Program and Evaluation Plan:

Supportive Housing in Durham, North Carolina

By

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Abstract

Mental illness and homelessness are widespread societal problems, and are concurrent in many cases. Providing proper housing for this population can be challenging, yet housing models formulated in the past 25 years have shown remarkable improvements over traditional solutions (i.e. shelters and transitional housing). This issue is of particular concern in North Carolina in the wake of a lawsuit alleging that psychiatric patients were inappropriately housed in adult care homes in violation of the Americans with Disabilities Act. As part of the settlement from this lawsuit, funding has been made available for the establishment of 3,000 new “housing slots” for these individuals, including rental subsidies and treatment/support teams.

The Durham supportive housing program plans to construct new apartments to meet this need, connect mentally ill individuals with this housing, and provide necessary services. At the current time, each of these roles is filled by different organizations, resulting in inefficiency and fragmentation of care. The primary goal of this program is to provide homes and treatment to 16 mentally ill individuals by its third year of operation, based upon the supportive housing model recommended by the Substance Abuse and Mental Health Services Administration.

This paper will begin with a review of the supportive housing literature to provide useful examples of programs. It will subsequently describe the program to be instituted in the City of Durham, including its theoretical basis, its goals and objectives, and an implementation timeline. The following section will describe an evaluation method to both ensure that the program is being instituted in accordance with its plan and provide evidence to support its use. The paper will conclude with a discussion of the program’s strengths and weaknesses. Overall, this paper will serve to guide the activities of this program over a five year period, and provide a foundation for future development and expansion.
Introduction

According to the National Alliance on Mental Illness, 57.7 million Americans suffer from mental illness each year, and approximately 1.59 million Americans experience homelessness (NAMI 2008, SAMHSA 2011). Both mental illness and homelessness are serious problems, yet an estimated 200,000 individuals across the United States cope with both simultaneously (Johns Hopkins Institute for Policy Studies). Still others affected by mental illness live in unstable housing situations (e.g. temporarily living with friends or family) or in inappropriate institutional settings that restrict their interactions with the community. Due to their disabilities, these individuals often experience difficulties in living independently, further complicating their housing situations.

The supportive housing model was developed to serve the housing needs of this population while addressing their specific challenges. It provides stable apartments, as well as individualized supports, for each person involved in the program. First created in the early 1990’s, it has since been instituted in cities across the nation. It has recently been rated as an “evidence-based practice” by the Substance Abuse and Mental Health Services Administration, and has demonstrated considerable success at improving the outcomes of many psychiatric patients (SAMHSA 2010).

This model has become particularly important over the past year in North Carolina, as its tenets were cited in a settlement agreement between the US Department of Justice and the State of North Carolina. This settlement agreement, seeking to remedy discriminatory placement of mentally ill individuals in adult care homes, provides funding for their rent and support services in community-based housing (USDOJ 2012).
The purpose of this paper is to describe a program and evaluation plan for a supportive housing program in Durham which would provide such housing and services. The first section of this paper is a systematic review examining current and past examples of successful supportive housing programs, assessing the specific advantages and disadvantages of each design. The second section utilizes these programs, in addition to public health theories, to describe the goals, objectives, and implementation of a supportive housing program to be instituted in Durham. The third section focuses on the evaluation of this program to determine its fidelity to the program plan and its effectiveness. It also includes the description of a randomized controlled trial comparing this program to the existing support systems in the City of Durham. In its conclusion, this paper discusses of the strengths and weaknesses of this program, and makes recommendations for its continuation and expansion. It should ideally serve as a blueprint for a supportive housing program that can be replicated in other cities.

**Systematic Review**

**Introduction**

This literature review will identify supportive housing projects that have been instituted across the country, and will appraise their elements and outcomes based upon the needs of the mentally ill.

Supportive housing programs share a common framework, based upon five principles (Tabol, Drebing, and Rosenheck 2010):

1. Housing is “normal” (e.g. permanent, private, governed by a standard tenant agreement)
2. Support services are flexible to the needs of individual patients
3. Services and housing are separate (i.e. continued use of services is not requisite for living in the supportive housing community)

4. Choice in housing options is available

5. Housing is “immediate” (i.e. no requirement of a preparatory setting)

Individual programs often adhere incompletely to these values, but they should nevertheless serve as goals for projects of this type.

By analyzing successful examples of the supportive housing model, I will identify key components of the individual designs to utilize in my program and evaluation plan and consequently maximize their effectiveness. I will assess the weaknesses of each program to become aware of common pitfalls, and attempt to remedy them in my plan. Furthermore, through scrutiny of the methods used to examine outcomes, I will determine the appropriate measures by which to evaluate my program.

**Methods**

**Research Question**

For the purposes of this literature review, my research question was “What are some of the current examples of the supportive housing model, and what can be learned from their development, implementation, and evaluation?”

**Search Strategy**

With the assistance of Liza Cahoon, a UNC Health Sciences Librarian, I identified the MeSH terms associated with supportive housing for mentally ill patients. “Supportive housing” itself is not a MeSH term, and is not suitable for a database search as it is often used interchangeably in the literature with “supported housing,” “independent housing for the chronic mentally ill,” or even “parallel housing services” (Tabol, Drebing, and Rosenheck 2010).
Instead, I selected the MeSH term “homeless persons/psychology” and used it to search the PubMed database in conjunction with “housing.” To increase the applicability of articles, I added “United States” to the search and restricted the search to articles that had been published in English within the past 15 years. The final search term ““Homeless Persons/psychology”[MeSH] AND housing AND United States” yielded 164 results.

I cross-referenced this list of results with the 2010 review article of supportive housing programs by Tabol, Drebing, and Rosenheck (which examined programs incorporating the criteria of this model, regardless of which term they used for their identification) for relevance and adherence to the model. After excluding articles which were not included in this comprehensive review, I reviewed the titles and abstracts of the remaining articles for relevance to patients with mental illness and my research question. Finally, I examined the full text of the remaining articles for the inclusion of a program description and evaluation. Four studies met these inclusion criteria.

**Results**

**Pathways to Housing (Tsemberis and Eisenberg 2000)**

Pathways to Housing is a supportive housing program that was started in New York City in 1992, and has since become one of the plans recommended by the National Council on Disability (National Council on Disability). It has additionally been recognized for its adherence to the overarching principles of supported housing (Tabol, Drebing, and Rosenheck 2010). The goal of Pathways to Housing is to provide housing and potentially psychiatric and drug rehabilitation treatment to those who are “unable or unwilling” to utilize the city’s residential/treatment programs. The hypothesis of this study was that Pathways to Housing
would be more effective at maintaining patients in housing than the standard New York City model.

In this study, the housing retention of persons involved in the Pathways to Housing program is compared that of individuals the New York City continuum of care for the mentally-ill homeless. Pathways to Housing is designed as a housing-first program, in that it offers its “clients” permanent independent apartments upon enrollment. Enrollment occurs through referral from homeless shelters, as well as the outreach efforts of the program itself. Clients are assisted in conducting an apartment search from among the available units in the area, with an emphasis on their preferences. Program staff guide them through making the lease agreement, obtaining furniture and necessary appliances, and moving. Only after these steps have been completed is the client offered the services of the program, including physician visits, substance abuse counseling, and vocational training. These services are provided by “Assertive Community Treatment” (ACT) teams, yet clients are under no obligation to utilize any of them. Furthermore, the housing is not dependent upon the abstinence of a client from drugs and alcohol. Though positive steps are encouraged, clients are not at risk for losing their home over relapses. The city’s approach, based upon the recommendations of the Federal Task Force on Homelessness and Severe Mental Illness, is a stepwise-program based upon treatment compliance. Homeless patients initially reside in a homeless shelter, and as they continue to receive psychiatric and drug abuse treatment, they are boarded in a series of transitional settings ending in permanent housing (typically group homes and single-room-occupancies). However, progress through these settings can stall or reverse based upon the sobriety and overall health of the patient.

To compare these two models, the authors of this study contacted the New York City Human Resources Administration, which oversees the city’s housing and treatment program, for
data on the individuals whom this agency assisted. These data included age, sex, race, specific
diagnosis, whether or not the patient had substance abuse problems, and their housing status over
a 5 year period. The authors compared these data to similar information from the patients served
by Pathways to Housing, although there were significant differences between the two groups in
all variables except age. The overall housing stability of patients in each group was determined
by using survival analyses, with failures being defined as periods to unstable housing or
homelessness. A Kaplan-Meier product-limit survival model for progressively censored data was
utilized for this purpose due to the different entry times of patients into the programs. However,
this method neglected the significant demographic and diagnosis differences between the
patients in the two programs, and as a result, a forward stepwise Cox regression survival model
was necessary to determine the effect of each variable influencing housing retention while
holding all others constant.

The Kaplan-Meier survival model indicated that 88
remained stably housed over the course of the study period, compared to only 47
utilizing the city’s model. The Cox regression model confirmed that the program in which
patients were enrolled made a significant difference on their housing tenure, even controlling for
differences between the two groups. Only the age of patients was a greater determinant of
housing status, and the type of program even exceeded the influence of race and specific
diagnosis. These results strongly favor the Pathways to Housing model over more traditional
models employed by New York City.

Strengths of this program include its tailoring to the needs of individual patients, its
community integration, and its assurance of housing security. These components are designed to
ensure that patients in this vulnerable population have their distinct needs met while respecting
their dignity. By not clustering patients in a particular housing complex, group home, or facility, this program satisfies the legal requirements established in the 1999 Olmstead lawsuit for integration of mentally ill patients with the general population. Also, Pathways to Housing’s understanding attitude toward substance abuse recognizes the realities of the lives of many homeless patients, though it might conflict with the wishes of private landlords and should be negotiated thoroughly with them.

The greatest flaw of this evaluative study is the fact that its lead author is also the founder of the Pathways to Housing program. Despite the strong results, his involvement with the study is a likely major conflict of interest, and any financial involvement is not disclosed. An impartial analysis should either exclude the shareholders of each project or involve members of both. Other weaknesses include the lack of comparability between the groups served by Pathways to Housing and the city. Randomization would be useful in resolving this potential confounding, though it would likely require the approval of an institutional review board. Additionally, this study measures housing, but not the overall wellness of patients. To determine the superiority of a new housing and services model, an evaluation would need to show both increased retention of patients in housing and equivalent or improved health outcomes.

The Boston McKinney Project (Seidman et al. 2003)

The Boston McKinney Project was a program that provided two different housing options for homeless patients with mental illness in order to study the effects of each type. This project included both group homes and individual apartments, and consequently was rated as only having “high to moderate” adherence to the supportive housing model (Tabol, Drebing, and Rosenheck 2010). The goal of this project was to determine which setting was superior in terms of improving the neuropsychological function of residents in order to guide future housing
developments for this population. Their hypothesis was that group homes would improve the executive functioning of patients, though all patients would generally benefit from both housing interventions.

The group homes utilized in this study were “evolving consumer households,” in which residents gradually assumed increased responsibilities for chores and home management over the course of their stay. Each home of this model housed 6-10 formerly homeless patients in separate bedrooms, but communal living spaces. The independent apartments were described simply as “single-occupancy units” without any further elaboration on locations, amenities, or program staff support. All patients in this study remained in contact with a case manager, but their interaction with medical services and the availability of this assistance, though recorded, was not reported in this paper.

The authors recruited stable occupants (averaging 2 months of residence) from three psychiatric homeless shelters in the Boston area to be randomized to one of these housing models. Prior to their transfer to their new residences, the patients underwent 20 neuropsychological tests to establish a baseline “overall impairment index.” Patients did not differ significantly in their test results or their demographic characteristics between groups. Follow-up testing was conducted at an average of 18 months after placement time, and included the initial tests, with the addition of evaluations of the patient’s substance use, medication use and compliance, social connectivity, and time spent with case managers, mental health services, and living in the assigned housing condition. A Hotelling’s $T^2$ test and paired t-tests were used to determine improvement in neuropsychological function from baseline. An analysis of covariance model was used to assess differences between the two groups in function while controlling for
the other factors (e.g. substance use, medication use, time spent with case managers). These controls were instituted to isolate the effects of the specific housing model on patients’ function.

Patients who completed the study did not differ significantly in baseline characteristics from those who did not, and there were not significantly different retention rates between the group home and independent apartment groups. Among the patients who completed the study, the Hotelling’s $T^2$ and t-tests indicated that neuropsychological function, based upon the 20 subtype exams and the overall impairment index, had significantly improved from baseline in both housing assignments. However, the subtest focusing on executive functioning (the Wisconsin Card Sorting Test) showed a marked decline for patients randomized to independent housing, compared to an increase for those in group homes. The authors interpreted this difference of executive functioning as evidence that group homes, rather than supportive-housing style independent apartments, should be the preferred manner with which to house mentally-ill homeless patients.

A major strength of this program is its randomized nature, allowing both supportive housing and a common alternative to be compared directly. Such research, if properly conducted with housing meeting the gold standards of each model, can help to determine which best meets the needs of a population. Studies focusing on an individual model can, at best, only measure effectiveness. Randomization can also address confounding factors which might also be influencing a patient’s mental state. This issue is also corrected through the use of the analysis of covariance model in the statistical analysis portion of the study. Another strength of this study was the use of quantitative evaluation methods, which could help to eliminate the potential measurement bias of qualitative measures by applying equal, valid, and reliable assessments to each group.
The weaknesses of this study center on the actual design of the programs, which potentially betray the bias of the researchers. Their hypothesis was that a group home would improve outcomes more than independent housing, and coincidentally, the study focuses on the group home and its specific setup while providing only a cursory description of independent housing. It is unknown, from the limited data provided in this paper, exactly how much support was provided to the patients living independently from staff and medical professionals, as well as their living conditions and community integration. This study might not have actually compared “supportive” housing to group homes, but rather independent living with few supports for patients with significant needs. Additionally, as the authors state, the patients who were recruited had been living in a group setting at the shelter for 2 months, making a transition to independent living possibly more difficult. Nevertheless, the results of this study raise important questions about whether supportive housing is indeed the best option for homeless patients with psychiatric disorders.

HUD-VA Supported Housing (Cheng, Lin, Kasprow, and Rosenheck 2007)

The United States Department of Housing and Urban Development (HUD) partnered with the Department of Veterans Affairs (VA) in 1992 with a mission to provide housing and case management services to homeless veterans with mental illness and/or substance abuse. The resulting program, which emphasized independence as well as appropriate supports, was considered to have “very high adherence” to the principles of supported housing (Tabol, Drebing, and Rosenheck 2010). The HUD-VA program was very widespread at the time, serving over 1000 individuals in 19 different cities in the United States, and continues to be active in 2013. The authors’ hypothesis was that the HUD-VA program would improve both housing and clinical outcomes over the results of more traditional programs.
In order to establish the effectiveness of this model, a comparison was made between HUD-VA supported housing, case management without housing vouchers (but including traditional housing resources), and standard Veterans Affairs homeless services. The HUD-VA supported housing program utilized Section 8 housing vouchers, which serve to pay for standardized local rent (less a 30 intensive case management. Identical case management was provided to the second group, though case managers were tasked with using “standard” (not Section 8) housing resources to assist their clients. The third group operated via temporary case managers, who were assigned to veterans as needed to assist them in navigating community and VA resources. This method was the standard for Veterans Affairs prior to the HUD-VA program.

The authors recruited veterans who had been homeless for more than one month from four of the nineteen sites at which HUD-VA supported housing was active, and received their consent to randomize them between the three interventions. The patients were assessed at baseline for number of nights housed and homeless in the past 90 days, and subsequently interviewed at 6, 12, 18, 24, 30, and 36 months. Additionally, elements of the Addiction Severity Index, the Brief Symptom Inventory, the Lehman Quality of Life Interview were administered, and social support was assessed through questions regarding the number of people on whom the veterans could rely and their frequency of contact. There were no significant differences in any of these variables for patients at baseline. Comparisons between the three groups were accomplished initially through estimated linear models of outcomes, and calculation of the area under the estimated response curve. The authors later used a multiple imputation method that accounted for differential rates of follow-up between groups.
Using linear models, a significant improvement in the housing of veterans in the HUD-VA program was discerned from the standard program, though not between the HUD-VA and intensive case management. Across all other measures, there were no other significant differences between the three programs, except that the HUD-VA supported housing showed a slight decrease in the number of days on which alcohol was used. The authors attributed these results to differences in the follow-up rates between groups, with patients in HUD-VA group having a much higher follow-up rate than those in the standard care group. Further study showed a correlation between poor outcomes and incomplete follow-up, so a multiple imputation method was developed to impute missing responses based upon the available data. Through this method, the HUD-VA group showed significant differences in housing status from both other groups, as well as improvements in six of the substance abuse measures. This new method of data analysis yielded results that supported the authors’ hypothesis advocating for the HUD-VA supported housing program.

The design of this program and its evaluation are particularly strong. The program itself expands Section 8 housing, a program that is already in place for the poor. By expanding the scope of this program to include the mentally ill, these patients can attain significant freedom to choose from a variety of “normal housing” in their communities. By building on another program, startup costs can be minimized and funds can instead be used to provide excellent support services. The evaluation is highly effective, as it utilizes a randomized trial with two alternatives programs and a variety of measures to assess outcomes. The assessment not only includes medical scales and indices, but also consideration of factors that actually influence the daily lives of patients, like days of substance use.
The primary weakness of this evaluation is the data analysis, which gives the impression of being manipulated to yield positive results for the study. Though multiple imputation is an accepted method for many studies, it was not part of the initial proposal, instead being added after the results did not strongly endorse supported housing over traditional alternatives. Since follow-up was identified as a problem, future programs should include innovative methods to collect needed information from patients, rather than calculating results based upon incomplete data.

Boley Centers/Homelessness Prevention Project (Clark and Rich 2003)

The Boley Centers for Behavioral Healthcare in Pinellas County, Florida developed a comprehensive program to reduce homelessness in those with mental illness in 1988. This project was based upon access to housing, housing support services, and assistance in accessing other types of services, such as health care. Likely due to its lack of mental health services as part of its standard supports, the program was rated as having only moderate to low adherence to the concepts of supportive housing (Tabol, Drebing, and Rosenheck 2010). In this study, the Boley Centers Project was compared to a case-management-only program in terms of outcomes.

The Boley Center’s Homelessness Prevention Project offered guaranteed access to housing as the centerpiece of their program, along with housing support services and case management. Medical and rehabilitative services were available for residents as needed, but there was not a standing arrangement for offering this type of care. Housing means and conditions were not specified by the study. For the purposes of this study, this program’s data was combined with that of Project Return, another program in the same geographic area which offered a similar model of housing and services to the homeless with mental illness. Together, these programs were assessed against the programs of the Suncoast Center for Community
Mental Health. This center sponsored outreach and provided temporary case management for the homeless with mental illness. Many of the same services (counseling, medication management, housing search assistance) were accessible through these short-term managers, but access to housing itself was not a component of the Suncoast Center’s program.

For this study, the authors recruited patients who were entering each of these three programs, all of whom were diagnosed with mental illness and had unstable housing. These individuals were assessed at baseline, 6, and 12 months with a battery of tests examining their housing status (the Residential Follow-back Calendar), their psychiatric symptoms (the Modified Colorado Symptom Index), and their substance use (the Drug/Alcohol 6-Month Follow-Back Calendar). Patients themselves chose the program in which they enrolled, and as a result of this lack of randomization, the groups of study patients were significantly different between the programs in their history of homelessness, their psychiatric symptoms, and their days of alcohol and drug use. Consequently, using symptoms and substance use at baseline, the cohort was divided into three groups based upon their level of impairment to allow for reasonable comparisons. Due to the amount of missing data due to poor attendance at follow-up and participant attrition, random regression models were generated based upon the available outcomes data, and served as the primary analytical method.

The primary result of these models was the recognition of a different response to the models of care based upon the individual’s impairment level. Patients with a high level of impairment demonstrated greater improvements in their housing evaluations in the housing-based program. Patients of medium and low impairment, however, did not significantly differ in these outcomes between the two programs. Additionally, neither type of program resulted in statistically significant improvements in psychiatric symptoms or substance abuse for patients at
any level of impairment. The authors argued that these results should justify tailored interventions for patients, maximizing the effectiveness of the limited financing available to these programs. They suggest that more-expensive housing-based programs should be utilized only when necessitated by the poor condition of a patient.

The strength of this study is primarily its evaluation component, as the program itself is only vaguely outlined. The stratification of these patient into different groups based upon level of impairment is an excellent technique. Grouping patients who meet the description of “mentally ill and homeless” makes for an easy analysis, but there are real differences between these patients which can result in very different clinical outcomes. Unlike many studies, this evaluation can both recognize and reflect these differences. Furthermore, by measuring only housing status, psychiatric symptoms, and substance use of patients, the authors have discerned the factors which most directly affect quality of life.

The weaknesses of this study result from the lack of randomization and the large amount of missing data. It was the non-comparability of groups which necessitated the tiered analysis of patients, but this technique would provide even better results if patients could be randomly assigned to programs. Additionally, without randomization, there is considerable possibility for further confounding with patient characteristics that were not assessed. Missing data is also a chronic issue for studies of supportive housing, but could be addressed through visits at home from the study team, possibly at the same time as the patient’s case manager.

**Summary**

The supportive housing model offers a loose framework to organize programs, and each of these distinct programs shows the adaptability of this model to meet the needs of different communities. Though all shared common elements, their emphasis shifted based upon the needs
of their target population. For example, the HUD-VA program partnered each veteran with a case manager to assist in determining necessary services, while Pathways to Housing allowed their residents to individually choose which supports they received. This customizability, rather than strict compliance to the model, will be advantageous in the institution of the Durham supportive housing project.

These programs also demonstrate the different evaluation measures and strategies available for use in a housing program. The Boley Centers, in particular, identified the most important factors to the quality of life of their patient, specifically housing stability, psychiatric symptoms, and substance abuse. To optimize the evaluation, however, these assessments should compare a new supportive housing program to one (or more) established programs in the community to which patients had been randomly assigned. In this way, the Durham supportive housing program can assess its effectiveness objectively compared to alternatives.
<table>
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<th>Alternative Program Elements</th>
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| Tsemberis and Eisenberg | Pathways to Housing          | Independent housing, housing support services, voluntary ACT teams                | Transitional housing settings based upon clinical status, mandatory psychiatric and drug abuse treatment | Housing stability    | Program: 88  
Alternative: 47                                                          |
| Seidman et al           | The Boston McKinney Project   | Independent housing, case management, medical services available                 | "Evolving Consumer Household" group homes, progressive chore and house management, case management | Neuropsychological function (20 subtests assessing different impairments) | Program: participants had overall significant improvement, but declined in executive function  
Alternative: patients showed overall significant improvement, with no significant change in executive function |
| Cheng, Lin, Kasprow, and Rosenheck | HUD-VA Supported Housing (HUD-VASH) | Section 8 housing vouchers, intensive case management | 1. Intensive case management, assistance with finding housing  
2. Standard VA services, temporary case management | Clinical outcomes (housing stability, housing characteristics, physical and psychiatric health, substance use, social connectivity, quality of life) | Without multiple imputation  
HUD-VASH improved housing outcomes over standard care, slight decrease in days of alcohol use over both alternatives, no other significant differences  
With multiple imputation  
HUD-VASH showed greater improvements in housing outcomes over both alternatives, also significant decreases in days of alcohol use, days of intoxication, days of drug use, and drug problem index over standard care group |
| Clark and Rich          | Boley Centers/Homelessness Prevention | Independent housing, housing support services, case management, medical and therapy services available | Temporary case management, assistance with finding housing, medical and therapy services available | Housing stability, psychiatric symptoms, substance use | High Functional Status: Housing-based program resulted in improved housing stability over case-management-only  
Medium/Low Status: Housing-based model participants showed no improvements over alternative |
Program Plan

Overview

The closure of the Dorothea Dix Mental Hospital, as well as a recent lawsuit restricting the use of adult care homes, has left many of North Carolina’s mentally ill without adequate housing. A significant number of this group live in Durham, NC, and are currently living in emergency shelters or transitional housing (HUD 2011). Such unstable housing arrangements can prevent patients with psychiatric illness from obtaining appropriate treatment, and can lead to substance abuse and often imprisonment.

The Durham supportive housing program will partner with the local community to address this problem. It will recruit a diverse group of stakeholders, ranging from medical specialists to patient advocates to community-conscious builders, to accomplish this goal. By pooling both knowledge and resources, this administrative board will guide the construction of permanent housing and organize a team to provide necessary supportive services. Consequently, the mentally ill population served will experience a better quality of life, with a stable and supportive environment, fewer psychiatric symptoms, and decreased substance abuse.

Background

For some of the 57.7 million Americans who suffer from mental illness each year, this illness can be a temporary episode of anxiety or depression. For others, it is chronic, severe, and life-altering (NAMI 2008). Persistent mental illnesses, like schizophrenia, can make it impossible for individuals to live their normal lives. North Carolina alone is home to approximately 335,000 adults with serious mental illnesses (NAMI 2009).

In previous years, patients with severe and persistent mental illness were often institutionalized. Such settings were necessary for certain patients, but many would have
benefited more from minimal supports, along with interactions with the community. In 1990, Congress passed the Americans with Disabilities Act, prohibiting discrimination based upon disability. The 1999 Supreme Court case *Olmstead v. L.C.* clarified that this law also pertained to those with mental illness, and prohibited institutionalization beyond the “least restrictive setting” necessary for treatment and safety (Disability Rights NC 2010).

Housing for the mentally ill reached the forefront of public health issues in North Carolina in 2010, after a report of Disability Rights NC revealed that psychiatric patients in North Carolina were preferentially placed in adult care homes instead of community settings (Disability Rights NC 2010). The US Justice Department investigated these allegations, and found that North Carolina fails to provide appropriately integrated housing settings, as specified by the Americans with Disabilities Act. In August 2012, they reached a settlement with the State of North Carolina, establishing the Transitions to Community Living Initiative. This initiative funds housing, treatment, and job training for 3,000 of the patients affected by these changes (USDOJ 2012). With these patients moving out of long-term care homes, the necessity for housing communities that offer proper support to maintain the health and wellbeing of this vulnerable population becomes evident. Optimally, these patients will have the opportunity to live relatively independently, alongside members of the general population. To this end, scattered site housing, in which no more than 20

However, 250 individuals will be permitted to live in disability-neutral housing, in which more than 20

funded projects to meet a portion of this need (Melcher 2013, USDOJ 2012).
Context

Over the past thirty years, there has been an effort to transfer mentally ill patients from institutions into community settings. While this movement promised the integration of the mentally ill into the community, better living conditions, and appropriate psychiatric and medical treatment, it has many times resulted in loss to follow-up, homelessness, and early death (Nichols 2011). In recent years, positive strides have been made to reverse these outcomes by providing the mentally ill with Section 8 housing and through the establishment of Assertive Community Treatment (ACT) teams (Bazelon Center for Mental Health Law). However, housing and psychiatric/medical care are still often disconnected and disjointed. Existing organizations, such as CASA, provide housing and rental support, but require a separate service provider for psychiatric treatment and rehabilitation (Seyda 2013). An integrative model encompassing all of the necessities of the mentally ill, commonly known as “supportive housing,” would help to address these issues.

Such a plan would find it difficult to gain political support in the North Carolina legislature without evidence of its fiscal benefits, if not for the recent settlement. The current trend of spending reduction has not spared mental health services, and has been partially been responsible for the closures of many needed mental institutions, such as Dorothea Dix in Raleigh (Biesecker 2010). However, there is a growing body of evidence which indicates that supportive housing is cost-effective, particularly in comparison to the alternative of homelessness. Psychiatric patients living in this style of housing utilize hospital services with less frequency, and are more likely to report improvements in their symptoms and quality of life (Bazelon 2006). Though savings will likely be realized in the long-term, receiving the initial funding to develop supportive housing would still pose a political challenge under normal circumstances. In many
cases, developers must seek funding from a multitude of sources, including non-profit organizations, local, state, and federal governments, to finance their projects (Johns Hopkins Institute for Policy Studies).

Fortunately, a political window of opportunity opened recently with Disability Rights NC’s complaint to the U.S. Department of Justice. As a result of this lawsuit, there are currently both financial benefits for funding supportive housing and highly visible, expensive consequences for continuing to ignore this important issue (Bonner 2012). Housing for the mentally ill will likely be a priority for the state government over the next few years, and funding will be easier to acquire. To help navigate this process, there are guidelines available from the North Carolina Housing Finance Agency (NCHFA 2012). Additional funding for replication may be received from other states after the initial program is instituted and evaluated, as 11 other states are also reforming their housing programs at the direction of the US Department of Justice (Melcher 2013).

Apart from funding, actually designing and instituting innovative supportive housing programs will require the cooperation of all of the stakeholders. Psychiatrists, government officials, social workers, developers, patient advocates, and even patients themselves must have input in this process, and their involvement will help to ensure their support of the final plan. Moreover, their expertise in different elements of the process, and the communication between them, will lead to the creation of a plan which addresses the needs of all. It is this cooperation, however, that will pose a challenge to the development process. Though psychiatrists, developers, and even social workers may be easy to contact through personal connections, gaining the attention of governmental and patient advocacy organizations will require formal plans which they can review. Letters of intent and requests for information may be helpful in
utilizing the resources of these organizations to develop an initial model prior to formal cooperation. Eliciting the opinions of the patients themselves may also be problematic, as some psychiatric patients may be less amenable to serving on focus groups than the general population. Prior research will be useful in this pursuit, at least at the onset, as there are several published works identifying the housing preferences of this population (Schutt and Goldfinger 1996, Tanzman 1993, Owen 1996, Piat 2008). Coordinating meetings with all parties will be complicated, if not impossible, so contact with the stakeholders should be established early and often.

**Program Theories**

Establishing a program to provide supportive housing for the mentally ill is a community-level intervention, and as a result, the community organization theory is most directly relevant to its planning. However, it is also useful to consider the social ecological model, as the program must be designed to function and be evaluated on the individual, interpersonal, and environmental levels as well.

**Community Organization**

Community organization is a theory that begins with the identification of a problem by the community itself (issue selection/relevance), and proceeds as stakeholders become involved (participation) and cooperate (community capacity). Together, these groups can collectively identify the causes of an issue (critical consciousness) and work together to address and solve the problem. In the process, members gain knowledge and skills useful for leadership and recognize their collective power to institute change (empowerment) (National Cancer Institute).

Effective public health workers can recognize the priorities of their community and help to facilitate cooperation between various parties by serving as liaisons. This method of action has
been used to successfully establish supportive housing in other communities, and its strategies for stimulating change can be emulated (Montgomery et al.).

The social action aspect of this theory in particular, which emphasizes grassroots efforts and the empowerment of vulnerable populations, is particularly relevant to the issue of supportive housing (National Cancer Institute). In North Carolina, housing for the mentally ill has already been recognized as an issue of importance, but there is little communication between the various stakeholders. A coalition must be organized that includes not only physicians, social workers, and public health workers, but also patient advocacy organizations like Disability Rights NC. The participation of patient advocacy organizations will be especially helpful in utilizing the media to promote awareness and support, a key element of social action. The cooperation between these groups, enabled through community organization principles, can make positive changes a priority in this state.

**Social Ecological Model**

While community organization theory will assist in the institution of supportive housing, planning a housing community requires consideration of the social ecological model. This model defines the multiple levels of influence that can affect health, from individual behaviors and interpersonal interactions to community issues and widespread environmental factors. By operating with the social ecological model in mind, program designers can construct their program to positively affect each level of influence.

Though supportive housing projects require community-level investment and support for their construction, they are designed most directly to improve individual-level health by providing a stable home and both mental and physical health services. Outcomes can be evaluated at this level through examination of individual behaviors (Cheng et al.) and symptoms
(Seidman et al.). In addition, supportive housing is designed to integrate its residents into the community rather than isolate them. Such a strategy facilitates interpersonal relationships and can lead to greater awareness, as the mentally ill become perceived as friends and neighbors rather than a negative stereotype. On the societal level, a successful intervention designed and instituted locally can inspire replication in other cities, which itself is a stated goal of this project. The challenges facing the mentally ill are not exclusive to Durham, and a well-constructed program could potentially benefit this population across the state and the nation.

**Goals and Objectives**

**Goal:** Provide permanent housing for and improve the clinical outcomes of mentally ill individuals with unstable housing in Durham, NC.

**Short Term Objectives:**

1. By month 6, recruit partners from stakeholder groups to represent patients, health care providers, and care coordinators on the executive program board.

   **Activities:** Contact each organization (e.g. Disability Rights NC, National Alliance on Mental Illness) with a formal letter of intent, requesting a meeting and assistance in establishing a supportive housing program. Meet with organizations to clarify program organization and goals. Conduct monthly meetings with partners to address planning and funding issues.

2. By month 9, develop an outreach strategy to recognize mentally ill individuals who would benefit from the program, and assess their needs.

   **Activities:** Publicize program in psychiatric offices, facilities, hospitals, and homeless shelters. Contact case managers and social workers for assistance in identifying potential clients. Conduct interviews with selected patients to both quantify and qualify needs, as
well as ascertain barriers to existing housing. Tailor program as needed to address the specific concerns of interviewees.

3. By year 1, secure at least support services.

   Activities: Submit applications for housing loans and grants from the City of Durham (HOME and CDBG), the North Carolina Housing Finance Agency (Supportive Housing Development Program), and Section 811 of the US Department of Housing and Urban Development (Supportive Housing for Persons with Disabilities) (Seyda 2013). Apply to partner organizations for additional funding resources.

4. By year 2, begin construction on first housing complex.

   Activities: Consult with architect to design apartments that maximize accessibility for those with disabilities. Lobby City of Durham and Durham County for donation of infill lots. Cooperate with developer to obtain land, construction materials, necessary permits, and water, sewer, and electric connectivity for the complex.

Long Term Objectives:

1. By year 3, provide permanent housing to at least 16 mentally ill individuals at risk of homelessness in Durham, NC.

2. By year 3, establish a modified Assertive Community Treatment (ACT) team to offer support services to 100 psychiatrist, case manager/social worker, nurse(s), substance abuse counselor, and physical, occupational, and vocational therapists (Tsemberis and Eisenberg 2000).
3. By year 5, improve outcomes of clients by at least 10 psychiatric symptoms (Modified Colorado Symptom Index) and substance abuse (Drug/Alcohol 6-Month Follow-Back Calendar) (Clark and Rich 2003).

4. By year 5, expand program to include renovation of previously constructed duplexes, quadruplexes, and apartments to improve ability to house additional clients.

**Implementation**

The settlement between North Carolina and the US Department of Justice over housing for the mentally ill affords a window of opportunity for the implementation of this supportive housing project. However, in order to accomplish the goals and objectives proposed for this program within the necessary time frame, an ambitious project timeline must be observed.

Over the course of the first six months, program members’ efforts will be directed toward the goal of recruiting stakeholder groups. To this end, activities will include contacting each organization with letters of intent, meeting with their representatives to request involvement, and conducting monthly meetings with partners. These meetings will take place after standard business hours to accommodate the varying schedules of team members, and will take place in the conference rooms of member organizations on a rotating basis.

Within nine months, cooperation with stakeholder groups will lead to a more educated assessment of the needs of mentally ill individuals and the development of an outreach strategy. Case managers and social workers will be instrumental to achieving this goal, as they will help to identify potential clients and arrange interviews to elicit patient perspectives. Advertisements in psychiatric facilities, offices, and shelters will also permit self-referred individuals to participate in this process. These interviews will focus on clarifying the specific characteristics of housing
and services required by patients in Durham, and examine of the causes of unstable housing. Through this information, the program can be tailored to the population of its catchment area.

For year one, the goal is to secure at least HOME and CDBG grants from the City of Durham, loans from the North Carolina Housing Finance Agency, capital advances from Section 811 of the US Department of Housing and Urban Development, funds from the Transitions to Community Living Initiative, and miscellaneous aid and in-kind donations from partner organizations. This funding will allow for the continued operation of this program, new construction, and the comprehensive Assertive Community Treatment (ACT) team.

By the beginning of the second year, construction should begin on the first housing complex. The preliminary activities to meet this goal will focus on the acquisition of land from Durham County or the City of Durham, potentially through the donation of unused infill lots. Subsequently, team members will cooperate with the architect and developer to maximize the accessibility of the apartments, apply for the appropriate permits, and purchase building materials and water, sewer, and electrical connectivity.

By year three, it is the goal of this program to provide permanent housing at least 16 mentally ill individuals at risk of homelessness. These individuals will meet the state’s definition for “severe mental illness” or “severe persistent mental illness,” in order to be eligible for support under the Transitions to Community Living Initiative (USDOJ 2012). Further, though a criminal background check will be performed, only those who have been convicted for sex offenses or arson will be automatically excluded (Seyda 2013). To be eligible for existing federal funding and to use resources most efficiently to house the mentally ill, this program will apply for these 16 apartments to qualify as part of the 250 housing slots allotted as disability-neutral
housing (Melcher 2013, USDOJ 2012). At this time, a modified ACT team will also be fully activated. In order to comply with the settlement agreement, this team will operate with compliance to the Tool for Measurement of Assertive Community Treatment (TMACT) model (USDOJ 2012). The services of this team will be offered to all individuals in this supportive housing project, but utilization will not be requisite for continued residence.

Within the first five years, this supportive housing project will begin to demonstrate improvements in the outcome measures of symptoms and substance abuse for residents. It is a goal that, by this time, all individuals improve their clinical status by 10 Colorado Symptom Index and the Drug/Alcohol 6-Month Follow-Back Calendar (Clark and Rich 2003). Additionally, in this time period, the program will begin acquiring and renovating properties in addition to constructing new housing. Restoration of previously built apartments is a means to rapidly expand the housing capacity of this program. Renovation is an eventual goal for this project as it requires long term investments in upgrades and maintenance, which can vary significantly. Though new construction requires land acquisition, permits, and buildings, these expenses can be more easily foreseen and funded by capital advances and grants, making it more suited to a starting project.

This program’s overall budget is estimated to be $1,833,339 over 5 years, almost half of which will be used for these one-time construction costs. A new apartment building of 16 units with 10,400 square feet of floor space, including contractor and architectural fees and constructed with wood siding and a wood frame using non-union labor in Durham, NC, is estimated to cost 2008). Assuming 3

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least 1% of the building’s value should be set aside for these costs ($26,105 over 3 years). Additionally, if not donated by the City of Durham or Durham County, the land for this project will likely cost at least an additional

Personnel needs to support this project include project administrators, property managers, part-time maintenance workers, and a modified ACT team (Seyda 2013). One full-time administrator will conduct meetings, facilitate communication between partners, and design printed materials at an estimated cost of employees will become necessary only at year three of the program, in order to manage the new property and provide services for residents. A full-time property manager will conduct leasing, rent collection, and arrange for property maintenance, costing approximately orders as needed once the apartments have been constructed, estimated to cost

established as an extension of Carolina Behavioral Care, as 16 patients do not require a full-time team. By structuring this team as part of the existing organization, it will eliminate the need for hiring and training of new providers and supervisors, and minimize the cost to an estimated $160,000 per year, assuming 16 patients ($320,000 over 2 years) (NAMI 1999).

Advertising costs will be the other primary expenditure of this project, as they will utilize printed materials to inform both providers and potential residents. Professional printing costs for posters and brochures are estimated at program. Additionally, a fund of cover discretionary spending and unforeseen expenditures.
Logic Model

Assumptions: Supportive housing programs have been shown to improve housing (Tsemberis and Eisenberg 2000, Cheng, Lin, Kasprów, and Rosenheck 2007), psychiatric (Seidman et al. 2003, Cheng, Lin, Kasprów, and Rosenheck 2007), and substance abuse outcomes (Cheng, Lin, Kasprów, and Rosenheck 2007). Supportive housing is an evidence-based practice preferred by both the Federal (SAMHSA 2010) and North Carolina State (NCHFA 2012) governments. Assertive Community Treatment (ACT) teams are effective treatment for those with mental illness and/or substance abuse disorders (Tsemberis and Eisenberg 2000).
<table>
<thead>
<tr>
<th>Resources/Inputs</th>
<th>Activities</th>
<th>Outputs</th>
<th>Outcomes</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>People:</strong></td>
<td>• Conduct monthly meetings with partners to address planning and funding issues</td>
<td>• Increased cooperation between stakeholders in the community</td>
<td>Short Term:</td>
<td>• Established at least 5 housing complexes (new construction and/or property renovation)</td>
</tr>
<tr>
<td>• Psychiatrist</td>
<td>• Work with social workers/case managers to identify potential residents</td>
<td>• Developed foundation for ACT team</td>
<td>• Recruited partners from stakeholder groups</td>
<td></td>
</tr>
<tr>
<td>• Social Worker/Case Manager(s)</td>
<td>• Interview patients to assess needs and identify barriers</td>
<td>• Identified potential residents to individually contact when leasing process begins</td>
<td>• Established outreach program for homeless, mentally ill individuals</td>
<td></td>
</tr>
<tr>
<td>• Public Health Worker</td>
<td>• Consult with architect to maximize accessibility of apartments</td>
<td>• Determined effective policies and targeted advertising strategies</td>
<td>• Secured at least $1 million in funding for construction and services</td>
<td></td>
</tr>
<tr>
<td>• Patient/ Patient Representative(s)</td>
<td>• Cooperate with developer to obtain land, materials, permits, connectivity</td>
<td>• Began preparations for building</td>
<td>• Began construction on first complex</td>
<td></td>
</tr>
<tr>
<td>• Architect/Developer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Organizations:</strong></td>
<td>• Contact organizations with information about project and request assistance</td>
<td>• Recruited partners with legal and media advocacy experience</td>
<td></td>
<td>• Provided permanent housing for &gt;50% of individuals with mentally illness with unstable housing in Durham, NC</td>
</tr>
<tr>
<td>• Disability Rights NC</td>
<td>• Publicize program through partner organizations</td>
<td>• Enabled program awareness and advertising across a wider network</td>
<td></td>
<td>• Provided comprehensive support services to supportive housing residents</td>
</tr>
<tr>
<td>• National Alliance on Mental Illness</td>
<td>• Observe ACT team in action</td>
<td>• Analyzed strengths and weaknesses of current ACT team organization and operation</td>
<td></td>
<td>• Significantly decreased substance abuse in residents</td>
</tr>
<tr>
<td>• Carolina Behavioral Care</td>
<td></td>
<td></td>
<td></td>
<td>• Improved daily clinical symptoms of residents</td>
</tr>
<tr>
<td>• Assertive Community Treatment (ACT) teams</td>
<td></td>
<td></td>
<td></td>
<td>• Integrated individuals with mentally ill into the local community</td>
</tr>
<tr>
<td><strong>Funding:</strong></td>
<td>• Lobby city and county for land donation</td>
<td>• Increased budget allows construction of future developments</td>
<td>Long Term:</td>
<td></td>
</tr>
<tr>
<td>• City of Durham HOME and CDBG grants</td>
<td>• Submit applications for loans/grants for construction and services</td>
<td>• Increased budget allows more comprehensive services to be provided</td>
<td>• Provided permanent housing to at least 16 mentally ill individuals</td>
<td></td>
</tr>
<tr>
<td>• North Carolina Housing Finance Agency loans</td>
<td>• Apply to partner organizations for additional funding</td>
<td>• Adequate funds allow for continuation of program</td>
<td>• Established modified ACT team and provide services to 100 residents</td>
<td></td>
</tr>
<tr>
<td>• HUD Section 811 capital advance</td>
<td></td>
<td></td>
<td></td>
<td>• Improved psychiatric and substance abuse outcomes of patients by 10</td>
</tr>
<tr>
<td><strong>Resources:</strong></td>
<td>• Align program with Department of Health and Human Services guidelines</td>
<td>• Implementation of evidence-based supportive housing program</td>
<td></td>
<td>• Expanded program to include property renovation</td>
</tr>
<tr>
<td>• Permanent Supportive Housing</td>
<td></td>
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<tr>
<td>• Evidence-based Practices Kit</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time</strong></td>
<td>• Conduct preliminary research on community needs, resources, and stakeholders</td>
<td>• Program objectives met in an organized and timely manner</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Evaluation Plan

Evaluation Rationale

On its most basic level, the evaluation of the Durham supportive housing program ensures that the program is meeting its objectives. The short-term and long-term objectives set forth are ambitious, and the determination that they are being met shows that the program is “working.” An assessment will also reveal which of these objectives have remained unattained, allowing for optimization of efforts focusing on correcting such impairments. Both the successes revealed by these assessments and the responses to them can help justify funding the program to the numerous organizations providing financial support. Funders prefer contributing to a program that can demonstrate its successes, but is also nimble enough to recognize and manage its mistakes. As this housing project, in particular, will require more up-front financial support than traditional shelters, it is important to show that the money is being well spent. Additionally, a program evaluation can provide valuable information for similar programs being instituted elsewhere (CDC 2011). Evaluations of other programs, as discussed in the systematic review section, have been instrumental in crafting this program and evaluation plan.

To assess this supportive housing program, an evaluator would need to have sufficient knowledge of the applicable legal issues, the process of construction, and the treatment of mental illness to understand and critique specialists in each area. Such varied skills would be rare to find in any one individual, and thus a team approach to evaluation would be most appropriate for this program. Although internal evaluators are commonly utilized due to their familiarity with the program, their status as part of the original team can hinder them from performing the objective analysis of an external evaluator. The external evaluator can offer a novel perspective to improve the intervention and make necessary criticisms without jeopardizing the team atmosphere (W.K.
Kellogg Foundation 2004). Additionally, the use of an external evaluator can help avoid the appearance of conflict of interest within the assessment of a program, as occurred within the Pathways to Housing program evaluation (Tsemberis and Eisenberg 2000). However, a full-time external evaluator is considerably more expensive than an internal source. Due to the advantages and disadvantages of each type of evaluator, the inclusion of both sources on the evaluation team is preferable. The internal evaluators would conduct much of the assessment using their familiarity with the program, while the external consultants would utilize their resources and experience to ensure objectivity of the evaluation. As a member of the evaluation team, my role will be to serve as one of these internal evaluators, facilitating collaboration with the external consultant and working to accurately assess the program to maximize its chances for success (W.K. Kellogg Foundation 2004).

While all stakeholders need not be represented on this evaluation team, each should be contacted to establish their key questions relating to the project. The program’s medical staff will likely focus on the objectives relating to clinical outcomes and ACT teams, while the developer will want to ensure that appropriate progress has been made on construction and renovation projects. By holding periodic meetings with all stakeholders present, as well as smaller focus groups occasionally, these different interests can be established and arrangements can be made for the assessment of specific questions (W.K. Kellogg Foundation 2004). It may also be advantageous to reach out to other community organizations helping the mentally ill homeless as part of the evaluation process, both to ascertain the questions used in their evaluation and possibly form a comparison group of patients.

Such outreach may present difficulties in the program evaluation process, as political factors can be difficult to anticipate and overcome (Bamberger, Rugh, and Mabry). It may be
difficult to find another program (e.g. a homeless shelter) willing to provide a comparison group for the analysis, as they may be concerned about losing their funding if demonstrated to be less effective. Another potential political challenge to evaluation is addressing the requirements and concerns of an institutional review board, as the best data would be obtained by randomizing patients to supportive housing or a comparison intervention. Such randomizations can be ethically questionable, but have been supported by institutional review boards in two of the studies examined (Seidman et al. 2003, Cheng, Lin, Kasprow, and Rosenheck 2007). However, many other major challenges to the evaluation process can be prevented through early planning. As this evaluation is being planned prior to the institution of the program, the expenses of assessment can be incorporated into the initial budget, and sufficient time can be allotted to allow for in-depth evaluation. Additionally, baseline data can be obtained as patients are provided housing, eliminating the need to recreate such information (Bamberger, Rugh, and Mabry). By forestalling such concerns, efforts during the evaluation can be directed toward solving unexpected issues as they arise and collecting data.

Evaluation Design

Both the process and the outcomes of this program should be evaluated, yet these require markedly different study designs. Examining the process objectives involves an in-depth review of the program’s functioning, making an observational design most appropriate. A randomized controlled trial will produce the most accurate data on the program’s effectiveness in terms of outcomes. As a result, a combination of two different study designs should be utilized to comprehensively evaluate this program.

An observational study design is particularly useful for collecting the data about this program, its staff, and its clients. Adherence with the program plan can be determined using this
data. A single-group time-series design can be used for this purpose, as it can elucidate the process by which this supportive housing program meets its objectives over the course of the implementation period (Issel 2009).

A randomized controlled trial, on the other hand, will assess the outcomes of this program compared to its conventional alternative. Though expensive and complex to organize and conduct, experimental designs offer several benefits in program evaluation. Randomization, in which individuals are randomly assigned one intervention or the other, allows two approximately equivalent groups to be formulated. The randomization process helps to eliminate the bias produced by confounding factors, such as age, sex, or race. Theoretically, the only difference between these two groups is the intervention to which they were assigned, and thus the intervention itself is attributed for any difference in outcomes between the two groups. Such a trial would allow a causal relationship to be established between supportive housing and improved outcomes in patients, helping to justify the intervention for continued funding and wider implementation (Issel 2009).

**Evaluation Methods**

The observational study will rely upon interviews with program staff and clients and document review, yet both qualitative and quantitative data will be collected through these methods. Interviews with the program staff and patients are the most important qualitative measure, and will be conducted with all involved due to the small size of this program. Due to time constraints as this program grows, a random purposeful sample of patient interviews will be preferred to ascertain generalizable opinions without conducting interviews with all participants (Issel 2009). These interviews will be standardized but open ended, allowing for elaboration on the part of interviewees as well as comparability between answers. Interviews will not only focus
on what has occurred within the program and the reasons why, but will also solicit suggestions for improvement. Focus groups of patients would be useful, but pose difficulties with this particular population due to scheduling difficulties and their potentially inhibited ability to maintain attention on the task. Written surveys of patients are similarly problematic due to literacy issues (Kellogg 2004). Document review as part of the observational study will have both qualitative and quantitative elements. Qualitatively, records will show the reasons for different decisions made in the program, as well as feedback from stakeholders, partner organizations, and clients. From a quantitative perspective, these documents can be used to assess fidelity with both the supportive housing model itself (Substance Abuse and Mental Health Services Administration 2010), and with the ACT team models required by the State of North Carolina (United States Department of Justice 2012). These fidelity measures code the inclusion or exclusion of program elements numerically, yielding an overall score by which a program’s adherence to the model can be judged.

The randomized controlled trial will rely upon quantitative methods by necessity, as they allow for direct comparison between the intervention and the control. Pre- and post-tests should be administered to all individuals in each group as part of the trial (Issel 2009). As these tests will be essential to prove the effectiveness of supportive housing, it is critical to select appropriate tools to measure the outcomes of interest. These tools must be equal, valid, and reliable in their measurements between groups, and should be supported in the scientific literature. Clark and Rich (2003) assessed patient psychiatric symptoms and substance abuse with two such tools, the Modified Colorado Symptom Index and the Drug/Alcohol 6-Month Follow-Back Calendar. This evaluation will also utilize these tools, as the outcomes they assess
are most important to the quality of life of patients, though quality of life will also be assessed using the Lehman Quality of Life Interview (Cheng, Lin, Kasprow, and Rosenheck 2007).

**Evaluation Planning Tables**

**Short Term Objective**

patients, health care providers, and care coordinators on the executive program board.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participant(s)</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were partners from each stakeholder group (e.g. patient advocates, health care providers) recruited by month 6</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>Were preliminary meetings held with each organization to establish partnerships</td>
<td>Evaluation Team</td>
<td>Document Review</td>
</tr>
<tr>
<td>Did any stakeholder groups decline to cooperate</td>
<td>Program Staff</td>
<td>Staff Interviews</td>
</tr>
<tr>
<td>Were monthly meetings held with partners</td>
<td>Evaluation Team</td>
<td>Document Review</td>
</tr>
<tr>
<td>What suggestions were made for improving this program by stakeholder groups they feasible</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>What went well with these meetings</td>
<td>Program Staff</td>
<td>Staff Interviews</td>
</tr>
<tr>
<td>What was challenging about these meetings were learned</td>
<td>Program Staff</td>
<td>Staff Interviews</td>
</tr>
</tbody>
</table>

**Short Term Objective**

individuals who would benefit from the program, and assess their needs.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participant(s)</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was an outreach strategy to recognize mentally ill individuals who would benefit from the program developed by month 9</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>Which facilities, offices, shelters, and hospitals agreed to allow outreach/publicity</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>Evaluation Questions</td>
<td>Participant(s)</td>
<td>Evaluation Method</td>
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<tr>
<td>-------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Were other homeless support organizations (e.g. soup kitchens, shelters) recruited for outreach and publicity partners groups</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>Were potential clients identified</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>Were interviews with patients conducted to assess needs</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>What were the most important concerns for patients</td>
<td>Program Staff, Residents</td>
<td>Staff Interviews, Patient Interviews</td>
</tr>
<tr>
<td>What barriers to housing were recognized based on interviews</td>
<td>Program Staff</td>
<td>Staff Interviews</td>
</tr>
</tbody>
</table>

**Short Term Objective**

construction and provide support services.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participant(s)</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was at least funding secured by year 1</td>
<td>Evaluation Team</td>
<td>Document Review</td>
</tr>
<tr>
<td>Were applications for loans and grants submitted on time How many were submitted</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>Were there any program changes necessary as a requirement for this funding</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>Were there any funding refusals reasons given</td>
<td>Program Staff</td>
<td>Staff Interviews</td>
</tr>
<tr>
<td>Were any funds or in-kind donations pledged by partner organizations</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review</td>
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**Short Term Objective**

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participant(s)</th>
<th>Evaluation Method</th>
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</thead>
<tbody>
<tr>
<td>Did construction begin on the first housing complex by year 2</td>
<td>Evaluation Team</td>
<td>Document Review</td>
</tr>
<tr>
<td>What challenges were encountered in this process What lessons were learned</td>
<td>Program Staff</td>
<td>Staff Interviews</td>
</tr>
</tbody>
</table>
Long Term Objective

individuals at risk of homelessness in Durham, NC.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participant(s)</th>
<th>Evaluation Method</th>
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<tbody>
<tr>
<td>Did at least 16 mentally ill individuals receive permanent housing through this program by year 3</td>
<td>Evaluation Team</td>
<td>Document Review</td>
</tr>
<tr>
<td>How were these individuals selected randomized to supportive housing as part of the program evaluation</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>Did they receive federal, state, or local rent subsidies what process did they obtain this funding</td>
<td>Program Staff, Evaluation Team, Residents</td>
<td>Document Review, Staff Interviews, Patient Interviews</td>
</tr>
<tr>
<td>Did the housing meet the needs of residents</td>
<td>Residents</td>
<td>Patient Interviews</td>
</tr>
<tr>
<td>What challenges were encountered during the move-in process learned</td>
<td>Program Staff, Residents</td>
<td>Staff Interviews, Patient Interviews</td>
</tr>
<tr>
<td>Was there any turnover of residents reasons given for leaving by those who moved</td>
<td>Program Staff, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
</tbody>
</table>

Long Term Objective

(ACT) team to offer support services to 100

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participant(s)</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was an ACT team established to offer services to 100 individuals in housing by year 3</td>
<td>Evaluation Team</td>
<td>Document Review</td>
</tr>
<tr>
<td>What went well in the organization of the ACT team</td>
<td>Program Staff, ACT Team</td>
<td>Staff Interviews</td>
</tr>
<tr>
<td>What were the challenges of the organization process What lessons were learned</td>
<td>Program Staff, ACT Team</td>
<td>Staff Interviews</td>
</tr>
</tbody>
</table>
Was the modified ACT team organized in compliance with the TMACT model

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participant(s)</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were all residents offered ACT team services</td>
<td>Evaluation Team</td>
<td>Document Review</td>
</tr>
<tr>
<td>How many residents opted to receive these services</td>
<td>Evaluation Team</td>
<td>Document Review</td>
</tr>
<tr>
<td>How many residents declined these services reasons given</td>
<td>Program Staff, ACT Team, Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>Were residents satisfied with their level of care from the ACT team suggestions on how to improve care</td>
<td>Evaluation Team, Residents</td>
<td>Document Review, Patient Interviews</td>
</tr>
</tbody>
</table>

Long Term Objective

in 2 clinical measures: psychiatric symptoms (Modified Colorado Symptom Index) and substance abuse (Drug/Alcohol 6-Month Follow-Back Calendar)

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participant(s)</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were psychiatric symptoms improved by at least 10 measured by the Modified Colorado Symptom Index</td>
<td>ACT Team, Evaluation Team, Residents</td>
<td>Modified Colorado Symptom Index</td>
</tr>
<tr>
<td>Was substance abuse decreased by at least 10 measured by the Drug/Alcohol 6-Month Follow-Back Calendar</td>
<td>ACT Team, Evaluation Team, Residents</td>
<td>Drug/Alcohol 6-Month Follow-Back Calendar</td>
</tr>
<tr>
<td>Did residents report an overall improved quality of life</td>
<td>ACT Team, Evaluation Team, Residents</td>
<td>Lehman Quality of Life Interview</td>
</tr>
<tr>
<td>Were there any significant differences in either outcome between the individuals who received ACT team services versus those who did not</td>
<td>Evaluation Team</td>
<td>Modified Colorado Symptom Index, Drug/Alcohol 6-Month Follow-Back Calendar, Patient Interviews</td>
</tr>
<tr>
<td>How did the outcomes of residents in this program compare to recipients of typical homeless supports (the comparison group)</td>
<td>Evaluation Team</td>
<td>Modified Colorado Symptom Index, Drug/Alcohol 6-Month Follow-Back Calendar</td>
</tr>
</tbody>
</table>
Long Term Objective

constructed duplexes, quadruplexes, and apartments to improve ability to house additional clients.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participant(s)</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did this program expand to include renovation projects by year 5</td>
<td>Evaluation Team</td>
<td>Document Review, Staff Interviews</td>
</tr>
<tr>
<td>What challenges were encountered during this expansion learned</td>
<td>Program Staff</td>
<td>Staff Interviews</td>
</tr>
</tbody>
</table>

Institutional Review Board Considerations

Institutional review boards (IRBs) have been established across the nation to protect the rights of individuals involved in research studies. The Durham supportive housing program and its evaluation will apply for approval by the local IRB, as this program involves the participation of a number of vulnerable populations, and will be published and presented to allow for replication.

The risk and confidentiality concerns of this evaluation are minimal, and consequently the ethics of studying the homeless and mentally ill populations will become the key issues to address with the IRB. Providing housing and services to these individuals involves minimal hazards, and even the comparison group is not being assigned to homelessness, but rather will receive the standard homeless supports provided by the City of Durham. Confidentiality of data will similarly be maintained, as HIPAA standards will already be instituted due to the involvement of an ACT team with the program. Potentially sensitive information regarding the patients, such as their substance abuse and symptom evaluations, will be de-identified prior to their use by the evaluation staff. Obtaining appropriate consent from these patients, however, will pose a challenge. The mentally ill and homeless populations tend to have low literacy, and
consequently consent forms will likely need to be simplified beyond the recommended 8th grade reading level (Issel 2009). The possibility of coercion, by offering a chance for housing in exchange for study participation, is a greater problem. Many patients may decline to participate in the study further if randomized to the conventional supports, and may feel animosity toward those who received housing and the program staff. While not ideal, these realities are inherent to this study design. Despite these limitations, other similar randomized supportive housing interventions have received IRB approval (Seidman et al. 2003, Cheng, Lin, Kasprow, and Rosenheck 2007).

Though the potential risks of involvement in this evaluation research are minimal, the UNC institutional review board notes that vulnerable populations require the “special protection” of the board (UNC Office of Human Research Ethics 2012). In recognition of this issue, this program will apply for a full review, and is committed to comply to the fullest extent with all recommendations to protect the rights and welfare of the patients involved.

**Dissemination**

In order to facilitate the improvement, continued support, and potential expansion of this program, its evaluation results must be disseminated appropriately. Partner and stakeholder organizations involved in the program, like the National Alliance on Mental Illness, will receive verbal presentations of Powerpoint slides from program staff with specific details about how this program has affected their particular interest group. These organizations should receive updates periodically throughout the evaluation period, as they can offer constructive criticisms based upon feedback they have received. Funding organizations, such as the North Carolina Housing Finance Agency, will receive written reports of findings at the end of each funding period, along with a detailed budget to demonstrate how their financial support was utilized. Additionally,
though not directly involved with the program, the larger program planning and advocacy community must receive these results to inform and improve programs elsewhere. To achieve this broader dissemination, the program model and evaluation results will be submitted to academic journals for publication. Psychiatric Services, in particular, published three of the studies examined in the systematic review, and thus would likely have both an editorial board and readership interested in the results of this supportive housing project.

To ensure that these results are convincing as well as widespread, Abelson’s five properties of persuasive data should be considered in the planning process. Credibility can be established for this program through the use of a randomized controlled trial, as well as by employing an external evaluator to present a balanced view. The external reviewer can also contribute to the articulateness of reports, ensuring clarity of the details. Generalizability and interest level are best determined through careful selection of target audiences, as described above. Only the effect magnitude observed is beyond the control of program evaluators, yet with a program persuasive by all other criteria, even negative results can be translated to improvement for this program and others like it (Issel 2009).

**Discussion**

The Durham supportive housing program, like all other programs, has both strengths and weaknesses. By identifying them, problems can be anticipated prior to crisis, and effective techniques can be expanded.

On the positive side, the Durham supportive housing program uses an evidence-based model to provide homes for mentally ill patients. It utilizes the social ecological model and the principles of community organization, giving it a firm basis in public health theory. It is further
designed based upon a systematic review of supportive housing projects across the United States, and tailored to meet the specific legal requirements for housing in North Carolina, as described in the Transitions to Community Living Initiative. It will include the expertise of many different stakeholders, and will prioritize the wants and needs of the mentally ill population that it serves. Further, it utilizes a robust evaluation method that will allow for concrete, patient-centered results to be collected and compared to those of traditional homeless and mentally ill support services. This rigorous evaluation will ensure that this program will be able contribute to the literature on this novel model of housing with either positive or negative results.

However, there are several weaknesses inherent to this project. Despite the positive political climate, thus far funding from the state government has been primarily directed toward financing rent and services for mentally ill individuals, rather than constructing new housing. There is no single source that provides sufficient initial capital to build these homes, and consequently funding must be obtained from multiple different organizations, each with their own application process and requirements. Some of these sources even require multiple years of tax returns, making it very difficult for a new program to begin. Time that could be spent instituting this program will instead be used for completing funding applications and administrative prerequisites, extending the timeline to the detriment of patients. Further problems could arise if the apartments developed by this project were not deemed to be part of the 250 “disability-neutral” housing slots. Such a decision from the state government would restrict both the number of mentally ill individuals who could reside there and this program’s funding stream. Other programs within the state will likely attempt to qualify for these slots, so the Durham supportive housing program must be prepared to compete. As discussed above, there is also the potential for difficulties in recruiting a comparison organization for the randomized controlled
trial, and receiving institutional review board approval. Many of these issues are unavoidable based upon this program and evaluation design, and other setbacks will be unforeseen until they pose challenges for this organization.

To manage these problems and to allow for the continuation of this program, the executive board must be creative and flexible. This program plan is a foundation for the Durham supportive housing program, but the program itself must be allowed to grow and develop as needed by the individuals it serves and as required by local, state, and federal law and its funders. Program planning is a dynamic process, and a program that is able to change is one that has a better chance of surviving in an uncertain economic climate. Plans for expansion can be postponed until preliminary results are obtained from the evaluation, whereupon publication will attract additional interest from funders, as well as promote replication in other cities.

The Durham supportive housing program is promising in its potential to establish and assess a program addressing a vital problem facing this community. The wellbeing of any group of people is based in having a stable home environment, and, by providing homes to the mentally ill, this program can help this vulnerable population to attain better health and community integration.

Acknowledgments

I would like to thank my advisors, Dr. Diane Calleson and Dr. Robert Millet, for their guidance throughout the creation of this program plan. I greatly appreciate the assistance of Allen Knight, Mary Jean Seyda, and Dr. Beth Melcher in determining specific facts and resources. I also wish to thank my wife for all of her loving support and editing prowess, and my family for their advice and encouragement.
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