

# Development of a Pharmacist-Managed Telehealth Clinic to Optimize Medication Regimens in Recently Hospitalized Rural Geriatric Veterans Using Intervention Mapping

by Brianna E. Glynn-Servedio, PharmD, Bianca Lezcano, PharmD, Lauren L. Welch, PharmD, BCPS, CGP, and Korey A. Kennelty, PharmD, MS, PhD

**W**hen transitioning from hospital to home, patients must manage numerous medications and follow complex regimens. Underlying cognitive issues in older adults may contribute to nonadherence to medications, adverse drug events, and re-hospitalizations. The risk of taking less or more of prescribed medication is two to three times greater in individuals with impaired cognition after hospital discharge.<sup>1</sup> Additionally, about one in five medications used in older people may be inappropriate based on changes in pharmacokinetics and pharmacodynamics.<sup>2</sup> Up to 50% of hospitalized and nursing home patients receive one or more unnecessary drug,<sup>3</sup> which is particularly important because the number of drugs a patient is taking has been found to be the single most important predictor of harm, including disability, re-hospitalization, and death.<sup>4</sup>

Living in a rural environment can also complicate the situation. Rural elderly individuals are more likely to have limitations in activities of daily living (ADLs) and suffer from higher rates of chronic disease. In 2005, about 7.5 million of the 50 million people living in rural areas of the United States were over age 65,<sup>5</sup> and nearly three million Veterans living in rural communities are aged 65 or older.<sup>6</sup> Additionally, 10.5% of the non-metro elderly population lives in poverty compared to 9.3% of the metro elderly population.<sup>7</sup> One study comparing rural versus urban elderly cohorts found that the rural cohort took an average of 5.5 prescription medications compared to 3.7 for the urban cohort, with a median

## Abstract

**Objectives:** Nearly three million Veterans living in rural communities are aged 65 or older, many of whom have chronic conditions that require complex medication regimens. There are often inadequate pharmacy services to support rural geriatric Veterans, particularly those who have medication-related issues complicated by a recent hospitalization. The purpose of this project is to create a pharmacist-managed telehealth clinic at a Veterans Affairs (VA) hospital to address the needs of this Veteran population, focusing on medication optimization during transitions of care.

**Methods:** An adapted Intervention Mapping (IM) framework was used for the systematic design and implementation of the clinic. Patients are referred to the clinic from the hospital's existing transitional care program. Veterans are included after being identified by the transitional care program to have a medication-related issue, and either are at least 65 years of age and live alone or were hospitalized more than once in the last year, or have a history of dementia, delirium or cognitive impairment. Patients must be discharged to a community setting and have a primary care provider established at one of the rural VA clinics associated with the existing GRECC Connect Clinic. Outcomes to be evaluated include changes in the number of medications and/or number of doses per day, risk of harm (e.g., geriatric syndromes) due to inappropriate medication use, feasibility of communication with providers outside of the VA system, and 90-day emergency department visit and hospitalization rates.

**Results:** Clinic implementation occurred according to the standard operating procedure. The clinic consult was built into the electronic medical record. Two clinic appointments are available per week via telehealth. Clinical video telehealth (CVT) visits address the following: specific medication-related concern identified in consult, potential medication optimization opportunities including medication addition, medication reduction, or consolidation of multiple doses per day, medication discrepancies pre- and post-hospitalization, medications matched to indications, significant drug interactions, medication adherence, and medications impacting functional status or risk of falls. Evaluation of this program has not yet been completed.

**Conclusions:** Intervention mapping is an effective way of developing and implementing a health care intervention with the input of all stakeholders. Three and twelve month follow-up will allow for evaluation of the clinic and resulting interventions.

survival time of 3.5 years in the rural cohort versus 7.1 years in the urban cohort.<sup>8</sup> Living with someone and/or having a large social network were found to be protective factors against chronic disease in this study. Both cohorts used an average of 8.8 over-the-counter medications.

It is clear that geriatric Veterans living

in rural environments have many risk factors for poor healthcare outcomes. Geriatric Research Education and Clinical Centers (GRECC) were developed within the VA system in the 1970s to help meet the needs of the aging Veteran population.<sup>9</sup> GRECCs are typically designed to be pilot programs for geriatric research and

education that can then be disseminated to other VA sites across the United States. There are now GRECCs located at 19 VA sites across the country. Within the GRECC, a specific clinic known as GRECC Connect utilizes telemedicine to connect providers to patients in rural areas in order to improve access to specialized geriatric interdisciplinary care via electronic consults or clinical video telehealth (CVT) visits.<sup>10</sup> VA has been using telehealth to increase Veteran access to healthcare for over a decade. CVT allows Veterans to travel to their nearest VA Community Based Outpatient Clinic (CBOC) and connect via video teleconferencing to healthcare providers at the main VA hospital. CBOCs are smaller clinics located in outlying, often rural, areas around main VA medical centers, primarily to provide primary care access without Veterans needing to travel to the main hospital. Advantages of CVT visits at CBOCs include less travel time and cost for Veterans, ability to stay in or near their

own community, and improved Veteran satisfaction.<sup>11</sup>

The purpose of this project was to create a pharmacist-managed telehealth clinic utilizing an adapted Intervention Mapping (IM) framework within the GRECC Connect clinic at this VA hospital, to address medication regimen optimization for recently hospitalized rural geriatric Veterans during transitions of care.

### **Methods**

An adapted IM framework was used for the systematic design, and ultimately the implementation and evaluation, of the clinic. IM is a widely-used protocol for developing theory-based and evidence-based healthcare interventions.<sup>12</sup> The IM framework originally had six steps for developing a healthcare intervention, but was modified by combining steps to allow for application to this specific practice setting. Step 1, the Needs Assessment, describes the problem, examines the nature and cause of the problem, and sets

priorities for action. Step 2, Intervention Outcomes and Performance/Change Objectives, defines who and what will change as a result of the intervention. Step 3, Intervention Design, uses practical strategies to design the intervention. Steps 1 through 3 of the adapted framework were used for intervention development. Step 4 is implementation of the intervention. Step 5 is the evaluation of the intervention after implementation, and will not be described in this paper.

### **Needs Assessment**

The first step was establishing a multidisciplinary planning team including a geriatric pharmacist, two post-graduate year 2 ambulatory care pharmacy residents with a focus in geriatrics, registered nurses (RNs) working in the existing transitional care program, and an advanced geriatric fellow. The PRECEDE-PROCEED model was used for the needs assessment. This model is a cost-benefit evaluation framework originally developed in 1974



**TABLE 1. Multipronged Intervention for Development of a Pharmacist-Managed Telehealth GRECC Connect Clinic**

<i>Responsible Person</i>	<i>Performance Objective</i>	<i>Change Objective</i>
<b>C-TraC RNs</b>	<ul style="list-style-type: none"> <li>Identify high risk patients</li> <li>Place consult to clinic</li> </ul>	<ul style="list-style-type: none"> <li>Recognize patients who meet criteria for referral</li> <li>Understand correct process to place consult</li> </ul>
<b>GRECC Administrative Staff</b>	<ul style="list-style-type: none"> <li>Call patient to schedule CVT appointment</li> </ul>	<ul style="list-style-type: none"> <li>Explain purpose of clinic visit and importance of bringing all medications and caregiver to visit</li> <li>Notify clinician to place CVT order</li> </ul>
<b>Clinical Pharmacist</b>	<ul style="list-style-type: none"> <li>Place reminder call to patient the day prior to appointment</li> <li>Conduct CVT visit with patient/caregiver</li> <li>Document encounter</li> <li>Fax documentation to non-VA provider if appropriate</li> <li>Determine need for follow-up appointment</li> <li>Alert primary care team if issues arise that need urgent follow-up outside of PharmD scope of practice</li> </ul>	<ul style="list-style-type: none"> <li>Address specific medication-related concern per consult</li> <li>Identify and address potential medication optimization opportunities, medication discrepancies, anticholinergic burden, duplicate therapies, and other medication-related concerns</li> </ul>
<b>CVT Staff</b>	<ul style="list-style-type: none"> <li>Facilitate CVT visit</li> <li>Provide patient with Release of Information form for signature</li> </ul>	<ul style="list-style-type: none"> <li>Utilize CVT technology</li> <li>Appropriate selection of Release of Information form</li> <li>Assist with medication disposal as appropriate follow-up CVT visit</li> </ul>
<b>Primary Care Team</b>	<ul style="list-style-type: none"> <li>Address issues that require immediate follow-up</li> </ul>	<ul style="list-style-type: none"> <li>Identify and triage issues as identified by PharmD</li> </ul>
<b>GRECC Connect Team (geriatrician, psychologist, geriatric pharmacist, social worker)</b>	<ul style="list-style-type: none"> <li>Conduct 3 and 12 month follow-up per established protocol</li> </ul>	<ul style="list-style-type: none"> <li>Understand reason for clinic referral</li> <li>Utilize current protocol for review</li> <li>Update GRECC Connect database with appropriate outcome information</li> </ul>

GRECC = Geriatric Research Education and Clinical Centers  
C-TraC = Coordinated-Transitional Care  
RNs = registered nurses  
CVT = clinical video telehealth

to help health program planners, policy makers, and others to design health programs efficiently.<sup>13</sup> The guiding principle of this model is to direct initial attention to the desired outcomes, and then work backwards in the causal chain to identify strategies to achieve those outcomes.

Literature searches were performed by team members to identify previous work in this area and potential outcomes to target, as well as literature supporting the use of telehealth as a modality for care delivery, and the role of pharmacists in the transitions of care period. Successive brainstorming sessions were held by the multidisciplinary planning team. Hypothetical patient examples identified by the transitional care RNs were discussed during these brainstorming sessions to determine the needs of the clinic. A needs assessment was conducted onsite at several of the involved rural CBOCs associated with this VA system in 2013, and at rural CBOCs associated with a neighboring VA system in 2015 and early 2016, which involved meetings with several key stakeholders at each site. Informal focus

groups were also held with members of the existing GRECC Connect clinic.

In order to fully understand the needs of post-discharge rural geriatric Veterans, further exploration of the existing transitions of care program was performed. The existing transitional care program is known as Coordinated-Transitional Care (C-TraC) at this VA site.<sup>14</sup> Patients who are enrolled in C-TraC receive a telephone call by the C-TraC nurses within 48 hours post-discharge to identify any issues or patient concerns since leaving the hospital. These post-discharge telephone calls allow for the identification of high-risk individuals who would benefit from additional pharmacy services. The C-TraC program is designed for patients who are 65 years or older and either live alone or were hospitalized at least one additional time in the past 12 months; have a history of dementia, delirium, or cognitive impairment regardless of age; are being discharged to a non-institutional setting (home with or without home health or hospice services, group home, or assisted living facility); or are identified as being at-risk for post-hospital institutionalization.

As a part of the needs assessment, all

patients enrolled in C-TraC from January 1, 2016 to March 11, 2016 were reviewed to see if they would be included if the clinic had already existed. One hundred forty-nine patients were enrolled in C-TraC during this timeframe, of which 122 were excluded as they did not receive their primary care at a rural CBOC. Of the 27 remaining patients, review of the electronic medical record indicated that 6 had a medication-related issue requiring follow-up, and thus would be candidates for referral to this clinic. Of these 6 patients, the average age was 79.5 years and 33% were living alone. These patients were taking a mean of 17 prescription medications at discharge, indicating a need for comprehensive pharmacy services.

**Intervention Outcomes, Performance and Change Objectives**

This step involved successive meetings by the multidisciplinary planning team to establish the goals of the new clinic and measurable performance objectives, intervention steps, and change objectives (the necessary factors to accomplish the performance objectives). Both subjective

and objective outcomes were established. This step also began the process of determining which team members and other stakeholders would be responsible for specific tasks during the implementation phase of the clinic.

### **Intervention Design**

The intervention design was informed by follow-ups of informal focus groups with key stakeholders including C-TraC nurses and GRECC Connect clinic staff, as well as individual interviews with CBOC primary care teams.

A consult template was developed in conjunction with the C-TraC nurses and was approved by the facility for site-wide use. The consult template was developed to have minimal impact on C-TraC RN workflow. The RN selects one or more of the following: poor understanding of correct medication indication/use (patient and/or caregiver), non-adherence to medications, complex medication regimen, cognitive impairment contributing to medication-related problem, or medication discrepancies requiring additional follow-up. There are also optional free-text fields available for additional information. The consult is currently restricted to entry by C-TraC RNs for this pilot clinic.

Specific performance objectives, change objectives, and responsible persons can be found in Table 1. This table defines each intervention step and delineates the role of each person within the workflow.

### **Enrollment and Outcomes**

Patients are included in this clinic if they were enrolled in C-TraC after hospital discharge, were identified by C-TraC nurses to have a medication-related issue requiring further follow-up, and received primary care at one of the six rural CBOCs associated with the existing GRECC Connect clinic.

Outcomes to be evaluated include changes in the number of medications and/or number of medication doses per day, risk of harm (e.g. rate of various geriatric syndromes) due to inappropriate medication use, ease of communication with providers outside of the VA healthcare system, and 90-day emergency department and hospitalization rates.

## **Results Implementation**

Clinic implementation occurred in accordance with the standard operating procedure (SOP) developed. The consult template developed in the previous step was built into the electronic medical record system and became accessible to the C-TraC nurses for entry. After the consult is entered by the C-TraC RN, an alert is sent to the geriatric clinical pharmacist via the electronic medical record. GRECC clerical staff call the patient to schedule a CVT visit, and request the patient come to appointment with their caregiver, if applicable, and bring all medications to the appointment. Two appointments are available per week, with 60 minutes allotted for each visit. Coordination with CVT staff at each site established a defined day of the week for the clinic to occur. A reminder call is placed by the pharmacist one day prior to the appointment. CVT visits address the following: specific medication-related concern identified by the C-TraC RN, potential medication optimization opportunities including medication addition, medication reduction, or consolidation of multiple doses per day, medication discrepancies pre- and post-hospitalization, medications matched to indications, significant drug interactions, medication adherence, and medications impacting functional status or risk of falls. Any medication changes as a result of the clinic visit are implemented by the clinical pharmacist within their designated scope of practice, which allows for independent prescribing for certain disease states by clinical pharmacists within the VA system. The clinic visit is documented in the medical record using a standardized template that was developed during team meetings. Clinic visit documentation will be communicated to non-VA providers via fax if the patient is agreeable to signing a release of information, in order to close the loop between VA and non-VA providers. Follow-up CVT or telephone visits will be determined if applicable, though will not routinely occur given the focus on the transitions of care period. Three month and twelve month follow-ups will occur during regular GRECC Connect clinics per established protocol, which will allow for the evaluation of the clinic and resulting

interventions.

## **Discussion**

Future directions include improving patient enrollment in the clinic, evaluation of outcomes at three and twelve months after enrollment, expansion of services to other patient populations, and continued expansion to other rural areas as GRECC Connect continues to expand.

Delays in patient enrollment were the main limitation to the implementation of this clinic. After the completion of steps 1 through 3 of the IM framework, implementation was delayed due to a number of reasons. Administrative approval of the clinic and the consult template was delayed, partly due to a facility trend toward decreasing reliance on consults for specialty services. Coordination needed to occur between many parties during the creation of the clinic, including pharmacy administration for staffing purposes, and CVT staff for coordination of appointment time slots between facilities within and outside of this VA system. There were also barriers to communicating efficiently with VA facilities outside of this network.

The initial enrollment of the clinic is restricted to a limited population, which decreases the number of patients who are initially eligible for these services. There are likely many more patients who would benefit from these services besides those enrolled in the C-TraC program, however C-TraC patients are already known to be very high-risk for re-hospitalization or institutionalization so they represent a reasonable population for the pilot clinic.

Additionally, the GRECC Connect clinic is partially funded by the Office of Rural Health, so enrollment is limited to patients who receive their primary care at a rural CBOC. However, there are often patients who may live in rural areas but do not receive their primary care at a rural CBOC and thus would be excluded from the current inclusion criteria. The US Department of Health and Human Services provides a method for checking a patient's zip code to determine if they live in a rural area, so this could be a future way to include more patients for eligibility.

## **Conclusions**

Intervention mapping is an effective

way of developing and implementing a healthcare intervention with the input of all stakeholders. This pharmacist-managed telehealth clinic for medication optimization provides a needed service to recently hospitalized rural geriatric Veterans. Additional patient enrollment will allow for the evaluation of interventions and continued quality improvement. ●

At the time of the work Brianna Glynn-Servedio and Bianca Lezcano were PGY-2 Ambulatory Care Residents at the William S. Middleton Memorial Veterans Hospital and Korey Kennelty was an Advanced Geriatric Fellow at the William S. Middleton Memorial Veterans Hospital Geriatric Research Education and Clinical Center. Currently, Brianna E. Glynn-Servedio is a Clinical Pharmacy Specialist at the Durham VA Health Care System in Raleigh, NC. Bianca Lezcano and Lauren Welch are Clinical Pharmacy Specialists at the William S. Middleton Veterans Memorial Hospital. Korey Kennelty is an Assistant Professor at the Department of Pharmacy Practice and Science at University of Iowa, College of Pharmacy, Iowa City, Iowa; and Assistant Adjunct Professor at University of Wisconsin-Madison, School of Pharmacy, Madison, WI.

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