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### Program Evaluation of an APRN-Led Home-Based Psychiatric Care (HBPC) Program for Vulnerable Geriatric Patients

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PROGRAM EVALUATION OF AN APRN-LED HOME-BASED PSYCHIATRIC CARE  
PROGRAM FOR VULNERABLE GERIATRIC PATIENTS

by

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Stacey A. Poole

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### Abstract

**Background:** Mental illness remains undertreated in older adults, especially those that are homebound. In response to access to care gaps, an innovative advanced practice registered nurse (APRN) led Home-Based Psychiatric Care (HBPC) Program was developed as an adjunct to an established home-based counseling agency. The program involves the research supported provision of home-based psychiatric evaluations and medication management by the agency's PMHNP. **Purpose/Objectives:** To evaluate the HBPC Program's effectiveness at increasing access to timely and effective psychopharmacological treatment and management as evidenced by: (a) an increased percentage of referred patients who are being managed by the agency's PMHNP, (b) a decrease in wait times for psychiatric evaluation, and (c) improvement in Global Clinical Impression-Improvement scale (CGI-I) and Efficacy Index (CGI-E) scores. **Intervention:** A retrospective program evaluation of the first 3 months (February to April 2019) of the HBPC Program was conducted via the analysis of remotely mined data, collected from the agency's internally shared quality improvement database. **Results:** At the 12-week mark, 60% of referred patients were being managed by the agency's PMHNP, 13% had been assessed within 10 days, and 33.3% had achieved a CGI-I score of  $\leq 3$  and an Efficacy Index score of  $\geq 1.5$ . **Implications:** The initial results are inconclusive, yet promising. If improved outcomes are realized over time, the HBPC program is anticipated to improve this agency's ability to provide psychiatric care to vulnerable homebound geriatric patients, by serving as an essential bridge that connects the elderly with effective psychopharmacologic interventions.

*Keywords:* home-based psychiatric services, psychiatric house call, geropsychiatry

More than two million United States citizens age 65 and older are in need of mental healthcare, however, less than 50% of these individuals will be able to obtain adequate psychiatric services (Ornstein et al., 2015). Homebound elders are particularly vulnerable, being twice as likely to have one or more psychiatric disorders compared to their non-homebound peers (Qiu et al., 2010). These patients are predominantly frail older adults, who often face several practical barriers to seeking traditional outpatient services, such as limited mobility or access to transportation (Ornstein et al., 2015; Qiu et al., 2010). Unfortunately, psychiatric disorders are often overlooked and inadequately treated in the homebound elderly even though research has shown they are at an increased risk of having depression, anxiety, and cognitive impairment compared to the general population (Qiu et al., 2010). Left untreated or improperly treated, these problems can have serious consequences, including suicide (Bruce & McNamara, 1992; Ornstein et al., 2015; Van Citters & Bartels, 2004). Consequently, policymakers and researchers have been searching for more efficient and innovative approaches aimed at meeting the psychiatric care needs of this underserved, vulnerable population.

### **Statement of Problem**

Per the American Psychological Association (APA, 2015) position statement on ensuring access and appropriate utilization of psychiatric services for the elderly, all older Americans should have access to timely psychiatric consultation and effective treatment that includes appropriate person-centered nonpharmacological and pharmacological interventions. Unfortunately, mental illness remains undertreated in older adults, especially those that are homebound, and few older adults with a recognized mental disorder are able to obtain access to evidence-based psychiatric treatment (Van Citters & Bartels, 2004). While some of these cases do reflect older adults, who declined to receive mental health services of their own accord, far



too many of them reflect cases of older adults who were unable to access mental health treatment due to barriers (e.g., limited mobility, lack of transportation, long wait times, limited income or insurance coverage) posed by the healthcare system. Therefore, there is a clear need for new innovative, evidence-based psychiatric care delivery models designed to reach out to the aged population that provide timely and effective person-centered nonpharmacological and pharmacological interventions.

### **Background and Significance**

Although estimates vary, it is anticipated that the number of older adults with mental and behavioral health problems will almost quadruple, from 4 million in 1970 to 15 million in 2030 (APA, 2018). Currently, over 20% of U.S. adults aged 60 and over suffer from a mental or neurological disorder of some type and 6.6% of all disability among people over 60 years is attributed to mental and neurological disorders (World Health Organization [WHO], 2017). The most common mental and neurological disorders in this age group are dementia and depression (WHO, 2017). However, anxiety disorders affect 3.8% of the older population, and around a quarter of suicides are among people aged 60 or above (WHO, 2017).

While everyone faces multiple risk factors for the development of mental health problems throughout their life, certain developmental periods are more stressful than others. Older adults, for example, may experience life stressors common to all people, but also stressors that are more common in later life, like a significant ongoing loss in capacities and a decline in functional ability (Qiu et al., 2010). For instance, it is common for older adults to experience progressively reduced mobility, chronic pain or other health problems as they age (Reckrey et al., 2015). In addition, older people are more likely to experience events such as bereavement, or a drop in

socioeconomic status with retirement, placing them at increased risk for the development of mental health problems (Reckrey et al., 2015).

Elders with behavioral health conditions face a multitude of physical and economic barriers that prevent them from accessing and receiving necessary psychiatric treatment. Common barriers elders face in accessing psychiatric treatment, include limited mobility or homebound status; long wait times for services, limited income or insurance coverage; lack of transportation; stigma around mental health treatment; lack of coordination among providers; and inadequate services and social support (Qiu et al., 2010). Older adults also tend to have other comorbid medical conditions (e.g., hypertension, congestive heart failure, diabetes mellitus, cancer), which can further complicate their ability to find a psychiatric provider capable of managing their complex health issues (Qiu et al., 2010).

Unidentified and improperly treated psychiatric illnesses, like depression, are associated with an increased risk of suicidal ideation in older adults (Qiu et al., 2010; Reckrey et al., 2015). Mental illness in older adults has also been associated with adverse health effects including higher rates of cognitive impairment or anxiety, medication nonadherence, and increased side effects (Reifler & Bruce, 2014). For this reason, prompt recognition and treatment of mental, neurological, and substance use disorders in older adults is essential. Both psychosocial interventions and medicines are recommended (APA, 2015). Unfortunately, traditional clinic-based treatment options haven't been very receptive to the unique needs of the elderly, especially those who are homebound and face unique challenges to accessing care.

To meet this vulnerable population's needs, newer innovative models of evidence-based psychiatric care delivery are needed. One promising treatment modality of care delivery that is proving to be ideal for elderly psychiatric patients unable or unwilling to access care through

community mental health clinics is the psychiatric house call. While descriptions of in-home geriatric mental health services date back at least a quarter of a century, there has been a recent resurgence in popularity of this model of psychiatric care in both the research and clinical setting. This care delivery model is supported by a growing body of evidence supporting its ability to increase access to appropriate and effective psychiatric care (i.e., person-centered nonpharmacological and pharmacological interventions) and improve psychiatric outcomes for homebound elderly patients with mental health illnesses (APA, 2015; Bruce, Van Citters & Bartels, 2005; Van Citters & Bartels, 2004).

### **Organizational Assessment**

The local mental health agency where this program evaluation was conducted, consists of a group of independent contractors that includes 14 licensed clinical social workers (LCSW), two psychologists, one psychiatric mental health nurse practitioner (PMHNP) and one psychiatrist; all of whom provide psychiatric services in the private homes (e.g. personal residence, independent living, or assisted living) of vulnerable homebound geriatric psychiatric patients who live in San Antonio, Texas. The group was established and is currently owned by two LCSWs, who in addition to providing therapy services themselves also provide practice management, to include marketing, referrals, billing, and support, for the other independent contractors. Medicare, Medicaid, and Tricare insurance plans are accepted, as well as many other secondary commercial insurances. There were over 500 current patients being seen for in-home counseling by this agency at the time of initial assessment and while this agency predominantly serves geriatric patients 65 years of age and older with mental health issues; ages of patients ranged from 42 years to 93 years.

Psychiatric services offered at the time of initial assessment included in-home counseling and behavioral interventions provided by contracted LCSWs and psychologists, however none of these mental health professionals were able to prescribe medications. Thus, any patient needing psychopharmacological treatment and management had to be referred out. The percentage of active patients referred for medication management at the time of initial assessment, that had successfully obtained psychopharmacological services was only 35.6%. The top five reasons reported for this low percentage of referred clients receiving care included, lack of transportation, difficulty leaving home without assistance, lack of providers who accepted Medicare, long wait times, and the expense of co-pays.

To address this access to psychopharmacological treatment and management care gap and meet APA guidelines, the agency developed an innovative advance practice registered nurse (APRN) led Home-Based Psychiatric Care (HBPC) Program as an adjunct to their already established home-based counseling agency. The new HBPC program involves the research supported provision of home-based psychiatric evaluations and medication management by the agency's PMHNP.

### **HBPC Program**

Detailed below is a brief overview of the APRN-led HBPC program. All patients in need of psychiatric care were referred either directly to agency staff member, by phone, or by emailing/faxing one of the agency's completed standardized referral forms. All referred patients were then directly contacted by one of the agency owners to briefly explain services offered (e.g. the standard in-home counseling services provided by LCSWs and/psychologists and the newly available HBPC program, which provides medication management by the agency's PMHNP) and set up an initial intake appointment to determine eligibility, answer questions, review the

agency's policies and sign required consent forms. Patients selected for the HBPC Program were then contacted directly by the agency's PMHNP to set up an initial evaluation. Once evaluated, the PMHNP developed an acceptable treatment plan with the patient, based on the assessment results and the patient's goals, ordered baseline laboratory blood tests, and set up an individualized follow-up schedule. Paper-based prescriptions and lab orders were provided directly to the patient or designated caregiver as necessary.

### **Stakeholders**

Stakeholders are individuals that have a vested interest in clinical decisions and outcomes of an organization. The primary stakeholders of this local mental health agency were the patients, patients' families, providers, and insurance companies. The patient's interests in the new HBPC program stemmed from the lack of current access to care due to: (a) a shortage of psychiatric providers who accept Medicaid; (b) long appointment wait times; and (c) a combination of practical barriers (e.g., immobility, lack of transportation, etc.), which prevented access to traditional outpatient psychiatric care programs. Conversely, provider's interest was based on the desire to provide evidence-based care, advance patient outcomes, and expand access to care for this vulnerable population. Insurance agencies and other third-party payer's interest lied on the desire to minimize direct and indirect cost due to the provision of unnecessary treatment (Schreck, 2018). All stakeholders involved had a stake in the success of the outcomes and were supportive of the proposed change.

### **Organizational Readiness for Change**

Informal interviews of leadership and staff and observations related to key readiness to change indicators were utilized to determine the preparation of this agency to implement this change in practice (R. Gainer, D. Welmaker, & I. Gilliland, personal communication, October

15, 2018). Key indicators of change readiness evaluated included; (a) the investment of leadership, (b) organizational alignment with goals, (c) culture and infrastructure level of support, and (d) past organizational experiences with change. The assessment found that (a) the agency's leadership recognized the need for change, (b) agreed about what changes were required, (c) prepared to support the change, and (d) were committed to this transformation.

### **Project Identification**

As discussed above, to address access to psychopharmacological treatment and management care gaps, this agency developed an innovated APRN-led HBPC Program, which provided research supported in-home psychiatric evaluations and medication management by the agency's PMHNP, as an adjunct to the agency's already established home-based counseling service. To determine the effect of this change in practice, a retrospective program evaluation of the first 3 months of the agency's HBPC Program was conducted. To monitor the change, wait times from referral to initial evaluation and the percentage of referred patients who came under the care of the agency's PMHNP in the first 3 months were tracked. Additionally, the Clinical Global Impression Improvement (CGI-I) scale (which compares the patient's baseline condition to his/her current condition on a seven-point scale from very much improved to much worse) and the Clinical Global Impression Efficacy Index (CGI-E) scale (which compares the patient's baseline condition to a ratio of current therapeutic benefit and severity of side effects on a four-point scale from none to outweighs therapeutic effect) were utilized. The CGI Scale global measurements are well-established standard measures, that are commonly used in FDA psychopharmacological trials as outcome measures that can be utilized together or independently (Guy, 1976).

**Purpose**

The purpose of this program evaluation project is to evaluate the HBPC Program's effectiveness at increasing access to timely and effective psychopharmacological treatment and management for vulnerable geriatric patients ages 60 years of age and older living in San Antonio, Texas.

**Objectives**

The first objective of this project was to increase the percentage of patients in need of medication management that were able to successfully obtain psychopharmacological treatment and management services by the agency's PMHNP.

The second objective of this project was to decrease patient wait times for an initial psychiatric evaluation after being referred for medication management.

The third objective of this project was to increase the percentage of patients who clinically improved after receiving appropriate psychopharmacological treatment, indicated by achieving a CGI-I score of 3 or lower after 8 weeks of treatment (appendix A).

The fourth objective is to increase the percentage of patients who received effective psychopharmacological treatment, indicated by achieving a Clinical Global Impression Efficacy Index (CGI-E) 1.5 or less after 8 weeks of treatment (appendix A).

**Anticipated Outcomes**

1. By the end of April 2019, 75% or more of HBPC patients, referred for medication management would be under the care of the agency's PMHNP.
2. By the end of April 2019, 75% or more of HBPC patients, referred for medication management, would be evaluated by the agency's PMHNP within 10 days.

3. By the end of April 2019, 40% or more of HBPC patients would achieve a CGI-I score of 3 or lower after at least 8 weeks of treatment.
4. By the end of April 2019, 75% or more of HBPC patients would achieve a CGI-E score of 1.5 or greater after at least 8 weeks of treatment.

### **Summary and Strength of Evidence**

The evidence for this project consists of seven articles from peer-reviewed journals, evaluated using Melnyk and Fineout-Overholt (2011) model. Included in these seven articles are two systematic reviews (Level I), one cohort study (Level IV), one cross-sectional study (Level IV), and three descriptive studies (Level V & VI) described below.

### **Supporting Evidence**

A cross-sectional study (Level IV evidence), that examined the use of behavioral health services, treatment preferences, facilitators and barriers to service use among older adults receiving home-based services, demonstrated that while this population was interested in obtaining a variety of behavioral health services, they rarely seek them out due to perceived barriers to care (Gum, Iser & Petkus, 2010). The most common barriers to service noted in this study were affordability (71.8%), difficulty traveling (62.7%), and lack of transportation (45.8%) (Gum et al., 2010). These findings reflect a common trend in the literature that indicates a strong need for innovative home-based psychiatric care delivery models which can meet the unique needs of the homebound elderly. The provision of home-based mental health services for older adults, therefore, has the potential to enhance access and utilization of psychiatric services in this vulnerable population. While models vary in structure, they typically include some combination of the following elements: (a) individual case management; (b) consultation to primary care physicians who provide in home care; (c) in-home counseling services; (d) in-home psychiatric



medication treatment and management by a psychiatrist or psychiatric APRN, and (e) provision of and efforts to maximize community-based mental health resources (Reifler & Bruce, 2014).

Several studies support incorporating nonpharmacological and pharmacological psychiatric intervention services into home-based care models to adequately address the mental health needs of the homebound geriatric population (Johnston et al., 2010; Karlin, Karel & Meeks, 2013; Reifler & Bruce, 2014). One large cohort study (Level IV evidence), for example, found that home-based psychiatric care delivery not only improved the identification of psychiatric conditions in the homebound community but also facilitated their optimal treatment, thereby improving patient symptoms and quality of life while reducing the burden on homebound patients and their caregivers (Reckrey et al., 2015). These studies further reflect the findings of two systematic reviews (Level I Evidence), which both provide substantial support for the utilization of home-based mental health services to improve psychiatric symptoms in older adults who often have limited access to traditional practice-based models of care (Bruce et al., 2005; Van Citters & Bartels, 2004).

### **Findings**

Overall, the evidence supports the utilization of home-based psychiatric treatment models that provide both nonpharmacological and pharmacological interventions to (a) improve access to effective evidence-based psychiatric care and (b) improve psychiatric outcomes for the vulnerable elderly population. The overall strength of the articles was acceptable to use as evidence to support this project.

## Methods

To determine the effectiveness of the HBPC program at increasing access to timely and effective psychopharmacological treatment and management, a retrospective program evaluation of the first 3 months (i.e., February to April 2019) was conducted.

### Setting and Population

Participants consisted of geriatric patients in need of psychopharmacological treatment and management who lived in the San Antonio, Texas area. Patients were included in the evaluation if they had been referred to the HBPC program within the inclusion period (February 1, 2019, through April 30, 2019), were greater than 60 years old, spoke and read English, and were recorded in the agency's password protected deidentified quality improvement database. However, only participants that received at least 8 weeks of treatment prior to the end of the inclusion period that had post outcome measures documented in the agency's quality improvement database were included in the final analysis used to determine the program's effect on patient outcomes. Any patients who did not fulfill the above criteria were excluded.

### Procedure

This retrospective program evaluation was accomplished via analysis of key demographic and outcome measures collected as part of the agency's standard of care, remotely mined from a specially created password protected deidentified quality improvement database and did not require any patient interaction.

**Data collection.** The following demographic data were extracted from the agency's deidentified quality improvement database: (a) gender (male, female), (b) age (in years), (c) relationship status (single, married, divorced, widow/widower), (d) number of psychiatric disorders (0-1, 2, 3, 4+), (e) past psychiatric medication use (Yes, No), (f) number of psychiatric

medication taken at baseline (0, 1, 2, 3, 4, 5+) and (g) number of total medications taken at baseline (<1, 1-5, 6-10, 11+). Additionally, the following outcome measures were collected from the quality improvement database: (a) reason for referral (i.e. psychiatric diagnosis), (b) referral date, (c) psychiatric evaluation appointment date, (d) treatment status (i.e. never seen, active, transfer, discharged), (e) Post intervention CGI-I & CGI-E scale scores.

**Measurements.** To monitor this change in practice, wait times from referral to initial psychiatric evaluation and the percentage patients referred for medication management who came under the care of the under the agency's PMHNP were tracked. Additionally, the CGI-I and CGI-E scale scores after 8 weeks of treatment were measured (see appendix A). As stated above, CGI-I and CGI-E global measurements are easily recognizable and universally known efficacy measures, commonly utilized in FDA psychopharmacological trials. These scales take less than 5 minutes for a clinician to complete and are applicable across all psychiatric disease states and all medications, no matter the population.

**Data analysis.** Abstracted data were entered into a password protect Excel database and transferred to SPSS statistical software. A range of descriptive statistics were used to summarize outcome results and the sample population. Baseline descriptors were summarized as mean and standard deviations for continuous variables and as frequencies and percentages for categorical variables.

### **Evaluation Plan**

To evaluate the effect of the HBPC Program on to timely access to psychiatric care the following extracted outcome data were analyzed: (a) Percentage of referred patients under the care of the agency's PMHNP (i.e., percentage of clients referred for medication management divided by those currently receiving care); (b) Wait times to be seen by the agency's PMHNP

(i.e., difference between the referral and evaluation dates) were analyzed and compared to pre-intervention wait time benchmarks. The program was to be considered successful at improving timely access to psychiatric care, if, by the end of April 2019, 75% or more of HBPC patients referred for medication management, were evaluated within ten days and/or were currently under the care of the agency's PMHNP.

To evaluate the effect of the HBPC Program on patients' clinical outcomes, post intervention CGI-I & CGI-E scale scores were analyzed and compared to pre-intervention outcome benchmarks set for the program. The program would be considered successful at providing effective psychopharmacological treatment and improving patient clinical outcomes if by the end of April 2019 and at least 8 weeks of treatment (a) 40% or more of HBPC patients achieve a CGI-I score of 3 or lower, and/or (b) 75% or more achieve a CGI-E score of 1.5 or greater after.

### **Organizational Barriers and Facilitators**

The agency's leadership commitment to allocate time and resources to implementing their new APRN-lead HBPC program and clinical staff agreement on the importance of addressing the identified care gaps, all helped to ensure that everyone was on the same page and motivated to see the project implemented. Furthermore, the agency's standard practice of collecting and mining of key deidentified demographic and clinical data for quality improvement purposes helped to streamline the evaluation process. However, there were still design barriers that hindered the evaluation process including the agency's use of paper-based prescriptions and lab orders due to the lack of electronic prescribing and lab ordering EMR functions and ongoing uncertainty in correct billing codes that threatened proper reimbursement.

### **Ethical Considerations**

Prior to beginning the project, agency approval was received (November 12, 2018) to conduct the planned retrograde program evaluation of the HBPC Program and the University of the Incarnate Word Institutional Review Board reviewed this project to ensure compliance with federal, state, local, and university regulations. Participation in the HBPC program was completely voluntary and did not pose any additional risks to patients than standard outpatient-based psychiatric treatment. Eligible participants who chose to enroll were not be provided any compensation for their participation in this project. The participants' privacy and confidentiality were maintained and protected throughout the project. All data collection for this retrospective program evaluation was remotely mined from a specially created password protected deidentified quality improvement database and did not require any patient interaction. Lastly, all findings were reported only as aggregate data to further their anonymity.

### **Results**

Nine women (60%) and six men (40%), with a majority of the participants being single (53%) or widow/widowers (33%) were enrolled during the eligibility window of this project. Ages ranged from 60 years to 92 years old, with a mean age of 73.9 ( $SD = 11.2$ ) years. Most participants had only one pre-existing psychiatric diagnosis at baseline, with major depression (recurrent) (40%), generalized anxiety disorder (27%), and adjustment disorder with mixed anxiety and depressed mood (20%) being the most common. Most participants also had a prior history of psychiatric medication use (80%) and were currently taking psychiatric medication at the time of enrollment (73%). However, due to credentialing delays, only three of these participants actually received the full 8 weeks of treatment required to be included in the clinical outcomes final analysis. A majority of the participants included in the clinical outcome final

analysis were female (67%), were single (100%), had three (33%) to four (67%) pre-existing psychiatric diagnosis, and all had a prior and current history of being treated with psychiatric medications. Ages ranged from 60 years to 79 years, with a mean age of 75.1 ( $SD = 9.6$ ) years.

### **Findings**

Wait times for an initial psychiatric evaluation among participants who were seen ranged from 3 days to 45 days, with a mean wait time of 20.8 ( $SD = 13.1$ ) days. Table 2 shows initial psychiatric evaluation wait times for study participants and their corresponding descriptive statistics. The CGI-I scores of the three participants included in the clinical outcomes final analysis (i.e., those that received at least 8 weeks of treatment), ranged from 3 (33%) to 4 (66%), indicating either no change or minimal improvement. Additionally, only one (33%) participant included in the final outcome analysis achieved a CGI-E score of  $\geq 1.5$ . Table 3 shows post intervention CGI-I and CGI-E results for participants included in the final outcome analysis and their corresponding descriptive statistics.

### **Discussion**

The purpose of this project was to evaluate the HBPC Program's effectiveness at increasing access to timely and effective psychopharmacological treatment and management. Initial results were inconclusive yet promising. At the 12-week mark, 60% of patient referred for medication management were under the care of a psychiatric provider (goal was  $\geq 75\%$ ), 13% of referred patients had been assessed within 10 days (goal was  $\geq 75\%$ ), and 33.3% of participants included in the final outcome analysis achieved a CGI-I score of  $\leq 3$  and an Efficacy Index score of  $\geq 1.5$  after receiving 8 weeks of treatment (goal was  $\geq 40\%$  and  $\geq 75\%$  respectively), ultimately falling short of the agency's benchmarks for the program.

Table 1

*Demographic Characteristics of Study Participants*

Characteristic	No. (%) of Referred Patients ( <i>n</i> = 15)	No. (%) of Final Analysis Patients ( <i>n</i> = 3)
<b>Gender</b>		
Male	6 (40%)	1 (33%)
Female	9 (60%)	2 (67%)
<b>Age</b>		
60-69	6 (40%)	2 (67%)
70-79	3 (20%)	1 (33%)
80-89	5 (33%)	0 (0%)
90+	1 (7%)	0 (0%)
<b>Relationship Status</b>		
Single	8 (53%)	3 (100%)
Married	1 (67%)	0 (0%)
Divorced	1 (67%)	0 (0%)
Widow/Widower	5 (33%)	0 (0%)
<b>Baseline Psychiatric Disorders</b>		
1	10 (67%)	0 (0%)
2	2 (13%)	0 (0%)
3	2 (13%)	2 (67%)
4+	1 (7%)	1 (33%)
<b>Hx of Psychiatric Medication Use</b>		
Yes	12 (80%)	3 (100%)
No	3 (20%)	0 (0%)
<b>Current Psychiatric Medication Use</b>		
Yes	11 (73%)	3 (100%)
No	4 (27%)	0 (0%)

Table 2

*Initial Psychiatric Evaluation Wait Time of Study Participants*

Initial Wait Time (days)	No. (%) of Patients ( <i>n</i> = 15)
0-10	2 (13%)
11-19	1 (7%)
20-29	4 (27%)
30+	2 (13%)
Not Seen	6 (40%)

*Note:* Objective was for  $\geq 75\%$  of participants to be seen  $\leq 10$  days.

Table 3

*Post Intervention CGI Global Improvement & Efficacy Index Results*

Clinical Outcome Category	No. (%) of Patients ( <i>n</i> = 3)
<b>CGI-I Score</b>	
$\leq 3$	1 (33.3%)
4+	2 (66.6%)
<b>Efficacy Index Score</b>	
$< 1.5$	2 (66.6%)
$\geq 1.5$	1 (33.3%)

*Note:* Objective was for  $\geq 75\%$  of participants to achieve a CGI-I score of  $\leq 3$  and an Efficacy Index score of  $\geq 1.5$  post intervention.

While none of the agency's goals were fully met within the first 3 months, this project was still considered at least partially successful in the sense that it succeeded in increasing the percentage of patients referred for medication management who were being cared for by a psychiatric medication provider (i.e., the agency's PMHNP) by 24.4% in comparison to baseline findings (i.e. from 35.6% to 60%). The project also had the secondary benefit of improving the agency's appreciation of the importance of ongoing program evaluation and quality



improvement. The overall findings of this project, including the initial administrative, and financial barriers faced during the implementation stage, were also similar to those described in other home-based psychiatric care model studies that despite initial challenges were eventually successful. Furthermore, this new HBPC program was found to have several key characteristics in common with other successful programs including; (a) a strongly held belief in the need for the program in their community, (b) an ability to work within the framework of their parent organization, (c) the ability to form partnerships within the community, and (d) a commitment to overcome the obstacles that constantly arise. Therefore, if improved outcomes are realized over time, the HBPC program is anticipated to improve this agency's ability to provide psychopharmacological care to its vulnerable homebound geriatric clientele.

Despite these successes, however, there were some challenges encountered during the implementation stage that directly impacted the HBPC program's overall effectiveness. For instance, unanticipated credentialing delays at the start of the program ultimately led to initial evaluation delays, making the agency's goal of seeing all referred patient's within 10 days practically impossible to meet until corrected. There were also several design and process weaknesses identified during this evaluation. For instance, the lack of observable clinical improvements by the 12-week mark might indicate that the allotted timeframe for this project was too short for detectable clinical improvements to occur. There was also the possibility that patients were not taking their medications, as this project did not track whether the paper-based prescriptions were filled. The lack of leadership oversight and frequent communication breakdowns with the agency's newly hired APRN, also led to several referred patients falling through the cracks due to lack of follow-up.

**Limitations**

This change in practice project contained numerous design limitations, including a small convenience sample size, lack of randomization, the use of paper-based prescriptions, and potential bias due to the use of only one psychiatric provider (i.e. agency's APRN) providing the treatment and outcome evaluations. Another major limitation was the short timeframe allotted for this project, as it was insufficient to produce an effective and diverse sample size and possibly too short to allow for detectable clinical improvements to occur. Another design limitation that led to potential bias was that neither patients and/or caregivers perspectives were taken into account when assessing clinical outcomes in this project; instead only the provider-rated CGI-I and CGI-E scores were considered. This project also did not account for patients' ability to afford and obtain any medications prescribed. Other limitations include the lack of outcomes aimed at assessing the short-term financial feasibility and long-term sustainability of this program.

**Recommendations**

There were seven recommendations based on the results of this program evaluation:

1. Set up regular weekly teleconferences between all team members to ensure prevent communication breakdowns, aid troubleshooting for any barriers encountered, and to increase accountability.
2. Consider changing Electronic Medical Record for one that allows for psychiatric providers to order labs and prescribe medication.
3. Consider investing in hiring a billing and coding specialist to ensure proper reimbursement for services received.
4. Consider hiring another PMHNP so that this program is not reliant on only one provider.

5. Consider conducting another program evaluation at the 6-month mark to further evaluate the program's effectiveness at improving patient outcomes.
6. Consider adding financial outcomes to assess the programs feasibility and sustainability.
7. Consider the addition of other clinical outcome assessment tools that take into consideration the patient and caregivers perspectives.

### **Implications for Practice**

Mental illness remains grossly undertreated in the elderly, especially in those that are homebound. As the number of older adults with mental illness is expected to reach over 15 million by 2030, there is a clear need for new innovative, evidence-based psychiatric care delivery models designed to reach out to this vulnerable population. Home-based psychiatric care models are designed to increase access to timely and effective psychiatric care, by allowing frail, elderly patients to receive quality patient-centered non-pharmacological and pharmacological interventions in their home. By bringing the services to them, this model of care has been shown to enhance access and utilization of psychiatric services and improve psychiatric outcomes in the elderly. This model of care has also been proven useful in helping healthcare organizations to address the growing access to psychiatric care gaps.

As people continue to live longer, the need for home-based treatment options is only expected to rise, making it essential that all psychiatric providers, including physicians, nurse practitioners, social workers, and psychologist learn about home-based psychiatric care delivery models and how they can be utilized to meet the unique needs of this vulnerable population. The results of this project reinforce the positive impact that home-based psychiatric care models can make in the management of older adults with mental illness unable or unwilling to access care through community mental health clinics, serving as an essential bridge that connects the elderly

with timely and effective psychopharmacologic interventions. This project also demonstrated how doctorly prepared APRNs have the necessary knowledge and leadership abilities to greatly impact patient care delivery systems and improve patient outcomes. For example, as experts in translating evidence into practice, doctorly prepared APRNs are exceedingly equipped to assess healthcare organizations and design, implement, and evaluate changes in practice, like the novel care delivery model utilized in this project. Lastly, as leaders in healthcare, doctorly prepared APRNs are uniquely prepared to urge policymakers to support the implementation of more efficient and innovative care delivery approaches aimed at meeting the psychiatric care needs of the underserved, vulnerable elderly population.

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Appendix A: Modified Clinical Global Impression Scale

Patient Information				
Patient Name:		Age:	Sex:	
Referral Reason:				
Referral Date:		Evaluation Date:		
Additional Information				
Number of psychiatric disorders	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5+			
Number of medical comorbidities	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5+			
Past psychiatric medication use	<input type="checkbox"/> YES <input type="checkbox"/> No			
Total number of medications taken at baseline	<input type="checkbox"/> <1 <input type="checkbox"/> 1 - 5 <input type="checkbox"/> 6 - 10 <input type="checkbox"/> 11+			
Number of psychiatric medications taken at baseline	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5+			
Clinical Global Impressions: Improvement Scale & Efficacy Index				
GLOBAL IMPROVEMENT		Week 8		
Rate total improvement whether or not in your judgment it is due entirely to drug treatment. Compared to his condition at admission to the project, how much has he changed?		<input type="checkbox"/> 1- Very much improved <input type="checkbox"/> 2- Much improved <input type="checkbox"/> 3- Minimally improved <input type="checkbox"/> 4- No change <input type="checkbox"/> 5- Minimally worse <input type="checkbox"/> 6- Much worse <input type="checkbox"/> 7- Very much worse		
EFFICACY INDEX		Week 8		
Therapeutic Effect	Side Effects			
	None	Do not significantly interfere with patient's functioning	Significantly interferes with patient's functioning	Outweigh therapeutic effect
<b>Marked:</b> Vast improvement. Complete or nearly complete remission of all symptoms.	01	02	03	04
<b>Moderate:</b> Decided improvement. Partial remission of symptoms.	05	06	07	08
<b>Minimal:</b> Slight improvement which doesn't alter status of care of patient.	09	10	11	12
<b>Unchanged or Worse</b>	13	14	15	16

Modified version of Guy W. Clinical Global Impressions *New Clinical Drug Evaluation Unit (ECDEU) Assessment Manual for Psychopharmacology*. 1976, pp. 218-222.



## Appendix B: UIW IRB DNP Project Approval Letter



11/12/2018

Project Lead: Stacey Poole

Project title: EVALUATION OF A NOVEL APRN-LED HOME-BASED PSYCHIATRIC CARE (HBPC) PROGRAM FOR VULNERABLE GERIATRIC PATIENTS

Stacey:

Your project titled "EVALUATION OF A NOVEL APRN-LED HOME-BASED PSYCHIATRIC CARE (HBPC) PROGRAM FOR VULNERABLE GERIATRIC PATIENTS" was deemed to be **Not Regulated Research**.

Your proposed project was reviewed and found to not meet federal regulatory requirements for human subject research and does not require approval via the IRB process. Please use the IRB number **NRR [18-016]** when inquiring about or referencing this determination.

No further review of the project as proposed is required. Should you determine at any point you wish to add additional elements to the project, please contact us before initiating those components, as this may impact the determination.

For information regarding the IRB or the review process, please contact me at (210) 805-5885.

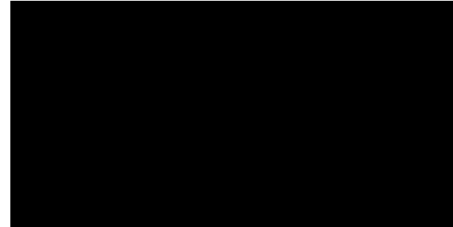
Sincerely,

Ana Hagendorf, PhD, CPRA

Ana Hagendorf, PhD, CPRA  
Director, Office of Research and Sponsored Projects Operations  
Office of Research and Graduate Studies  
University of the Incarnate Word  
4301 Broadway, CPO 1216  
San Antonio, Texas 78209  
(210) 805-3036  
[wandless@uiwtx.edu](mailto:wandless@uiwtx.edu)

Appendix C: DNP Project Site Approval Letter

December 12, 2018



**DNP PROJECT SITE APPROVAL LETTER**

**University of the Incarnate Word  
4301 Broadway  
San Antonio, TX 78209**

**Subject:** Site Approval Letter

To whom it may concern:

This letter acknowledges that I have received, reviewed, and approved of a request by a Mrs. Stacey A. Poole to conduct her Doctor of Nursing Practice (DNP) capstone project entitled "Evaluation of a Novel APRN-Led Home-Based Psychiatric Care (HBPC) Program for Vulnerable Geriatric Patients" at my agency, [REDACTED]. I support this effort, agree to provide access and will provide any assistance necessary for the successful implementation of this DNP capstone project.

This letter also acknowledges my understanding and acceptance of the findings of the UIW Office of Research and Sponsored Projects Operations' formal determination letter [REDACTED], which found upon preliminary review that this proposed project does not meet federal regulatory requirements for human subject research and as such will not require approval or further review by the IRB. I understand that if I have any concerns or need additional information on the IRB or review process that I can contact UIW's Office of Research and Sponsored Projects Operations at [REDACTED].

Sincerely,

A large black rectangular redaction box covering the signature area at the bottom of the letter.