonadherence with medication was defined as missed doses, other alterations to the schedule, or use of alcohol or other contraindicated drugs.

\* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001; ^ p < 0.0001, ADM = antidepressant medication

## **Summary of Main Results**

Table 8 describes each category's effect on the three outcomes. All categories of interventions increased at least two of the primary outcomes. The care management interventions measured and increased all three outcomes. Three categories measured two of the three primary outcomes, but did increase the ones they measured: MH knowledge/attitudes/logistical barriers, MH knowledge/family involvement, and home visit. The MH knowledge category measured all three outcomes; these interventions increased attendance and medication initiation/adherence, but not number of appointments. The MH knowledge/attitudes category also measured all three, increasing medication initiation/adherence and number of appointments but not attendance.

Table 6: Summary of Each Category's Effect on the Outcomes

Category	Primary Outcomes	Significantly Increased Outcome	N of interventions with significant result/ N of interventions that measured the outcome
MH knowledge	Attendance at out-patient MH visit	Yes	1/1
	Number of appointments	No	0/1
	Initiation and compliance with medication	Yes	3/6
MH knowledge/ attitudes	Attendance at out-patient MH visit	No	0/2
	Number of appointments	Yes	1/2
	Initiation and compliance with medication	Yes	2/2
MH knowledge/ attitudes/ logistical barriers	Attendance at out-patient MH visit	Yes	1/1
	Number of appointments	Yes	1/1
	Initiation and compliance with medication	Did not measure	N/A
MH knowledge/ family involvement	Attendance at out-patient MH visit	Yes	1/1
	Number of appointments	Did not measure	N/A
	Initiation and compliance with medication	Yes	1/2
Care management	Attendance at out-patient MH visit	Yes	1/1
	Number of appointments	Yes	1/1
	Initiation and compliance with medication	Yes	1/2
Home visit	Attendance at out-patient MH visit	Yes	2/3
	Number of appointments	Did not measure	N/A
	Initiation and compliance with medication	Yes	1/1



## **Chapter 4: Discussion**

The main finding of this thesis is that care management pre-treatment interventions increased all primary outcomes: attendance, number of appointments and increasing medication initiation/adherence. Moreover, this category had some of the highest quality ratings. The results are more likely to be a true reflection of the effect of the intervention, rather than the effect of error and bias. In addition, care management interventions were most effective over a wide range of outcomes.

Based on the evidence, it appears that addressing MH knowledge and attitudes are not enough to increase these outcomes. It is only when additional predictors are also addressed, such as addressing logistical barriers or including family involvement, that the interventions increase all the outcomes they measured. It is unknown if, had these studies had measured all three outcomes, they would have increased all three.

Care management interventions may be particularly effective precisely for this reason, because they target multiple factors associated with MH service use. Moreover, several additional aspects appear to have made these interventions effective. The care management interventions are:

1. Comprehensive: addressed more than one factor;
2. Individualized: tailored to each participant, focused on the barriers specific to that individual and;
3. Provided follow-up: Followed up with participant to see if they were using services, and if current treatment was not effective, modifying the treatment plan.

Therefore, future interventions be individualized and provide follow-up, in addition to addressing multiple predictors of MH service use.

### **Overall Completeness and Applicability of Evidence**

The targets of these interventions fit with the current literature. Based on the literature of MH service use predictors, it logically follows that common elements of these interventions include addressing MH knowledge, attitudes, logistical barriers, one's social network and integration of care. In future reviews, perhaps focusing on improving one outcome at a time would provide for more powerful results for each particular outcome. Also, it may be of value to focus on studies of certain MH issues, to see if interventions vary across different types of MH issues. The current review can only be generalized to adults in out-patient settings. Moreover, studies that address medication initiation and adherence are probably different from studies designed to address psychotherapy use. The interventions also correspond to the literature on groups of individuals who are less likely to use MH services, such as interventions targeting older adults or racial and ethnic minority adults. It is unclear, however, whether different pre-treatment interventions are needed for different populations or settings.

### **Quality of the Evidence**

In terms of quality, all studies were rated at the “good” or “fair” level, based on Newell's behavioral intervention assessment tool. Most studies (n = 11, 68.8%) adequately concealed allocation of participants and systematically sampled the participant population, and all studies included equivalent treatment groups and objective outcome measures. However, monitoring to ensure that the intervention was delivered with fidelity was only undertaken in five studies. This presents concerns about the

consistency with which the examined intervention was delivered across treatment providers and across sites. Moreover, only four studies (25%) included an intention-to-treat analysis.

### **Potential Biases and Limitations in the Review Process**

The primary limitation to this review is the existence of a single reviewer. In the future, another researcher will conduct a search to see if any additional studies should be included, as well as assess the already included studies for quality. The current studies will be discussed and agreement reached about the categorization of the interventions. In addition, since the review yielded a small sample size, the research aims may not be adequately addressed, particularly the ability to determine which intervention components are most effective. Another limitation is the potential for publication bias; that is, scientific journals may reject manuscripts on interventions that did not significantly increase MH service use. Publishing null findings is important because knowledge can be gained from intervention strategies that were not effective, particularly if they were evaluated in well-designed trials.

### **Implications for Practice and Research**

Based on this review, several recommendations are evident. First, pre-treatment interventions need to be more explicitly theoretically based, which may lead to more powerful interventions that target the most important factors associated with service use or that more comprehensively target the range of factors involved. It was surprising that none of the interventions in this review included a strong theoretical basis and reasoning behind their methods; instead they referred to segments of the empirical literature on predictors of MH service use. Therefore, there is a need for a more intentional

application of theories and theoretically based interventions. More research is needed on why these interventions work, both from a theoretical perspective and also from a logistical perspective. In the future, the use of qualitative methods with participants in these interventions could shed light on which intervention components increased MH service use, as well as additional components that need to be added.

In terms of methodology, there is much left wanting in these interventions. More rigorous methods are needed. For instance, monitoring of intervention delivery is critical to ensure that the intervention is being delivered with fidelity across sites and study staff members. This was only present in a handful of reviewed studies. Future studies need to incorporate intent-to-treat analyses. It is unclear when these are not included whether attrition bias enhanced or decreased the effect of the intervention. This review also highlights the need for randomized controlled trials to evaluate these interventions with the highest level of rigor.

In spite of these limitations, the available evidence suggests that care management interventions show the greatest promise for improving MH service use outcomes. In the future, pre-treatment interventions should strive to be more comprehensive and individualized in order to have the greatest likelihood of engaging people in MH service use, ultimately improving MH symptoms and quality of life, as well as significant public health outcomes, such as disability and role impairment at the population level.

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## Appendix A: Detailed Tables of Intervention Characteristics

Table A1: Characteristics of Included Studies

Study	Interventions	N of Intervention Group	N of Control Group	Delivery Method	Duration	Type of MH Problem
Alvidrez	psychoeducation	32	37	in person	1 session, 15 minutes	no specific diagnosis
Azocar	depression education	460	512	written material mailed to patient	1 mailed flyer	major depression
Azrin (2 interventions)	patient + family guidelines	13	13	in person	1 session	no specific diagnosis
	patient guidelines	13				
Boczkowski (2 interventions)	behavioral-tailoring (BT)	12	12	in person	1 session, 30 to 50 minutes	schizophrenia
	psychoeducational (PE)	12				
Dyches	mobile crisis services	1187	1187	in person	1 session crisis consultation	no specific diagnosis
Hornung	psychoeducation	134	57	in person	Ten 90-min sessions	schizophrenia

Katon	MH knowledge and attitudes	108	109	in person	4 sessions with PCP, 2 with psychiatrist	major and minor depression
McFall	outreach	302	292	letter, telephone follow-up	1 mailing, followed by 15 minute telephone contact	PTSD
Ruoff	patient flowsheet/education	61	national statistics (N/A)	in person	1 meeting with PCP	major depression
Sherrill	family workshop	108	24	in person	1 half day workshop	major depression
	feedback	221	196	N/A	N/A	major depression
Simon (2 interventions)	care management	196	196	telephone	One 5 minute introductory phone call, two 10 to 15 minute calls at 2 and 4 months	major depression
Sirey	treatment initiation program	26	26	in person, telephone follow-up	three 30-minute individual meetings during first six weeks, two follow up phone calls at 8 and 10 weeks	major depression
Stoleru	midwife referral	7	4	in person	number of visits varied by participant	no specific diagnosis

Van Heeringan	special care	258	258	in person	1 home visit	suicidal ideation
Wang	telephone	304	300	telephone	number of telephone calls varied by participant	major depression

PCP = primary care provider

Table A2: Categorization of the Interventions

Target of Intervention	Interventions	Specific Factors Addressed
MH knowledge	Azocar Azrin (1) Boczkowski (1) Boczkowski (2) Ruoff Simon (1)	<p><b>All:</b></p> <ul style="list-style-type: none"> <li>information about MH diagnosis and MH treatment</li> </ul>
		<p><b>Azocar only:</b></p> <ul style="list-style-type: none"> <li>discussed that ADMs should not be discontinued without consulting a doctor and listed some common side effects;</li> <li>the best treatment for depression includes combined ADMs and psychotherapy treatment;</li> <li>ending treatment early increases the chance of relapse by 50%;</li> <li>self-help and coping strategies such as exercise, seeking out family and friends, and avoiding alcohol and drugs might be helpful; and</li> <li>how to contact other depression-related resources</li> </ul>
		<p><b>Azrin (1) and Boczkowski (1):</b></p> <ul style="list-style-type: none"> <li>discussed guidelines to increase medication adherence with participants (such as the use of the compartmentalized pill box, taking medications at the same time, place, or occasion each day, taking medications in the presence of the family member, having both the subject and the family member check the pill box, and jointly refilling the pill box at the start of each week with all medications)</li> </ul>
		<p><b>Ruoff only:</b></p> <ul style="list-style-type: none"> <li>Flowsheet with medication reference guide, and a major depression reference guide</li> </ul>

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**Simon (1):**

- Doctors received a report on each patient detailing their ADM dosage, repeat prescriptions, number of follow-up visits and treatment recommendations up to the doctor to follow through with recommendations

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MH knowledge/  
attitudes

Alvidrez  
Hornung  
Katon

**All:**

- knowledge of course of illness and available therapies
  - attitudes toward MH and medications
-

**Alvidrez only:**

Identified various attitudinal barriers to receiving psychotherapy e.g.;

- stigma of receiving MH services;
- fear of hospitalization/institutionalization;
- reluctance to work with a non-African American therapist;
- feeling pressured to divulge personal information or discuss irrelevant material;
- the lack of attention to religious beliefs/spirituality by therapists; and
- dissatisfaction when the therapist does not provide concrete solutions to problems

Addressed attitudinal barriers by discussing the following topics:

- how a medical-model view of psychiatric disorders could reduce stigma
- the specific conditions under which involuntary hospitalization could occur
- the importance of the patient's input in determining therapy goals and session topics
- the importance of talking with the therapist about conflicts, misunderstandings, or dissatisfaction with the treatment process
- how therapists could be different from their clients and still be helpful
- the receptivity of clinic therapists to discussing issues of religion/spirituality and incorporating them into the treatment

---

**Hornung only:**

- Discussed management of neuroleptic medications, strategies for coping with psychotic crises and relapses
-



**Katon only:**

- educated about the biology of depression, the mechanism of action of antidepressants, and potential side effects through pamphlets and a video
  - participants filled out questionnaire for their return visit to the PCP, designed to motivate patients to take an active role in their health care by writing down questions they had after reading the booklets and watching the videotape, indicating their current major depressive symptoms and any side effects to medication
- 

**Both:**

- physical/logistical barriers to accessing care
  - attitudes toward MH treatment
- 

**McFall only:**

- discussed attitudes toward VA health care system, participants' treatment history, and awareness of mental health resources
- 

MH knowledge/  
attitudes/logistical  
barriers

McFall  
Sirey

**Sirey only:**

- discussed misconceptions about depression and treatment;
  - perceived need for care;
  - perceived stigma;
  - cognitive distortions associated with depression; and
  - identified personal treatment goals
  - clinician used cognitive behavior and nonspecific therapeutic techniques (e.g., empathy, support) to address barriers and increase treatment self-efficacy
- 

MH  
knowledge/family

Azrin (2)  
Sherrill

**Both:**

---

involvement

- educated both the participant and family member at the same time
- 

**Azrin (2) only:**

- discussed guidelines to increase medication adherence with family members of participants (such as the use of the compartmentalized pill box, taking medications at the same time, place, or occasion each day, taking medications in the presence of the family member, having both the subject and the family member check the pill box, and jointly refilling the pill box at the start of each week with all medications)
- 

**Sherrill only:**

- addressed symptoms of mental illness, course and prognosis and treatments\
  - gave family members an opportunity to share their reactions and learn how to interact with their loved ones in a healthy, helpful way
- 

**All:**

- during home visits intervention workers recommended MH services
- 

**Dyches only:**

- stabilized the participant
- 

Home visit

Dyches  
Stoleru  
Van Heeringan

**Stoleru only:**

- developed rapport with participants
- 

**Van Heeringan only:**

- assessed reasons for non-compliance with referral to MH services
  - motivated participants to comply with referral
-

Care management

Simon (2)  
Wang

- **Both:**
  - assessed current use of medication, side effects, and severity of depression
  - provided feedback and recommendations to treatment providers
  - assisted the treatment providers with relaying treatment information back to participants
- 

**Simon only:**

- assessed needs for treatment and barriers to treatment
  - facilitated entry into treatment
  - monitored and supported treatment adherence
-

## Appendix A con't.

Table A3: Methodological Quality Indicators

Quality Indicator	Adequate concealment of allocation	Patients randomly selected	Patients blinded to treatment group (I or C)	Care-providers blinded to treatment group (I or C)	Except trial intervention, other treatments equivalent	Care-providers' adherence monitored	Detailed loss to follow-up information	% patients not in analyses	Intention-to-treat analyses	Outcomes measured objective/ blind	Study Score	Quality
Alvidrez	0	3	0	0	3	2	3	3	0	3	17	Fair
Azocar	0	3	0	0	3	3	3	3	3	3	21	Good
Azrin	3	0	0	0	3	2	3	2	0	3	16	Fair
Boczkowski	3	3	0	0	3	2	0	1	0	3	15	Fair
Dyches	0	0	0	0	3	1	2	3	0	3	12	Fair
Hornung	3	0	0	0	3	2	2	2	0	2	14	Fair
Katon	3	3	0	0	3	2	2	2	0	3	18	Fair
McFall	3	3	0	0	3	2	3	1	3	3	21	Good
Ruoff	0	3	0	0	3	2	3	1	0	3	15	Fair
Sherrill	0	0	0	0	3	2	2	2	0	3	12	Fair
Simon	3	3	0	0	3	3	3	3	0	3	21	Good
Sirey	3	3	0	0	3	3	0	0	3	3	18	Fair
Stoleru	3	0	0	0	0	0	3	3	0	3	12	Fair
Van Heeringan	3	3	0	0	3	1	3	2	0	3	15	Fair
Wang	3	3	0	0	3	3	3	3	3	3	24	Good