REDUCING POLYPHARMACY BY IMPROVING THE GERIATRIC EVALUATION BY UTILIZING THE VIRTUAL VIDEO CONNECT

By

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A project submitted to the School of Nursing

In partial fulfillment of the requirements for the degree of

Doctor of Nursing Practice

UNIVERSITY OF NORTH FLORIDA

BROOKS COLLEGE OF HEALTH

December 06, 2021

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Abstract

The issue of polypharmacy in the geriatric population requires continual monitoring to reduce adverse patient outcomes, such as falls, drug interactions, and mortality. Over the years, several resources have been used to help to mitigate potential polypharmacy by healthcare professionals. Unfortunately, many healthcare providers don't know how to use these lists, or patients' health conditions predicate prescribing potentially inappropriate medications. Employing telehealth technologies that are mainly designed to assess geriatric syndromes of older adults can improve veterans' access to care and coordination and enhance the quality of life. The presented PICOT question is: In geriatric veterans (P), what is the benefit of telehealth as a means for a medication review and education (I) during a geriatric evaluation vs. current NFSG Veteran's Health system medication reconciliation (C) on reduction of polypharmacy (O) over a three-month period (T)? Based on the appraised available research, evidence supports the use of a comprehensive geriatric evaluation with the help of telemedicine while reducing polypharmacy. The purpose of the DNP QI project was to evaluate and implement an improved geriatric evaluation via telehealth while reducing polypharmacy by providing education on alternative medication use and referrals. The interdisciplinary team for the virtual comprehensive geriatric evaluation will include a pharmacist, physical and occupational therapists, a nurse, and a social worker. A decision tree template was designed to be embedded into the Veterans Affairs Health Systems' computerized patient record system. The decision tree template is The Geriatric Reduction in Polypharmacy Telehealth (GRIP-TH)". GRIP-TH includes cognitive ability assessment, health literacy, and physical ability. The template provides continual evaluation ease, thus reducing appointment duration times, allowing for increased scheduling capability.

A total of 15 patients were pre-screen for telehealth capability, were evaluated with the GRIP-TH template, and completed the entire visit. In reviewing the survey data, the geriatric population can use telehealth technology. The GRIP-TH template did identify18 potential inappropriate medications (3 red flags, seven high risks, and 8 were duplicates); 50% of the medications were discontinued, changed to alternative medications. For some patients, education had to be provided because patients had those identified medications prescribed by outside the VA providers.

The use of telehealth provides an alternative to providing healthcare at a distance. Implementing the GRIP-TH template into the CPRS system provides a thorough, efficient, and effective, comprehensive geriatric evaluation.

Key Words: telehealth, telemedicine, polypharmacy, comprehensive geriatric evaluation, veterans, primary care

Introduction

Comprehensive geriatric evaluations and polypharmacy are interlinked in many ways. As primary care providers, we must evaluate all geriatric patients for potential harm caused by medications that inhibit physical and cognitive abilities as we prescribe medications. The effects of medications have been shown to cause potential falls and, in some cases, mortality. An effective way to mitigate potential inappropriate medication from being prescribed is to do a comprehensive geriatric evaluation with a collaborative team approach that evaluates and treats health literacy, cognitive limitations, physical limitations, and caregiver reliance.

Comprehensive Geriatric Evaluation (CGA)

Comprehensive geriatric evaluations are a multidimensional, multidisciplinary assessment designed to evaluate older adults' functional ability, physical health, cognition, mental health, and social-environmental circumstances (Powers & Eubank, 2018; Elsawy & Higgins, 2011). Comprehensive care approaches like the CGA are recommended widely. It is usually initiated when the position identifies a potential problem, and there is no consensus about which different items or scales should be included in CGA (Parker et al., 2018). According to the British Geriatric Association, CGA adapted to primary care should consist of a holistic medical review resulting in an interactive, personalized care plan considering patient priorities (Ivanoff et al., 2018). Team members of a comprehensive geriatric evaluation need to include at least three or more of the following people: the patient, the primary care provider, the pharmacist, the social worker, mental health or psychiatric team, a nurse/patient care tech, physical therapist, and or caregiver support groups share such as family, friends and hired personal health care associates (Powers & Eubank, 2018; Tran & Leonard, 2017).

Advantages and Disadvantages of a CGA

According to a 2017 randomized controlled trial, there were positive effects on Health-related quality of life (HRQoL) as measured by the 15D instrument on older patients exposed to clinical geriatric assessment, polypharmacy, and comprehensive drug reviews carried out by a geriatrician with the patients' care team (Romskaug et al., 2017). Additionally, several secondary outcomes were favorable of the interventions to include more drug withdrawals, reduced dosages, and new drug regimens started in the intervention group (Romskaug et al., 2017). In another study, one advantage to CGA was improved medication adherence. However, there were mixed results relating to hospital admissions (Garrard et al., 2019). Geriatric training and or knowledge of geriatric syndromes was recommended by several studies and articles before implementation of a CGA model (Powers & Eubank, 2018; Department of Veterans Affairs et al., 2017). Another RCT study showed similar advantages for using CGA where the mean (SD) number of current medicines reduced per patient was 0.99 (1.23) in the intervention group vs. 0.43 (0.84) in the usual care group (the group who did not have a CGA), equaling a mean difference of 0.55 (95% CI = −0.90 to −0.21; P = .002) (Anderson et al., 2019). Disadvantages that were brought up centered around when an elderly patient has not been seen the PACT before. There is inadequate time for continuity of care, systematic medication reviews are seldom being performed by providers, pharmacist consults do not transpire, and the lack of use of CGAs (Auvinen et al., 2018; Ferrat et al., 2018).

VA Geriatric Evaluations and the VA Geriatric Scholars Program

According to the U. S. Department of Veterans Affairs, a 2012 US Census brief reported that Veterans age 65 or older numbered over 12.4 million (US Department of Veterans Affairs, 2017). According to VHA directive 1140.04, availability and offered access for inpatient and

outpatient elderly veterans for a geriatric evaluation is specified for older Veterans who have undergone significant functional decline, or development of other geriatric syndromes such as depression, dementia, delirium, urinary incontinence, gait, and balance impairment, falls, etc. (Department of Veterans Affairs et al., 2017). There is a need for synchronized, interdisciplinary provision of medical, nursing, psychosocial, and preventive health services for outpatient geriatric veterans managed by the Geri Patient-Aligned Care Team (GeriPACT), with or without co-management by GeriPAC (Department of Veterans Affairs et al., 2017).

One way to mitigate the disadvantages of CGAs in the Veterans Affairs (VA) system is by utilizing the VA Geriatric Scholars Program (GSP) tools. The GSP integrates geriatrics into primary care practices by providing continuing education and professional development on geriatric topics, interprofessional (e.g., physicians, nurse practitioners, physician assistants, pharmacists, social workers, psychologists) educational experiences, encourage innovation and creativity to promote function and independence in older adults (Kramer, Ph.D. & Melendez, MPA, MS, 2019). The GSP's primary focus is on veterans who reside in rural areas; the Geriatric Scholars Program comprised a training manual called the Rural Interdisciplinary Team Training (RITT) to provide a tool and develop providers' knowledge in rural VA clinics (Office of Rural Health, US Department of Veteran Health Affairs, 2020).

Polypharmacy

Polypharmacy is an umbrella term that relates to the overuse, underuse, or inappropriate use of medications that are common in older adults, particularly those aged 65 or older that carries a risk of negative health outcomes such as mortality, falls, adverse drug reactions, and readmission into hospitals (Masnoon et al., 2017). Polypharmacy is generally defined as using five or more medications by an individual, a situation that has been more prevalent with disease-

specific prescribing guidelines (Davies et al., 2020). Clinicians need to be prepared to balance the risks and benefits of prescribing multiple drugs, considering drug-drug and disease-drug interactions (Rieckert et al., 2020). Polypharmacy is often linked to comorbidities and is connected to a high risk of potentially inappropriate prescribing (Davies et al., 2020). The higher frequency of multiple comorbidities for older people and the corresponding prescription of various medicines, often managed by multiple physicians, to address these situations, coupled with pharmacokinetic and pharmacodynamic changes associated with aging and disease, dramatically increases the risk of adverse drug reactions (Masnoon et al., 2017).

Polypharmacy Awareness and Tools

Many older adults (aged 65 and older) take medications for sleep disorders, anxiety, high blood pressure, or chronic pain whereby the side effects from these drugs can cause drowsiness, loss of balance, changes in vision, delayed reaction time, and other consequences that increase the risk of falling. In 2018, falls by geriatric adults accounted for approximately 3 million emergency department visits, 950,000 hospitalizations, and 32,000 deaths (Centers for Disease Control and Prevention & National Center for Injury Prevention and Control, 2020).

Aware of the need to improve collaboration between healthcare providers and pharmacists, STEADI-Rx is based on CDC's STEADI (Stopping Elderly Accidents, Deaths, & Injuries) initiative. It provides guidance to pharmacists on how to screen pharmacy patients, assesses their medications, and intervene to reduce fall risk (Centers for Disease Control and Prevention & National Center for Injury Prevention and Control, 2020). STEADI-Rx outlines steps to minimize polypharmacy such as screening the patient for fall risk at the pharmacy, performing a medication review, collaborating between patient, healthcare provider, and

pharmacist, and sharing the information to other members of the healthcare team (Centers for Disease Control and Prevention & National Center for Injury Prevention and Control, 2020).

At the VA, the Geriatric Research Education and Clinical Center (GRECC) is another program that is looking at improving polypharmacy among older veterans through an assortment of educational tools and training resources (US Department of Veterans Affairs, 2021). One tool that is available to use is the GRECC Connect VIRTUAL Geriatrics (Veteran Interprofessional Rural Telehealth Linking Geriatrics Expertise for Education and Access) program (formerly known as GRECC Connect) that aims to improve access to geriatric care for Veterans in rural areas (US Department of Veterans Affairs, 2021). Older veterans residing in rural areas often have limited access to senior care. Rural providers and staff often lack opportunities to learn about best practices for managing Veterans with geriatrics syndromes (US Department of Veterans Affairs, 2021).

Telehealth

The American College of Physicians Health and Public Policy Committee (ACP), American Heart Association (AHA), Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), and many other reputable entities have developed recommendations and positions for the use of telemedicine (American College of Physicians, 2021; American Heart Association News, 2020; CDC, 2020; World Health Organization, 2019). The AHA reports the federal government relaxed HIPAA regulations to allow Medicare reimbursement for medical consultations using technologies such as Skype, FaceTime, and Zoom. In 42 states and Washington, DC, private insurers were mandated to provide at least some coverage of telemedicine services (American Heart Association News, 2020). In addition, the CDC considers that telehealth has the probability to meaningfully increase access to health care,

reduce healthcare costs, and improve overall health outcomes (CDC, 2019). Adopting current technological advancements in healthcare by older patients is feasible; however, design and execution should account for geriatric syndromes that older patients can exhibit (Narasimha et al., 2017).

Telehealth has been successfully used by agencies such as the Veterans Health Administration (VHA) and the Indian Health Service for many years to provide access to healthcare while maintaining quality and managing costs (Perdew et al., 2017). The VHA has been one of the largest providers of telehealth services due to its advocacy for care and budget impact, and results showed video teleconference groups were found to be feasible and resulted in similar treatment outcomes to in-person groups (Gentry et al., 2018). Different tools in telehealth technologies such as face-to-face clinical video telehealth (CVT), home telehealth, and care coordination "store-and-forward" programs have empowered veterans to access care from their local VA community clinic or the privacy of their own home (Perdew et al., 2017). At the Indianapolis VA Medical center, CVT had an overall 96% satisfaction score amongst veterans by tackling issues of inaccessible or postponed care while bringing care closer to those who may have difficulty accessing it for multiple reasons, such as transportation worries and geographic barriers (Perdew et al., 2017). Licensure by VA health providers and the ability to use across state borders without having to obtain another medical license helps promote telehealth (Gentry et al., 2018).

Significance

COVID-19 Pandemic and healthcare accessibility

SARS coronavirus 2 (SARS-CoV-2) or COVID-19, as it has been called, presented the whole world with a challenge with access to healthcare beginning in December 2019.

According to the World Health Organization, COVID-19 is an infectious disease that presents with mild to moderate respiratory illness for most people; however, given the person's age and or other comorbidities such as cardiovascular disease, diabetes, chronic respiratory disease, and cancer: serious illness and or mortality is possible (World Health Organization, 2021). COVID-19 virus transmission is primarily through secretions such as droplets of saliva or discharge from the nose when an infected person coughs or sneezes (World Health Organization, 2021).

Before COVID-19, geriatric patients faced socio-economic factors such as poverty, limited income, health factors, and limited access to care, but the effect that COVID-19 intensified the access to care problem further attributable to reduced clinic visits, transportation restrictions, and other societal measures to mitigate the pandemic (Hawley et al., 2020). During COVID-19, elective procedures were postponed, intensive care unit capacity increased, and clinicians were encouraged to switch as many outpatient visits as feasible to an electronic medium such as telephone or video-to-home formats (Nearing et al., 2020). Many healthcare organizations recognized the threat that COVID-19 posed to health care access and changed their policies to encourage virtual care options (American College of Physicians, 2021; American Heart Association News, 2020; CDC, 2020; World Health Organization, 2019). The Centers for Medicare and Medicaid Services (CMS), through the 1135 Waiver, has permitted clinicians to provide comprehensive telemedicine services than before COVID-19 (Forrester et al., 2020).

At the VA, where more geriatric training occurs for health professionals than any other organization, GRECCs provided geriatric-specific interprofessional education and tried to rapidly respond to the growing COVID-19 pandemic challenge for access to appropriate care (Nearing et al., 2020). GRECCs implanted telehealth training based on their platform GRECC Connect to facilitate transforming in-person visits to virtual video connection (VA Virtual

Connect or Doximity) and or telephone visits where one survey showed that 65% of the healthcare provider respondents expressed that video-to-home visits were a vital part of the COVID-19 response (Nearing et al., 2020). In another case study conducted at the VA Palo Alto Geriatrics clinic, 69.4% (43 visits) of the 62 scheduled appointments were conducted either video (26--60.5%) or by telephone (17--39.5%), resulting in patient time savings of approximately 118 minutes, positive experiences for telehealth as compared to in-person visits, decreased exposure to COVID-19 exposure and increased awareness of telehealth by patients (Nearing et al., 2020).

Aging Population, Home Care and Substance abuse

Worldwide, the aging population is increasing, many more geriatric patients are living longer and seeking healthcare at home, and consequently, elderly patients with many different health conditions are trying to manage their comorbidities through an array of medications that potentially can have adverse effects on them (Fralick et al., 2020; Krishnaswami et al., 2019).

Substance abuse usually pertains to alcohol and drug use; however, geriatric persons are at higher risk for potential harm because they may self-medicate using legal and illegal drugs and alcohol or deliberately or unknowingly mix medications and use alcohol. Often, especially after hospitalizations, medicines may be changed by clinicians to address current health problems, and these changes may not be reported to primary care physicians or specialists, who may lead to multiple medications being used because of a lack of understanding of instructions or cognitive decline in geriatric patients. The lack of transition of care between healthcare providers can lead to inappropriate medication taking and or substance abuse due to drug-drug interactions or over-prescribing/under-prescribing, which means that checks should be performed by physicians periodically to improve health outcomes for older adults (Le Bosquet et al., 2019).

Over the years, several resources have been used to help to mitigate potential polypharmacy by healthcare professionals. The Beers criteria list, STOPP (screening tool of older person's prescriptions), and START (screening tool to alert doctors to proper treatment) criteria help decide the appropriateness of medications in older adults (American Geriatric Society, 2019; Mangin et al., 2018). The Beers criteria list potentially inappropriate medications for most older adults, medications to avoid with specific conditions, combinations that may lead to harmful interactions, and drugs that should be dosed differently for persons with poor kidney function (American Geriatric Society, 2019). STOPP and START contain clinically significant criteria for potentially inappropriate prescribing in older persons and potential prescribing omissions (Mangin et al., 2018).

Unfortunately, many healthcare providers don't know how to use these lists and or health conditions of patients predicate prescribing potentially inappropriate medications (PIMs). According to Bilek et al. (2019), whose study investigated outcomes and prescribing patterns among providers trained in Good Palliative-Geriatric Practice to reduce polypharmacy, trained providers had a significant decrease ($n=100$, the difference between groups $p<0.0001$) in prescribed medications from admission to discharge (18.5%) compared to those who were not trained (1.9%)(Bilek et al., 2019). One way to help train providers on PIMs that can effectively provide patient-centered care is through collaboration with a pharmacist if possible. A systematic review conducted by Anderson et al. (2019) evaluated interventions addressing polypharmacy and recommended that a provider or organizations interested in addressing polypharmacy should focus first on patient-specific deprescribing interventions through the collaboration of pharmacy personnel in their clinical decisions (Anderson et al., 2019). One illustration of such an intervention is found in the SR by Kroger et al. (2015), in which Verrue et

al. (2012) ascertained that medication review conducted by pharmacists using the Beers criteria identified 11 patient-specific warnings for potentially hazardous drug-disease and drug–syndrome interactions and resulted in increased medication appropriateness (Anderson et al., 2019).

Injury

Among seniors, falls are the leading cause of injuries, hospital admissions for trauma, and deaths due to injury, and approximately one-quarter of every senior person (age 65 or older) has a fall (Make STEADI Part of Your Medical Practice | STEADI - Older Adult Fall Prevention | CDC Injury Center, 2019). Approaches to reduce falls include exercises to improve balance and strength and medication review. Polypharmacy is associated with adverse patient outcomes, such as fall incidence, drug interactions, and mortality (Hernández et al., 2019; Masnoon et al.,2017).

The CDC's STEADI initiative offers a coordinated approach to implementing the American and British Geriatrics Societies' clinical practice guidelines for fall prevention revolving around three core elements: Screen, Assess, and Intervene to reduce fall risk (Make STEADI Part of Your Medical Practice | STEADI - Older Adult Fall Prevention | CDC Injury Center, 2019). An intervention that addresses all the elements mentioned in STEADI that is often bypassed is deprescribing medications by providers because of fear of undesirable consequences such as patient deterioration and relapsing symptoms (Curtin et al., 2018). The CDC recommends deprescribing as a provider intervention that coincides with asking patients if they have fallen, felt unsteady, or worried about falling in the past year, review medications and stop, switch, or reduce the dose of medications that could increase the risk of falls and recommending vitamin D supplements (Centers for Disease Control and Prevention, 2016).

Review of the Evidence

The purpose of this search for evidence was to answer the following clinical question: In geriatric veterans (P), what is the benefit of telehealth as a means for a medication review and education (I) during a geriatric evaluation vs. current NFSG Veteran's Health system medication reconciliation (C) on reduction of polypharmacy (O) over a three-month period (T)?

Search Methods

Guided by the PICOT question, an organized electronic database literature search was performed in April 2021 in CINAHL, Cochrane, Joanna Briggs Institute, and PubMed. Two reviewers screened the titles and abstracts to appraise the relevance of the pertinent studies for inclusion. The embarked search strategies consisted of keywords and boolean operators to maximize the highest evidence-based practice data available. A CINAHL search was done using ("geriatric evaluation and management") AND (polypharmacy or multiple drugs or medications) AND (telehealth or telemedicine) AND (systematic review or meta-analysis) AND (randomized controlled trials or RTC or randomized control trials) which returned eight resources that met our search criteria. A search for systematic reviews written in the last five years was conducted in the Joanna Briggs Institute using (geriatric AND evaluation AND telemedicine), which identified two potential systematic reviews that met the criteria. An additional search was conducted in the Joanna Briggs Institute using (geriatrics and polypharmacy) which returned 11 potential systematic reviews that met the criteria. A Cochrane Library search was done using advanced search ("Older Veterans Telehealth) AND (Polypharmacy older adults) AND (GERIATRIC EVALUATION). "Older Veterans Telehealth" yielded 130 Cochrane reviews, using "Polypharmacy Older Adults" yielded 28 reviews, and "Geriatric Evaluation" yielded 130 reviews; 3 total reviews met inclusion criteria. A PubMed search was done using ((((Home video

visits) OR (Potentially inappropriate medication in the elderly)) OR (second sit-to-stand test)) OR (Designing Telemedicine Systems for Geriatric Patients)) OR (Comprehensive geriatric assessments in integrated care programs) which returned 169 results.

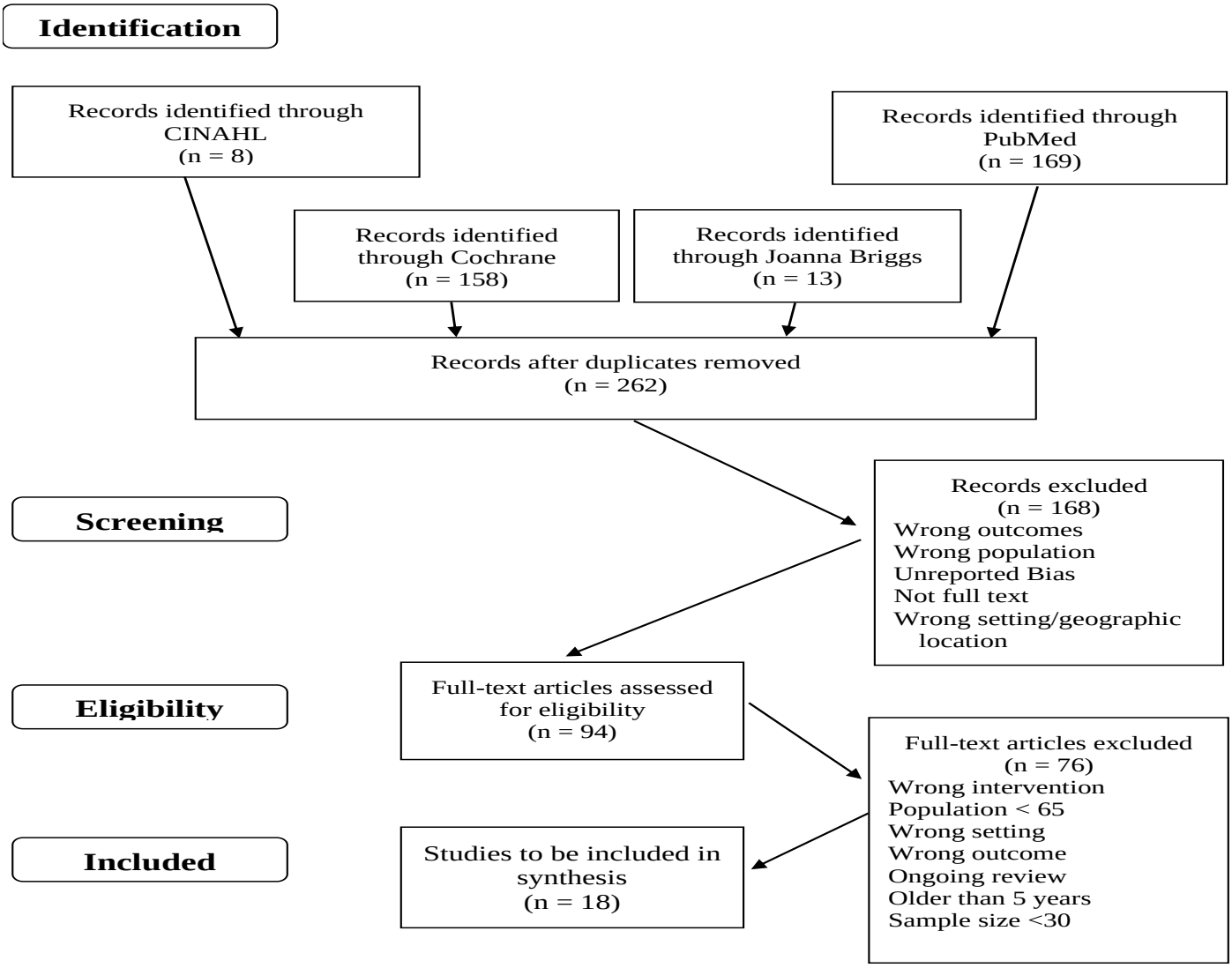
Studies were included if they included telehealth/telemedicine geriatric evaluation (with various forms that included telephones calls and videos) with patients over the age of 65 years old, where data on interventions was reported and methods employed as well as interventions compared from baseline. Studies were excluded if they were older than five years, lack of complete reports with missing reported bias, wrong patient population, sample sizes less than 30 human subjects

Search Results

The search yielded nine systematic reviews, three randomized control trials, one scoping review, and one cohort study. A review of the included articles is listed below to include Table 1, with a synopsis of additional reports are further explained in Appendix A.

Figure 1

Literature Search Flow Diagram



Synthesis of the Evidence

Population, Interventions, & Outcomes

In a literature review conducted from 2000 to 2016 by Narasimha et al. (2017), 297 articles were found, and 16 articles met inclusion criteria in the usability of telemedicine/telehealth for the geriatric population. The review resulted in 60% of the studies focusing on overall telemedicine systems, 6.25% focused on robot-type telemedicine systems,

12.5% reviewed face-to-face medical visits with the use of telemedicine, while 25% focused on studying other means for use. About 31.25% was reported for patient satisfaction; regarding care coordination, 6.25% was reported. Regarding patient and family convenience, 18.75% was reported, and 6.25% for both reliability and privacy of telehealth was reported. It is important to remember the included articles' timeframe, thus signaling the need to create systems or processes that enhance use for the geriatric population. Trust, privacy, and reliability of telehealth must continually be improved to enhance telemedicine usability.

Katsimpris et al., (2019), conducted a literature systematic review to analyze the relationship between polypharmacy and physical function in older adults. The study included eighteen observational studies, with eight relating to physical function impacting polypharmacy, while the other ten studies relating to polypharmacy affecting physical function. Their study used the Newcastle Ottawa Scale (NOS) for prospective cohort and observational case studies; those studies with more than 6 points were categorized as moderate or good quality. Seven of the studies found that older adults with excessive polypharmacy (more than five medications) had lower physical functioning when compared to others with less prescribed medications. The studies also concluded that when more medications were prescribed, it resulted in a further decrease in physical functioning. One study found that polypharmacy is not associated with the decline in physical function over the period of one year for older individuals who reside in nursing homes. It is essential to highlight the previous study as there could be other factors that need to be further analyzed that could limit outcomes. For those individuals living in nursing homes, their medications could be more closely monitored or titrated, as well as having access to physical therapy interventions.

Soler and Barreto (2019) conducted a systematic review that included sixteen published articles from 2007 to 2017; also included countries ranging from low to high income. It was found that many interventions were ranging from professional, organizational, governmental, or multi-organizational improved polypharmacy, errors, adherence, and reduced drug-related problems. The recommended professional interventions included reviewing drug use, educating prescribers and patients. The recommended organizations' interventions included the provision of pharmaceutical care services that lead toward improved quality of life while being cost-effective. According to Soler and Barreto (2019), it must be understood that polypharmacy is a term for both adequate and inadequate medications. The systematic review provides evidence that prescribers, organizations, and regulatory agencies must have interventions that improve managing, prescribing, evaluating and monitoring of individuals. The systems in place must also improve access to services/medications in a safe manner that reduces drug-related deficiencies.

Fried et al., (2017), conducted a randomized controlled trial that included 128 veterans older than 65 years of age who were prescribed seven or more medications. The trial used the tool to reduce inappropriate medications (TRIM), which extracted medications' information as well as chronic conditions based on clinicians' input from phone assessments. The tool provided information that resulted in discrepancies on which medications patients believed they should be taking versus what was in their medical chart. The intervention group with 64 individuals, resulted in a medication discrepancy rate of 98%. The control group of 64 individuals, resulted in a mediation discrepancy rate of 97%. Clinicians recommendations for medication discontinuation or dosage decrease, resulted in 93% for the intervention group, and 100% for the control group. About half of the individuals for each group had one or more potentially inappropriate medication (PIM), which were identified using the Beers and STOPP criteria,

about over three-quarters had over-treatment for hypertension, while 30% had over-treatment for diabetes. 30% were found to self-report low adherence or cognitive impairment that affected understanding of medication regimen. The randomized controlled trial provided evidence in the importance of clinician education on availability of resources such as TRIM resulting in patients' improved outcomes.

Uemera et al., (2018), conducted a randomized controlled trial that included 84 individuals over the age of 65 to investigate active learning education on health, cognition, physical functioning, and dietary habits. A controlled group consisted of 42 individuals, and the remaining 42 were placed in the intervention group. The 42 individuals in the intervention group assisted a weekly 90-minute program over the course of 24 weeks. Classes included behavioral changes, lifestyle approaches, group sessions, and exploratory exposure. Using the health literacy scale-14 (HLS-14) improvement was measured which resulted in evidence demonstrating that learning programs for older adults can result in understanding and accessing health information thus improving decision making in the choices they make that may affect decreased health. The program provided evidence that key health literacy programs can help to improve cognitive and physical functioning.

Mueller et al., (2018), conducted a prospective study that included 85 participants who underwent rapid geriatric evaluations from March 2013 to December 2014. The rapid geriatric evaluation can help family practice providers with the capability to identify eight common geriatric syndromes. The eight geriatric syndromes for the study were cognitive impairment, mood, incontinence, visual impairment, hearing loss, undernutrition, gait disturbances, and osteoporosis (Mueller et al., 2018). The geriatric assessments resulted in a 91.2% of all individuals having one geriatric diagnosis, a median number of three syndromes per patient. The

most identified syndrome during the geriatric evaluations was vision impairment, hearing loss, and osteoporosis. The study reported the reasons reported by family practitioners for not conducting the geriatric evaluations was due to time, forgetfulness, condition was already known, or unnecessary assessment. When the evaluations were conducted, the average time was for about 20 minutes, and 95.2% reported the design of the evaluation adapted to the clinicians' needs. The study provided evidence that supports the need for improved geriatric evaluations that can prevent further debilitation and improved quality of life. The geriatric evaluation is a screening tool that is essential in identifying certain conditions, and how to help the patient to mitigate changes.

Rasheedy et al., (2021), conducted a cross-sectional study at university hospital in Cairo Egypt with the aim of evaluating the use of a smartphone application termed as the electronic geriatric assessment tool (e-GAB) that self-administers a geriatric assessment and provides the information to the patients' providers. There were 20 individuals in phase 1, who pretested the tool, 50 individuals in phase 2 who were used to validate the tool via face-to-face interviews, and 12 individuals in phase 3 who were followed up on with a standardized office visit. The application had the following embedded tools, the MMSE for the cognitive assessment, pure tone audiometry for the hearing assessment questions, the ADL and IADL for the functional capacity assessment, the CFS to screen frailty, the FRQ to assess fall risk assessment, the MNA-SF to screen for malnutrition, the ICIQ-UI-SF to assess urinary incontinence, the PSQI to assess sleep, and the NRS to assess pain. Feedback from patients resulted in the following, all reported the application as user friendly, six patients recommended the use of a larger screen such as a tablet instead of a phone, 3 reported some questions to not be applicable to their medical conditions, and eight patients praised the capability of choosing questions and not having to type

answers. Two participants were referred to neuropsychological assessments, two were positive for the identification of new depression, two were referred to a dietician, one was identified to have a urinary tract infection and treated, one was identified as needing an increase on insulin, and one was referred to be hospitalized for decompensated congestive heart failure. The study provided evidence in the use of a smartphone application as an alternative when telehealth or office visits are limited.

Guzman-Clark et al., (2021), conducted a retrospective cohort study from January 1, 2014 to June 30, 2014 using the Andersen Model to examine predictors of veterans stopping the use of home telehealth use over a year. The sample size consisted of 3,449 veterans with heart failure, mean age of 70.8 years, 74.75 white, and 97.9% males. One third of the sample had depression, and 13% died in the first year of enrollment. 38% were categorized as noninstitutional care (NIC) due to level of functional impairment, and 78% were given in home messaging devices to use for home telehealth technology. Mean average adherence average was 57.1%, a median of 30.6%, and a range of 34.9 to 84%. The study found the 14% that had the highest risk of discontinuing home telehealth were those with functional impairment, deficit in activities of daily living, and frail. 41% of the white veterans had the highest risk of discontinuing home telehealth. Veterans with an in-home messaging device had a lower risk of stopping home telehealth than those who use a web browser to access the technology as they may not be comfortable with the use of electronics.

The study provided evidence on predictors on what factors may be correlated to older adults adhering to the use of home telehealth. Continued engagement is of great importance in ensuring the best health practices.

Padala et al., (2020), conducted a cross-sectional interview of 118 veterans to examine their capability and willingness to use the Veterans Affairs video connect (VVC). The study was conducted during the COVID-19 pandemic who had a scheduled appointment within the next four weeks, where they were asked if they wanted a VVC or phone call to conduct their appointment. The participants' mean age was 72.6 years of age, 92% were male, 68.6% were Caucasian, 29.7% were African American, 36% lived in rural areas. The most common chronic conditions were hypertension with 81% of participants, 46% with hyperlipidemia, 32% with depression, 25% with posttraumatic stress disorder, 26% with mild cognitive impairment. Although 77% had internet access and 70% had an email account, only 56% had a device with a camera, and 58% were willing to participate in a VVC appointment. From the 63 VVC capable veterans, 54 had an upcoming appointment within the next four weeks; 35% requested phone appointments, and 65% preferred a VVC visit. 48% required assistance from a caregiver or family member, six veterans could not complete their VVC appointment as two did not show, and four could not connect to the internet. The study provided evidence that internet (67) and email (62%) accessing rural veterans is limited, as well as access to a camera device, is important in ensuring connectivity and for the clinician to conduct needed evaluations. Providing veterans with video-capable devices is part of the solution, but also ensuring high-speed internet could pose a challenge.

Hastings et al., (2021) conducted a pilot randomized controlled trial in the Durham Veterans Affairs health care system from May 2017 to February 2018 that included 20 veterans using telephone capability, while the remaining 20 used VVC. Veterans were over the age of 65 with complex medical conditions and with mild cognitive impairment who had an in-home caregiver. The participants were provided with monthly visits for a period of 12 weeks. 53% of

those who use the internet were comfortable using VVC, of which care partners and clinicians reported increased patient engagement. 71.7% conducted case management visits via VVC, and 86.7% conducted case management visits via telephone. The pilot study provided evidence that a video home telehealth visit can successfully incorporate the use of case management for cognitively impaired veterans.

Strengths and Limitations of Evidence

The levels of evidence of the included sources were Levels I, II, and III, as defined by Melnyk & Fineout-Overholt (2019) (see Table 1). Additional synthesis of evidence attached (see Appendix A); provided 3 RCTs (Noone at al., 2020, George et al., 2020 and McCallister, & Palombro, 2020), one scoping review (Stoop et al., 2019), 1 Cohort Study (Rule et al., 2021), and two Systematic Reviews (Seitz et al., 2018, and Motter et al., 2018).

Table 1

Level of Evidence for Included Sources

Level of Evidence	# of Sources	Source
Level I: Systematic Review of RCTs	10	Guzman-Clark et al., (2021) Katsimpris et al., (2019) Motter et al., (2018) Narasimha et al., (2017) Padala et al., (2020) Rasheedy et al., (2021) Seitz et al., (2018) Soler & Barreto (2019) Stewart et al., (2020) Stoop et al., (2019)
Level II: Randomized Control Trial	8	Fried et al., (2017) George et al., (2020) Hastings et al., (2021) McCallister & Palombro (2020) Mueller et al., (2018) Noone et al., (2020) Rule et al., (2021) Uemera et al., (2018)

Application to Practice

Based on this evidence-based review it was concluded there is moderate to high level of evidence which supports the use of a comprehensive geriatric evaluation can be conducted with the use of telemedicine while reducing polypharmacy. Implementing the GRIP-TH template into the CPRS system can be used in both in person visits and telehealth visits has the potential in providing high quality patient care, while providing measures for early interventions and improved safe medication reconciliation. Telehealth comprehensive geriatric evaluations serve to ensure the collaborative team provides needed interventions as a means that supplements traditional care that increases care access, efficiency, and decrease patient wait times.

Action Plan

The purpose of this evidence-based process/quality improvement project is to evaluate and implement the use of an improved geriatric evaluation via telehealth while reducing polypharmacy by providing education on alternative medication use and referrals. The interdisciplinary team for the virtual comprehensive geriatric evaluation will include a pharmacist, physical and occupational therapists, nurse, and social worker.

Population

The sample population will consist of 40 VA patients greater than 65 years of age, established in the VA geriatric clinic. Patients will be included if they have completed a telehealth visit in the past six months. Excluded patients will be those who do not wish to have a virtual clinic, who choose phone visits, or who did not complete scheduled telehealth appointments.

Setting

The setting of this project will be at the Jacksonville outpatient VA clinic. The included patients in the study will be approved by Dr. Michelle Bednarzyk, DNP APRN as the chair of this project, and Dr. Cynthia Cummings, DNP APRN as the co-chair of this project in collaboration with the clinic's DNP APRN provider Dr. Janette Dunlap at the clinic. Other stakeholders are the VHA primary care and geriatric service areas to include administrations, providers, and the geriatric veteran population.

Conceptual Framework

Theories serve to provide a framework in meeting several challenges that may include engaging individuals in altering behaviors that improve health. Proven researched theories can help to enhance guiding the development of a health promotion initiative, process improvement, or health education programs, thus resulting in possible more efficient or effective outcomes.

The theoretical framework chosen for this process improvement project, Albert Bandura's social cognitive theory will be employed. The social cognitive theory is based on learning as the interaction between personal, environmental, and behavior factors (Jin, & Baumgartner, 2019). Behaviors are influenced by observation and modeling, expected outcomes, current barriers, self-efficacy, and via intrinsic or extrinsic rewards (Chau, & Osborne, 2018, p. 26). The applicability of this theory to reducing polypharmacy, improving the current use of the geriatric evaluation, and using telehealth. Confidence will increase once veterans learn and become more experienced with digital tools, thus promoting future use of technology. With continual support in their environment, which includes families, and friends the individual's self-efficacy can also be improved in wanting to change behaviors such as agreeing to substitute possible red flag medications with alternate medications.

Procedures

The process of developing a standard of practice for the content areas that comprise a comprehensive geriatric evaluation with the use of telehealth will require a team approach. The subject content for this objective will be limited to medication-related measures and basic geriatric screens. Targets of intervention with the use of a template that can be an embedded decision tree template that will be termed as The Geriatric Reduction in Polypharmacy Telehealth (GRIP-TH)". GRIP-TH will include cognitive ability assessment, health literacy, and physical ability.

Before we begin the project, all healthcare professionals that comprise the geriatric evaluation team will be identified. Upon identifying team members, key assessment tools will be selected for the GRIP-TH template that will increase baseline data availability. The primary care provider will identify patients to conduct a comprehensive telehealth geriatric evaluation using the GRIP-TH template. Simultaneously, the clinical nurse will collect vital signs, order needed supplies, and coordinate scheduling. The social worker will evaluate and mitigate socio-economic factors that may impede quality of life. Physical therapy/occupational therapy will assess, treat and make recommendations. The dietician will assess and treat to help improve nutritional status that can help improve health outcomes. Psychiatry will evaluate the cognitive ability and prescribe while reducing potentially inappropriate medications (PIMs) with the use of the BEERS criteria (see Appendix C). Optimizing safe medication use in older adults will be done with guidance from the VA Ann Arbor Healthcare System (VAAAHS) pharmacist. The VAAAHS pharmacist will be provided with patients identified as currently being prescribed red flag medications based on their recommended high-risk medications. The pharmacist will receive an average of seven referred patients per week and will provide medication alternatives within

one week. The primary care provider will review the pharmacist's recommendations, schedule a follow-up telehealth visit to educate on medication alternatives, address patients' concerns with proposed changes, and at the conclusion of the visit, it is identified if the patient will comply with the medication changes. For those patients who agree and comply with recommendations, a follow-up will be scheduled within six weeks to re-evaluate targeted interventions compared to baseline data.

See table 2 for the proposed prior practice change timeline and post-practice change timeline.

Planning is crucial in evaluating current practice, expectations in outcomes; therefore, establishing a timeline can identify and bridge gaps. The timeline will be affected by the size of the project, staff, decision-making, as well as how urgently the organization wants the change to take effect.

Table 2, Timeline

Task		**Estimated Start**	**Estimated Length to Completion**	**Sequential or Parallel**	**Dependent Upon**
A	Identify potential VA Telehealth Candidates	Week 1	2 weeks	Sequential	Task B
B	Design EBP project/intervention	Week 2	3 Weeks	Parallel	A & C
C	Educate patients on technology use and educate staff on comprehensive geriatric evaluation tool.	Week 3	3 Weeks	Sequential	A&B

D	Assess health literacy, medication specific concerns, cognitive limitations, physical limitations, ease of use, and caregiver concerns/resources. Continually mitigate staff concerns with patient's ease or hardship with access to telehealth/care, as well tool concerns.	Week 4	90 days	Parallel	A
E	Assess data 90 days post start of pilot.	12	90 days	Sequential	C
F	Publish to the Journal of American Geriatrics Society.	13-14	60 days	Parallel	B, C, D, & E
G	EBP implementation using PDSA model. Transferability to other sites in the future	12	90 days	Sequential	A, B, C, D, & E

Data Collection

The comprehensive geriatric evaluation will provide for the geriatric screens to be completed annually, which include health literacy, cognitive abilities, physical abilities, and caregiver reliance.

Data collection will commence and conclude with information gathered on patients identified from the computerized patient record system (CPRS). Documents and records will be reviewed prior and post evaluation to identify the number of medications prescribed, the percentage of medications prescribed that are high-risk medications, to analyzing the percent of

medications that could be avoided, and the number of alternative medications that were substituted for high-risk medications to lesser risk medications post evaluation. Collection of the data will be done at three-time points: initial (1st week), during (6th weeks), and post (3-months or 12 weeks). The Geriatrics and Extended Care GeriPACT Dashboard, which is managed by the VHA Support Service Center (VSSC) will be also be used to see how many comprehensive geriatric evaluations are completed in accordance with VHA DIRECTIVE 1140.04 and evaluate the records for the percentage of CGA evaluations that led to identification and management of PIMs (see Appendix A).

Data Analysis

Expected outcomes were that geriatric veterans would benefit from a comprehensive geriatric evaluation performed through Virtual Video Connect and that the visits would likely uncover polypharmacy as effective as face-to-face visits because patients were more at ease in the confines of their homes with or without caregivers than when tasked to arrive at VA facilities. 15 out of 15 (100%) veterans observed had comorbidities (*figure 1*). The medical problems for observed geriatric veterans most identified were hypertension (86.7%), hyperlipidemia (73.3%), acute/chronic urinary issues (73.3%), diabetes mellitus (66.7%), neurological/pain issues (66.7%), and anemia (66.7%) (*figure 1*). 10 out of 15 (66.7%) of the observed geriatric veterans had been prescribed five or more medications which meet the criteria for polypharmacy according to Davies er al. (2020) (*figure 2*). 8 out of 15 (53.3%) observed veterans were prescribed high-risk or red-flag PIMs as defined by GRECC criteria (*figure 2*, See Appendix D).

12 out of 15 (80%) observed were taking some type of vitamin, minerals, electrolytes, or herbal supplements, which also adds to the number of pills the veterans were taking (*figure 3*).

Nineteen categories were derived based on the medical problems we collected from the observed veterans. The medical problems identified for all the veterans accounted for 190 confirmed medications (prescribed or over the counter) and vitamins, minerals, electrolytes, or herbal supplements that the veterans were taking, with the majority being in the form of something taken orally or injected intradermally. 43 out of the 190 (22.6%) were vitamins, minerals, electrolytes, or herbal supplements, 25 out of 190 (13.2%) were cardiac/hypertensive medications, 17 out of 190 (8.9%) were gastrointestinal medications, 14 out of 190 (7.4 %) were cardiac/hyperlipidemia, 14 out of 190 (7.4%) were endocrine medications, 13 out of 190 (6.8%) were respiratory medications, 12 out of 190 were (6.3%) were pain medications. The remaining 12 categories accounted for 52 out of 190 (27.4%).

18 total medications prescribed for observed veterans were determined to be high-risk or red-flag medications. However, using the GRIP-TH template and virtual video connect, 9 (50%) of the prescribed medications were changed or resolved with recommendations from the pharmacist assigned to review the veterans' records (*figure 2*, See Appendix D). Red-flag medications that were identified as PIMs included one benzodiazepine (alprazolam) and three non-steroidal anti-inflammatory drugs (NSAIDs) (aspirin>325 mg day, diclofenac, and meloxicam) (*figure 4*). High-risk medications identified one oral diabetic (glimepiride), one blood pressure medication (nifedipine IR), 2 proton pump inhibitors (omeprazole, pantoprazole), and three anticoagulants/antiplatelets (apixaban, clopidogrel, and warfarin) (*figure 5*).

Figure 2

Medical Conditions

	Vet 1	Vet 2	Vet 3	Vet 4	Vet 5	Vet 6	Vet 7	Vet 8	Vet 9	Vet 10	Vet 11	Vet 12	Vet 13	Vet 14	Vet 15	Total	% of Vets with condition
Hypertension (HTN)	X	X		X	X	X	X	X	X	X		X	X	X	X	13	86.7%
Hyperlipidemia (HLD)		X	X	X	X		X	X		X		X	X	X	X	11	73.3%
Acute/Chronic Urinary /Prostate issues/BPH		X	X		X		X	X	X	X	X		X	X	X	11	73.3%
Diabetes Mellitis (DM)	X	X		X			X	X			X	X	X	X	X	10	66.7%
Neurological (arthritis, neuropathy)		X		X	X			X		X	X	X	X	X	X	10	66.7%
Audiology Issues	X	X		X	X			X	X	X	X		X	X		10	66.7%
Anemia		X	X		X	X	X				X	X	X	X		9	60.0%
Vitamin D deficient	X	X	X					X	X	X	X		X		X	9	60.0%
GI Disorders		X			X	X		X		X			X	X	X	8	53.3%
Skin Disorders		X	X		X	X					X	X	X		X	8	53.3%
Optometry Issues	X			X	X	X		X				X	X			7	46.7%
Congestive Heart Failure (CHF)/Cardiac Disease	X				X			X	X		X		X			6	40.0%
Chronic Kidney Disease (CKD)		X				X	X				X		X	X		6	40.0%
Podiatry Issues	X			X	X			X					X			5	33.3%
Acute Respiratiory		X			X							X		X		4	26.7%
Chronic Respiratory / COPD / Asthma		X				X		X				X				4	26.7%
Sleep Disturbances												X	X			2	13.3%
Chronic Pain					X								X			2	13.3%
Erectile Dysfunction		X										X				2	13.3%
Thyroid Disorders					X							X				2	13.3%
Obesity	X				X											2	13.3%
Failure to thrive				X												1	6.7%
Substance abuse														X		1	6.7%
PTSD/Mental Health		X														1	6.7%
Vitamin B deficient		X														1	6.7%

100% of all veterans have comorbidities

Figure 3

Medication Review

	Total # of VA prescription medications	Total # of Non-VA prescription medications	# of OTC medications	Vitamins	Herbal supplements / treatments	Total # of prescription medications /supplements/vitamins	# of Potential red flag /high risk medications	# of Potential deprescribing opportunities	# of Potential outdated medications identified during reconciliation	Medication education provided	# of Medictions disccontinued	# of Medictions Added/changed
Veteran 1	0	0	0	0	0	0	0	0	0	X	0	0
Veteran 2	12	0	6	0	0	18	3	1	1	X		1
Veteran 3	1	1	1	2	0	5	1	2	0	X	0	1
Veteran 4	0	8	3	2	0	13	0	1	0	X		
Veteran 5	7	0	5	2	0	14	0	0	0	X	1	
Veteran 6	3	0	1	10	0	14	0	0	0	X		
Veteran 7	4	0	2	0	0	6	0	0	0	X		
Veteran 8	11	0	3	1	0	15	4	0	0	X		
Veteran 9	7	0	0	4	0	11	1	2	1	X	2	1
Veteran 10	14	0	3	2	0	19	1	2	0	X		
Veteran 11	5	4	2	2	0	13	1	2	0	X		
Veteran 12	11	4	2	2	0	19	0	3	0	X		1
Veteran 13	13	2	2	1	0	18	0	3	0	X		
Veteran 14	10	2	1	3	0	16	4	1	0	X		1
Veteran 15	0	3	1	3	0	7	3	0	0	X	1	

66.7%	Approximately take 5 or more prescription medications for comorbidities
53.3%	Are prescribed high risk or red/flag medications
60.0%	Of medications/vitamins/herbal supplements can potenitially be deprescribed

18	Total # of prescription red flag/ high risk medications
9	Total # of prescription red flag/ high risk medications changed or resolved
50%	% of prescription red flag/ high risk medications changed or resolved

Figure 4

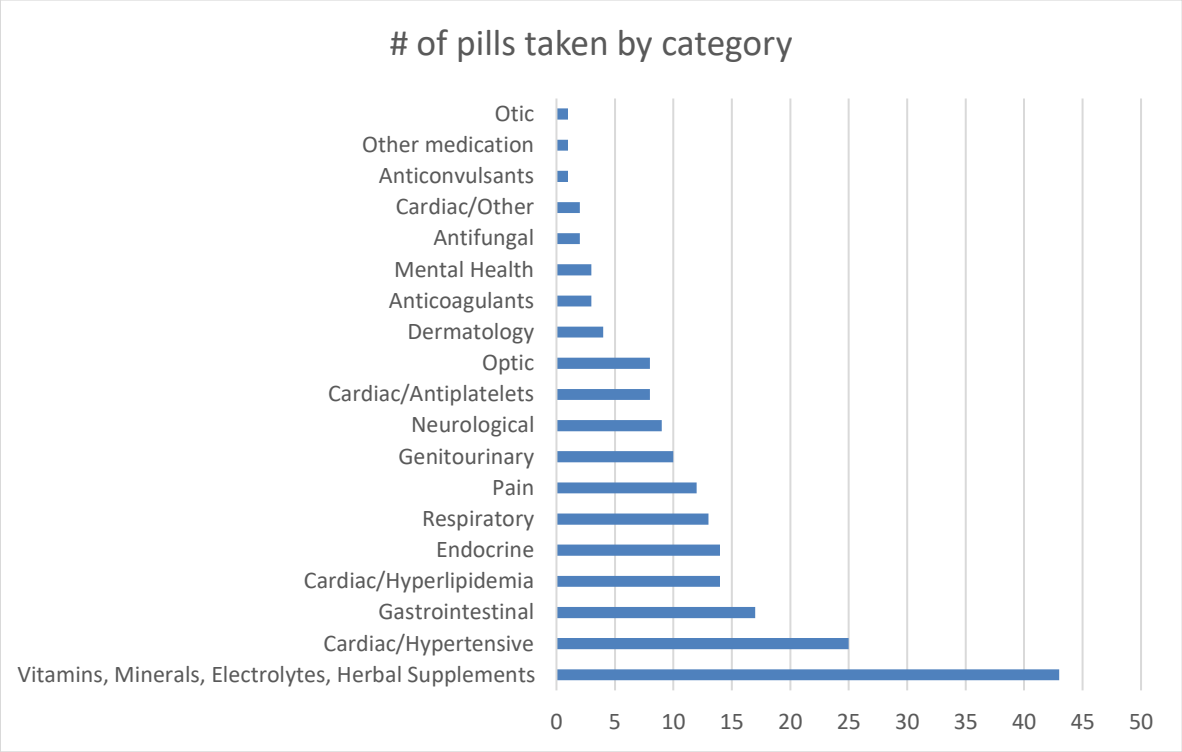


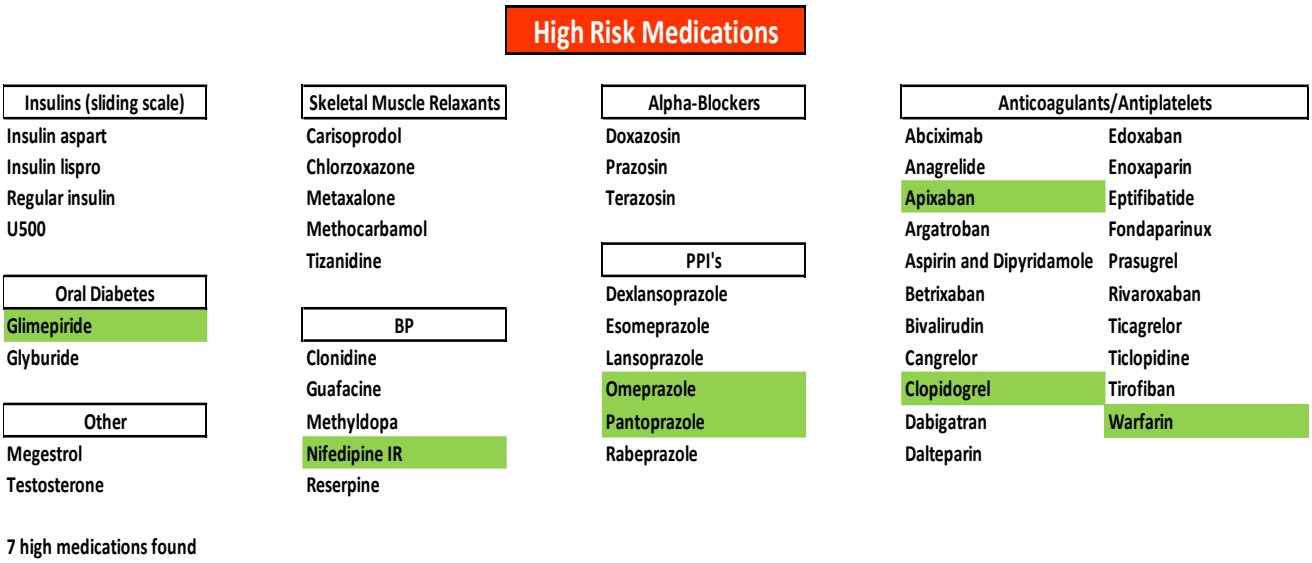
Figure 5

Red Flag Medications

BZD	NSAIDs	Barbiturates	Highly Anticholinergic		Antipsychotics	SGA
Alprazolam	Aspirin >325 mg/day	Amobarbital	Benztropine	Homatropine	Chlorpromazine	Aripiprazole
Chlorazepate	Celecoxib	Butabarbital	Brompheniramine	Hydroxyzine	Fluphenazine	Asenapine
Chlordiazepoxide	Diclofenac	Butalbital	Carbinoxamine	Hyoscyamine	Haloperidol	Brexipiprazole
Clobazam	Diflunisal	Mephobarbital	Chlorpheniramine	Meclizine	Loxapine	Cariprazine
Clonazepam	Etodolac	Pentobarbital	Chlorpheniramine	Methscopolamine	Loxapine	Clozapine
Diazepam	Fenoprofen	Phenobarbital	Clemastine	Orphenadrine	Molindone	Iloperidone
Estazolam	Ibuprofen	Secobarbital	Clidinium-chlordiazepoxide	Oxybutynin	Perphenazine	Lurasidone
Flurazepam	Indomethacin		Cyclobenzaprine	Paroxetine	Pimozide	Olanzapine
Lorazepam	Ketoprofen	TCA's	Cyproheptadine	Promantheline	Prochlorperazine	Paliperidone
Midazolam	Ketorolac	Amitriptyline	Darifenacin	Promethazine	Thioridazine	Pimavanserin
Oxazepam	Meclofenamate	Amoxapine	Dexbrompheniramine	Propantheline	Thiothixene	Quetiapine
Quazepam	Mefenamic acid	Clomipramine	Dexchlorpheniramine	Pyrilamine	Trifluoperazine	Risperidone
Temazepam	Meloxicam	Desipramine	Dicyclomine	Scopolamine		Ziprasidone
Triazolam	Nabumetone	Doxepin >6mg	Dimenhydrinate	Solifenacin		
	Naproxen	Imipramine	Diphenhydramine	Tolterodine	Heart/Blood	
Z-Drugs	Oxaprozin	Maprotiline	Disopyramide	Trihexyphenidyl	Digoxin >0.125 mg/day	
Eszopiclone	Piroxicam	Nortriptyline	Doxylamine	Triprolidine		
Zaleplon	Salsalate	Protriptyline	Fesoterodine	Trospium		
Zolpidem	Sulindac	Trimipramine	Flavoxate			
	Tolmetin					

4 red flag medications found

Figure 6



In addition to reviewing medications for polypharmacy, the GRIP-TH template included several assessment tools that are correlated to PIMs usage and or medication side effects that warranted investigation. 4 out of 15 (26.7%) of the observed veterans reported previous falls in the last 12 months with 3 out of 4 (75%) were also identified as taking PIMs. Further evaluation showed that 6 out of 15 (40%) veterans were at risk for falls based upon the fall risk identifiers reported. As falls can also be related to incontinence, mobility, and mental cognition, data was collected from veterans related to these items. 8 out of 15 (53%) of the veterans reported some type of incontinence, 4 out of 15 (27%) were at risk for falls based on their timed-up and go (TUG score greater than 12 seconds), and 3 out of 15 (20%) performed abnormal (received a score of 2 or less) on their mini-cog evaluation respectively (*figure 6*, *figure7*, *figure 8*). 1 out the 15 patients were identified as potentially needing to be further evaluated for depression based upon the geriatric depression scale (*figure 9*).

Figure 5

Fall Risk

	Have you had any falls within the past 12 months?	When you walk through a room, do you have to walk around furniture?	Do you have any throw rugs on the floor?	Are there papers, books, towels, shoes, magazines, boxes, blankets, or other objects on the floor?	Do you have to walk over or around wires or cords (like a lamp, telephone, or extension cords?
Veteran 1	NO	NO	NO	NO	NO
Veteran 2	NO	NO	NO	NO	NO
Veteran 3	NO	NO	NO	NO	NO
Veteran 4	NO	NO	YES	NO	NO
Veteran 5	NO	NO	NO	NO	NO
Veteran 6	YES	NO	YES	NO	YES
Veteran 7	NO	NO	NO	NO	NO
Veteran 8	YES	YES	YES	NO	YES
Veteran 9	YES	NO	NO	NO	NO
Veteran 10	N0	N0	N0	N0	YES
Veteran 11	NO	NO	NO	NO	NO
Veteran 12	NO	NO	NO	NO	NO
Veteran 13	NO	NO	NO	NO	NO
Veteran 14	YES	YES	YES	YES	NO
Veteran 15	NO	NO	NO	NO	NO

26.7% % who have falls in previous 12 months
75.0% who fell were identified taking PIMs

40.0% % who are at risk for a fall due to trip hazards
50.0% chance that a fall could happen due to trip hazards identified

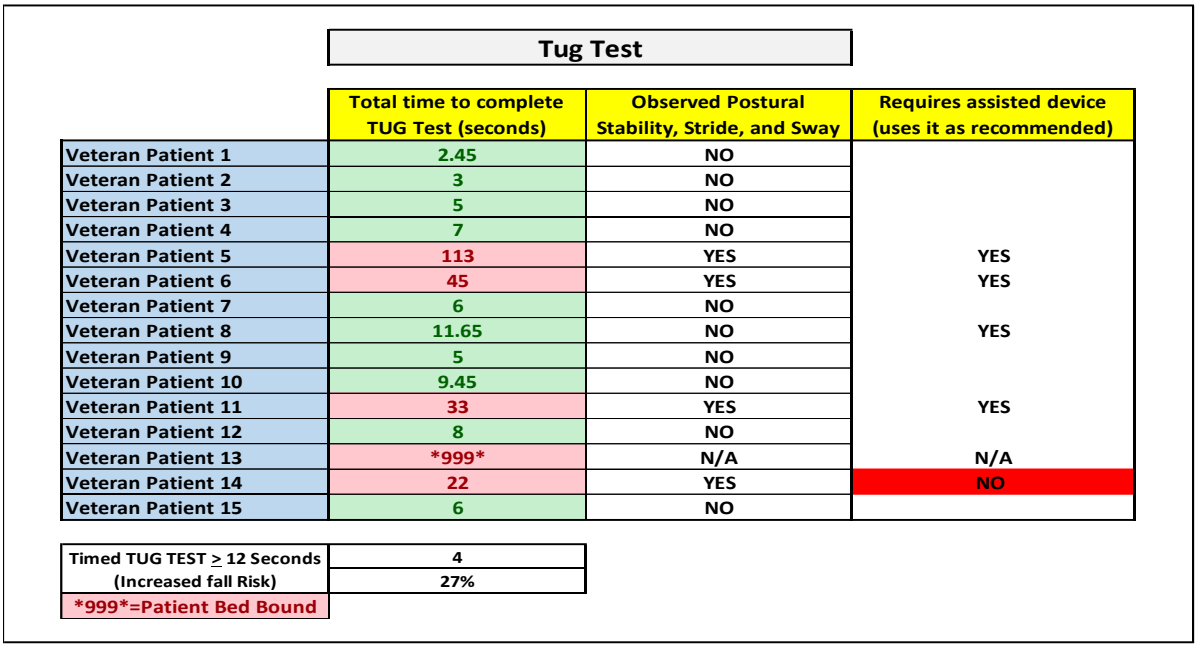
Figure 6

Urinary Incontinence

	Urge Incontinence	Stress Incontinence	Mixed Incontinence	Overflow Incontinence	Functional Incontinence	Total Incontinence
Veteran 1	NO	NO	NO	NO	NO	NO
Veteran 2	YES	NO	YES	YES	YES	NO
Veteran 3	NO	NO	NO	NO	NO	NO
Veteran 4	NO	NO	NO	NO	NO	NO
Veteran 5	YES	YES	YES	YES	YES	NO
Veteran 6	YES	NO	NO	NO	NO	NO
Veteran 7	NO	NO	NO	NO	NO	NO
Veteran 8	NO	NO	NO	YES	NO	NO
Veteran 9	NO	NO	NO	YES	NO	NO
Veteran 10	NO	NO	NO	YES	NO	NO
Veteran 11	YES	NO	YES	YES	YES	YES
Veteran 12	NO	NO	NO	NO	NO	NO
Veteran 13	NO	NO	NO	NO	NO	NO
Veteran 14	YES	YES	YES	YES	NO	YES
Veteran 15	NO	NO	NO	NO	NO	NO

53% % who have at least some kind of incontinence

Figure 7

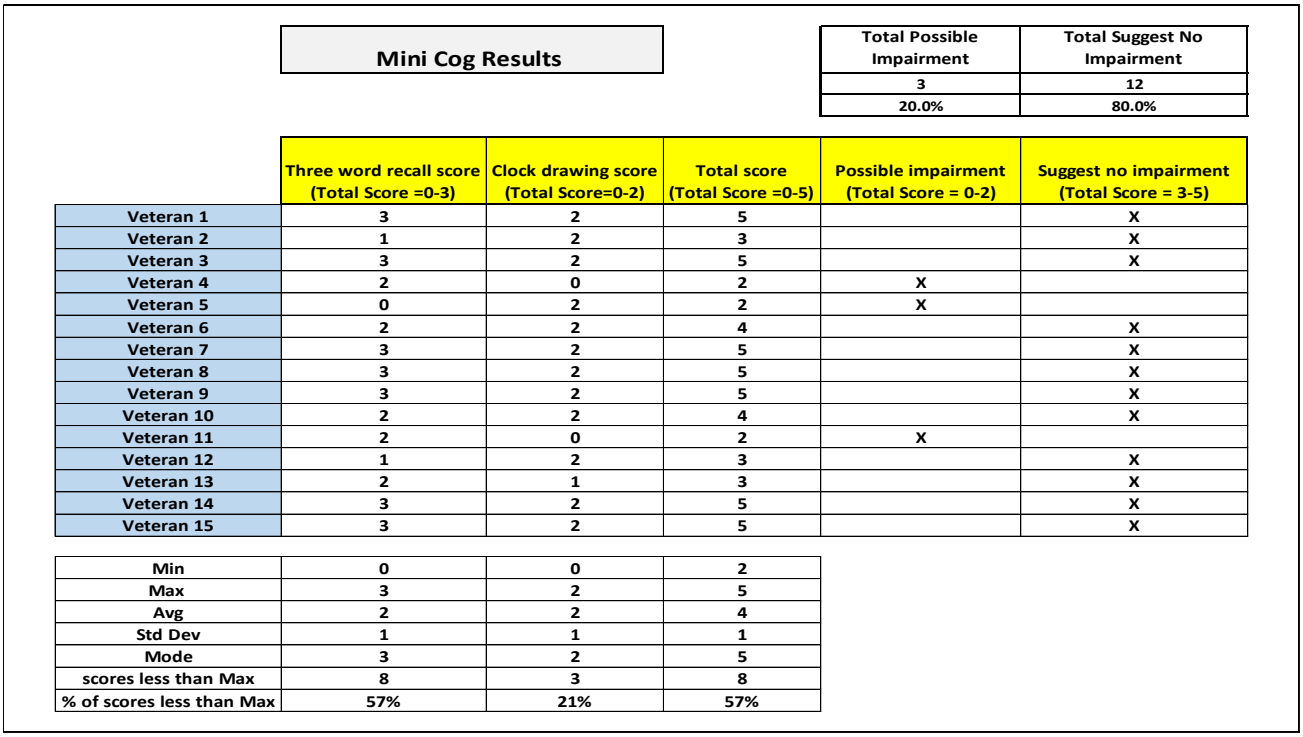


Tug Test

	Total time to complete TUG Test (seconds)	Observed Postural Stability, Stride, and Sway	Requires assisted device (uses it as recommended)
Veteran Patient 1	2.45	NO	
Veteran Patient 2	3	NO	
Veteran Patient 3	5	NO	
Veteran Patient 4	7	NO	
Veteran Patient 5	113	YES	YES
Veteran Patient 6	45	YES	YES
Veteran Patient 7	6	NO	
Veteran Patient 8	11.65	NO	YES
Veteran Patient 9	5	NO	
Veteran Patient 10	9.45	NO	
Veteran Patient 11	33	YES	YES
Veteran Patient 12	8	NO	
Veteran Patient 13	*999*	N/A	N/A
Veteran Patient 14	22	YES	NO
Veteran Patient 15	6	NO	

Timed TUG TEST ≥ 12 Seconds	4
(Increased fall Risk)	27%
999=Patient Bed Bound	

Figure 8



Mini Cog Results

Total Possible Impairment	Total Suggest No Impairment
3	12
20.0%	80.0%

	Three word recall score (Total Score =0-3)	Clock drawing score (Total Score=0-2)	Total score (Total Score =0-5)	Possible impairment (Total Score = 0-2)	Suggest no impairment (Total Score = 3-5)
Veteran 1	3	2	5		X
Veteran 2	1	2	3		X
Veteran 3	3	2	5		X
Veteran 4	2	0	2	X	
Veteran 5	0	2	2	X	
Veteran 6	2	2	4		X
Veteran 7	3	2	5		X
Veteran 8	3	2	5		X
Veteran 9	3	2	5		X
Veteran 10	2	2	4		X
Veteran 11	2	0	2	X	
Veteran 12	1	2	3		X
Veteran 13	2	1	3		X
Veteran 14	3	2	5		X
Veteran 15	3	2	5		X

Min	0	0	2
Max	3	2	5
Avg	2	2	4
Std Dev	1	1	1
Mode	3	2	5
scores less than Max	8	3	8
% of scores less than Max	57%	21%	57%

Figure 9

Geriatric Depression Scale

	Vet 1	Vet 2	Vet 3	Vet 4	Vet 5	Vet 6	Vet 7	Vet 8	Vet 9	Vet 10	Vet 11	Vet 12	Vet 13	Vet 14	Vet 15	Total signs of Depression by Question	% of Vets who had this symptom
1. Are you basically satisfied with your life? (NO=1)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	0	0.00%
2. Have you dropped many of your activities and interests? (YES=1)	YES	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	YES	YES	NO	NO	6	40.0%
3. Do you feel that your life is empty? (YES=1)	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	1	6.7%
4. Do you often get bored? (YES=1)	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	3	20.0%
5. Are you in good spirits most of the time? (NO=1)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	0	0.0%
6. Are you afraid that something bad is going to happen to you? (YES=1)	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	1	6.7%
7. Do you feel happy most of the time? (NO=1)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	0	0.0%
8. Do you often feel helpless? (YES=1)	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	YES	NO	NO	4	26.7%
9. Do you prefer to stay at home, rather than going out into a new things? (YES=1)	NO	NO	NO	YES	YES	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	10	66.7%
10. Do you feel you have more problems with memory than most? (YES=1)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0.0%
11. Do you think it is wonderful to be alive now? (NO=1)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	0	0.0%
12. Do you feel pretty worthless the way you are now? (YES=1)	NO	YES	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	2	13.3%
13. Do you feel full of energy? (NO=1)	YES	YES	NO	YES	YES	YES	YES	NO	NO	NO	YES	YES	NO	NO	YES	6	40.0%
14. Do you feel that your situation is hopeless? (YES=1)	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	1	6.7%
15. Do you think that most people are better off than you are? (YES=1)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	1	6.7%

5 points or more /suggestive of depression /warrrant interview 1

Using the Lawton IADL scale for which validity has been reported significant at the .01 or .05 level and reliability of 0.88, the observed veterans showed that 6 out of 15 (40%) relied upon caregivers for medication assistance and 7 out of 15 (46%) relied on caregiver assistance for food preparation (*figure 10*). Since all the observed veterans were male, scoring the areas of food preparation, housekeeping, and laundering should identify if the veteran had previously conducted activities. If females were included, it would be essential also to identify previous capabilities. This may lead to bias as males are treated as if they do not perform household chores. Another effect correlated to the Lawton IADL was the Caregiver Burden screen (Zarit-Screen) that was done during the virtual visit connect, which showed that 4 out of 15 (26.7%) of the caregivers that performed tasks for the observed veterans reported burden with regards to the veteran's care with one showing high burden and three showing moderate burden. Referrals were made to the study team's geriatric social work (*figure 11*).

Figure 10

Lawton IADL

Rely on caregiver for nutrition*	7
Rely on caregiver for medications**	6
Total other IADL activites caregiver assists with	28

	Vet 1	Vet 2	Vet 3	Vet 4	Vet 5	Vet 6	Vet 7	Vet 8	Vet 9	Vet 10	Vet 11	Vet 12	Vet 13	Vet 14	Vet 15	Total
1. Ability to use telephone	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
2. Shopping	0	1	1	0	0	1	1	1	1	1	0	0	0	1	1	9
3. Food Preparation	0	1	1	0	0	1	1	1	1	1	0	0	0	0	1	8
4. Housekeeping	1	1	1	1	0	1	1	1	1	1	0	1	0	0	1	11
5. Laundry	0	1	1	0	0	1	1	0	1	1	0	1	0	0	1	8
6. Mode of Transportation	0	1	1	1	0	1	1	1	1	1	0	0	0	0	1	9
7. Responsibility for own medications	0	1	1	0	0	1	1	1	1	1	0	0	0	1	1	9
8. Ability to handle finances	0	1	1	1	0	1	1	1	1	1	0	0	0	1	1	10

*46% of sample need help with nutrition
*40% of sample need help with medictions

Figure 11

Caregiver Burden Scale

	Do you feel that because of your relative that you don't have enough time for yourself?	Do you feel stressed between caring for your relative and trying to meet other responsibilities (work, home)?	Do you feel strained when you are around your relative?	Do you feel uncertain about what to do about your relative?
Veteran 1	0	0	0	0
Veteran 2	999	999	999	999
Veteran 3	999	999	999	999
Veteran 4	2	1	0	0
Veteran 5	0	0	0	0
Veteran 6	2	2	3	2
Veteran 7	0	0	0	0
Veteran 8	0	0	0	0
Veteran 9	999	999	999	999
Veteran 10	999	999	999	999
Veteran 11	2	2	0	2
Veteran 12	2	2	0	0
Veteran 13	0	0	0	0
Veteran 14	0	0	0	0
Veteran 15	0	0	0	0

999 means no caregiver support needed at this time
Sent addendum request to social worker to contact caregiver regarding additional support that can be provided

The average age of the observed veterans was 83.4 and 53.4% of them reported use of MyHealthevet (*figure 12*). Referrals were made for observed veterans based on results from the GRIP-TH template answers received (*figure 13*). A social worker, Geriatric Nurse, and Pharmacist were seen or were alerted to see the veterans as part of the comprehensive geriatric assessment requirements. 7 out of the 15 (46.75) veterans were referred to mental health/psychiatric for follow-up based upon their geriatric depression score and MiniCog results. 4 out of 15 (26.7%) could benefit from physical therapy and or occupational therapy based upon the results from their TUG test, subjective input from patient/caregiver. All referrals were not executed due to changes in the collection time and project end date.

Figure 12

	Other Metrics							
	Tobacco Use	Alcohol Use	Caffeine use	Illegal Drug use	AGE	Comfortable with current care plan	Veteran or Caregiver uses MyHealthevet	Needs Precheck in
Veteran 1	NO	NO	YES	NO	84	YES	YES	x
Veteran 2	NO	NO	YES	NO	76	YES	NO	x
Veteran 3	NO	NO	YES	NO	74	YES	YES	x
Veteran 4	NO	NO	YES	NO	91	YES	YES	x
Veteran 5	NO	YES	YES	NO	100	YES	NO	x
Veteran 6	NO	YES	YES	NO	90	YES	YES	x
Veteran 7	NO	NO	N0	NO	78	YES	NO	x
Veteran 8	NO	YES	YES	NO	87	YES	YES	x
Veteran 9	NO	NO	YES	NO	76	YES	YES	x
Veteran 10	NO	YES	YES	NO	73	YES	YES	x
Veteran 11	NO	NO	N0	NO	93	YES	NO	x
Veteran 12	NO	NO	N0	NO	80	YES	YES	x
Veteran 13	NO	NO	YES	NO	86	YES	NO	x
Veteran 14	YES	NO	YES	YES	84	YES	NO	x
Veteran 15	NO	NO	N0	NO	79	YES	NO	x

Previous smoker		Age range	73-100	% use Myhealthevet	53%
Educated to use		Average age	83.4		

Figure 13

	Referrals/Cosultations					
	Social Worker*	Mental Health/ Psychiatric **	Geriatric Nurse*	Pharmacist Review*	Self-Referral Clinics (Audilogy, Optometry, Podiatry)	PT/OT***
Veteran 1	x	x	x	x	x	
Veteran 2	x		x	x	x	
Veteran 3	x		x	x	x	
Veteran 4	x	x	x	x	x	
Veteran 5	x	x	x	x	x	x
Veteran 6	x		x	x	x	x
Veteran 7	x		x	x	x	
Veteran 8	x		x	x	x	
Veteran 9	x	x	x	x	x	
Veteran 10	x		x	x	x	
Veteran 11	x	x	x	x	x	x
Veteran 12	x		x	x	x	
Veteran 13	x	x	x	x	x	
Veteran 14	x	x	x	x	x	x
Veteran 15	x		x	x	x	

* Social worker, Geriatric Nurse and Pharmacist should see everyone
**Based on depression score scale and minicog
*** Based upon TUG test,subjective input from patient/caregiver

Human Subjects Protection

The University of North Florida's Institutional Review convened to analyze this project. The board's thorough evaluation concluded the research did not involve human subjects, thereby warranting a waiver of the IRB review. The North Florida South Georgia Veterans' Health Systems' Evidence Base Practice and Research Council conducted their review, and approved this scholarly project. This project is not a research study, but rather a quality improvement project.

Organizational Factors

This project is applicable to both virtual and in person comprehensive geriatric evaluations. Providing a telehealth evaluation provides safer workflows as patients do not have to wait in lobbies or distanced in vehicles while waiting for an appointment. Providing telehealth geriatric evaluations is cost effective for both the patients and the VA. Remote care is conducted via the VA's established virtual video connect or a free alternative platform such as doximity. Targets of intervention with the use of a template used as a decision tree template is embedded into the VA's documentation system CPRS. The decision tree template is termed as :The Geriatric Reduction in Polypharmacy Telehealth (GRIP-TH)". GRIP-TH, will include cognitive

ability assessment, health literacy, and physical ability. The template provides for continual ease of evaluation, thus reduces appointment duration times, allowing for increased scheduling capability.

Other available resources at the VA include providers with a wide range of expertise, other subject matter expects that include statisticians as well as the Geriatric Research Education and Clinical Center (GRECC) who are continually finding innovative ways to improve geriatric healthcare.

As telehealth proves to be an indispensable alternative asset in providing healthcare, there are barriers to implementing the GRIP-TH to conduct a comprehensive geriatric evaluation. One of the most significant barriers is patients not having an email address to send the virtual visits' link, or not knowing how to check their email to access the visit's link. The assigned clinic must ensure to add the responsibility to a pre-check in staff member to conduct a connectivity walk through. By the assigned staff member conducting a walk through, issues of poor internet connection can be mitigated, needed supplies and equipment such as eyeglasses, hearing aids, paper, pen, and medications can be readily available or accessible thus minimizing possible distractors and potential successful visit.

The collaborating team must have an identified time frame to follow up by providing feedback on medications, schedule needed physical or mental health for the patient or caregiver, as well as provide social work evaluations and services. The team must be inclusive, therefore the geriatric team must have this staff assigned to the team and allow for them to have schedules that follow up after the primary care provider has conducted the yearly comprehensive geriatric evaluation to properly validate the visit.

Outcome Evaluation

A total of 15 patients were pre-screen for telehealth capability, were evaluated with the GRIP-TH template and completed the full visit. In reviewing the survey data, the geriatric population are able to use telehealth technology. The GRIP-TH template did identify18 potential inappropriate medications (3 red flags, 7 high risk, and 8 were duplicates); 50% of the medications were discontinued, changed to alternative medications, or patients were educated on reason for discontinuing as patients were prescribed by outside the VA providers.

Discussion

One myth that is often heard is older people can't use the technology. This study showed that older people were accepting of technology as long as it worked. The only frustrated veteran was the one veteran who we could not reach over the internet making it unable to perform the evaluation online. Like the VA Palo Alto Geriatrics clinic study conducted by Nearing et al. (2020), positive experiences for telehealth were noted. Veterans and caregivers were appreciative of the time savings and the "attention to care" they received during this study.

Utilizing Virtual Video Connect and veterans, we were able to demonstrate that polypharmacy can be reduced using the GRIP-TH template. Using virtual video connect to perform a comprehensive geriatric assessment and to minimize polypharmacy is achievable provided that you have a complete team that has adequate time to do so. Research suggests that telehealth can achieve good results especially where there is an established relationship among the provider and patient. However, little information was available to show whether a veteran would give the allotted time to complete the geriatric assessment over the internet. Not only were we able to complete the evaluations, all of the veterans that were observed were very pleased with the though assessment that was performed.

Polypharmacy was much more prevalent in the study than we expected. Reasons for this may be that all the veterans in the study had significant comorbidities and were taking several medications in their care plan. According to Masnoon et al. (2017), patients with five or more comorbidities are at a higher risk for polypharmacy. The findings of this study suggest that comorbidities do correlate with higher risk of polypharmacy. Hypertension, hyperlipidemia, and diabetes were among the largest medical problems that geriatric veterans face, however acute/chronic urinary issues and anemia were more prevalent than previously expected. One thing that stood out was that many patients talk about "pill burden" (having to take too many pills), but our data showed that about 22% of pills veterans were taking were vitamins, minerals, electrolytes, or herbal supplements. As prescribers, educating veterans about the use of vitamins, minerals, electrolytes, or herbal supplements should be incorporated into your practice as many veterans were taking them and did not need them according to their review of their objective data. Another theme that was resonated was that many patients take medications and don't know what they are for and neither does the caregiver. Diligence should be taken when prescribing to provide the veterans and their caregivers with education on the medications and make sure they understand what it being told them. Performing medication reviews with a pharmacist was very beneficial to the patient as it allowed for medications that were not necessary to be changed on eliminated in a timely manner. Turnaround time to get feedback from the pharmacist about reviewing medications should take less than one week which in most cases the goal was achieved. Tools that were provided by the GRECC program as best practices were well received by the veterans and their caregivers.

In the VA healthcare system, many veterans have additional providers who are not part of the VA healthcare system so many medication may not be accounted for due to lack of

continuity of care. As prescribers, many times patients don't always tell you all the medications because they can't remember them. By being able to be at home, patients were able to just grab their medications and tell what they were taking.

The last theme that this study shows is that as healthcare providers we need to be more aware to the person holistically. One thing that was reported by veterans and caregivers during this study was that "they felt the VA was taking care of them". When asked what "taking care of them" meant, the majority of the veterans proclaimed it meant taken care of them as a person and their family. Scheduling times that fit their schedule, pre-visit calls, listening, and providing feedback/education were deemed valuable to veterans.

Limitations

One limitation is the sample size, as the total of scheduled patients were 16, but only fifteen were completely evaluated. The sample size was also limited to male geriatric veterans, as the geriatric clinic's female population is less than 5%, and they were not scheduled during the time frame of this project. Another limitation was the clinic not having enough that could alleviate pre-check in, which would have involved ensuring the scheduled individuals knew how to access their link prior to the visit, as well as having all their vitals documented. Pre-check in by the nurse or licensed practical nurse would ensure internet connectivity issues are identified, and vitals are documented in real time thus minimizing potential delay in the current and future appointments.

Implications for Practice

The use of telehealth provides an alternative to providing healthcare at a distance. During times of pandemic or high incidence of communicable diseases, the use of telehealth ensures continual patient-provider connection. Veterans who may have anxiety with in-person

appointments or those who lack reliable transportation would benefit with telehealth evaluations. No-show appointments can be reduced, and patients can be closely monitored in all body systems, which can preclude need for follow up face-to-face appointments.

Implications for Future Research

Based on the previously appraised evidence and the findings of this project, it would be of great interest to research whether conducting the telehealth comprehensive geriatric evaluation leads to clinicians having shorter in person visits. Another future research implication is whether telehealth triage appointments' assessments provide relevant data that is synchronous with in person assessment findings. Future research in the aforementioned areas can lead to improved policies regarding efforts in VA patients having reliable internet accessibility, improved home monitoring technology, improved access to resources for patients and caregivers.

Conclusions

Based on this evidence-based review it was concluded there is moderate to high level of evidence which supports the use of a comprehensive geriatric evaluation can be conducted with the use of telemedicine while reducing polypharmacy.

Telehealth comprehensive geriatric evaluations serve to ensure the collaborative team provides needed interventions as a means that supplements traditional care that increases care access, efficiency, and decrease patient wait times. The interdisciplinary team for the virtual comprehensive geriatric evaluation will include a PCP, pharmacist, physical and occupational therapists, nurse, and social worker.

Implementing the use of the GRIP-TH template into the VA's charting (CPRS) system can be used in both in person visits and telehealth visits; has the potential in providing high

quality patient care, while providing measures for early interventions and improved safe medication reconciliation.

Based off the social cognitive theory, confidence will increase once veterans learn and become more experienced with digital tools, thus promoting future use of technology. With continual support in their environment, which includes families, and friends-the individual's self-efficacy can also be improved in wanting to change behaviors such as agreeing to substitute possible red flag medications with alternate medications.

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Appendix A

Evaluation of Studies Demonstrating the Impact of Geriatric Assessment Tools and Telemedicine

Citation	Design	Sample/ Setting	Variables	Analysis	Findings	Strength of the Evidence
Noone et al., 2020	Randomized Control Trial	3 Cluster Quasi RCTs; total 201 participants Adults 65 and older Studies were conducted in Taiwan These included participants in nursing homes. Median age of older adults in trials was 65	Intervention- Lonelines, Social Isolation, Symptoms of Depression, Quality of Life Control- standard face-to-face check-ups Efficacy variables: Risk of selection, performance, detection, attrition, an reporting bias	GRADE Approach Intra-cluster coefficient (ICC)	Using the UCLA loneliness scale-at 3 months' follow up with three studies, mean difference -0.44, 85% CI -3.28 to 2.41 for all 201 participants. At 6 months with 2 studies for 152 individuals-MD -0.34, 95CI -3.41 to 2.72. At 12 months with one study for 90 individuals- MD -2.40, 95%CI -7.20 to 2.40. Using the geriatric depression scale-At three months using 3 studies for all 201 individuals-MD 0.41, 95%CI -0.90 to 1.72. At 6	**Strengths:** Level I evidence; Jadad Score: 4 **Limitations**: Conducted in one geographic area, only included individuals living in nursing homes. The UCLA loneliness scale-evidence was found to be very uncertain. Using the geriatric depression scale-the researchers had to downgrade the certainty of the evidence by three levels due to limitations of the study regarding impreciseness and indirectness. **Risk of harm:** no significant harm from remote video calls

					months using 2 studies with 152 individuals-MD -0.83, 95%CI -2.43 to 0.76. At 12 months using 1 study with 90 individuals- MD -2.04, 95%CI -3.98 to -0.10.	**Feasibility:** Use of technology is feasible in reducing loneliness among older adults.
George et al., 2020	Randomized Control Trial	40 RCTs; total 14,269 participants Older adults older than 65 years Living at home or discharged from inpatient setting to home with 4 or more medications	Intervention- 14-Educational 7-behavioral Strategies 29-Mixed-educational and behavioral interventions 5-medication taking ability 48-evaluated interventions for improving medication adherence	Random-effects model GRADE-Grades of Recommendation, Assessment, Development, and Evaluation to assess evidence certainty	Behavioral interventions that included 4 studies, resulted in RR 1.22, 95% CI 1.07 to 1.38. Mixed interventions that included 12 studies resulted in RR 1.22, 95% CI 1.08 to 1.37. In 5 studies regarding educational only interventions results were SMD 0.16, 95% CI -0.12 to 0.43, while 7 studies resulted in SMD 0.47, 95% CI -0.08 to 1.02.	**Strengths:** Level I evidence; Jadad Criteria 3 **Limitations**: Differences in interventions' delivery caused for a low quality of evidence. **Risk of harm:** Uncertainty in the effects of behavioral, educational, or mixed interventions on mortality. **Feasibility:** Mixed interventions that include educational and behavioral interventions may

						improve proper medication adherence.
Stoop et al., 2019	Scoping Review	27 integrated care programs and 21 comprehensive geriatric assessment tools (CGA) Older adults living at home January 2006 to June 2018	The countries that have integrated care programs were Netherlands (n=12), United States (n=5), Canada (n=4), Japan (n=2), France (n=1), Germany (n=1), New Zealand (n=1), and Sweden (n=1)	Comprehensive Multidisciplinary Person-Centered	Geriatric Resources for Assessment and Care of Elders (GRACE), helps to evaluate functional status, decrease excess healthcare use and prevent long term nursing home placement. A useful tool for primary care settings with a focus on low income older people as the target group. It recommends having a geriatrician, an NP/PCP, SW, pharmacist, PT, mental health, and community based service liaison. The Geriatric Evaluation and Self-Management Services	**Strengths:** Level IV evidence; AMSTAR low quality review **Limitations**: Variability in appropriate frailty screening, diagnostic tools and effective interventions. Lack of empirical evidence on effectiveness and costs. **Risk of harm:** Minimized risk to patient is likely. **Feasibility:** Developing a tool suitable for a specific practice area/population may satisfy older adults problems and care needs.

					(GEMS), is an integrative program that recommends evidence-based prevention oriented interventions provided by an interdisciplinary team. The targeted population involves older people living in the community with one or more chronic illnesses.	
McCallister, & Palombaro, 2020	Randomized Controlled Trial	Phase I-7 older adults Phase II-33 older adults with comorbidities	Sit to Stand Test 5 Repetition sit-to-stand test (FRSST) 30 second chair stand test (30s-CST) Validated Versus Berg Balance Scale and Modified Barthel Index	Interrater reliability-Intraclass correlation coefficient (ICC) Phase II concurrent validity-Spearman	The sit-to-stand test has a few variations. The most used are the 5-repetition sit-to-stand test (FRSST) and the 30-seconds chair stand test (30s-CST). The modified 30 second sit-to-stand test (m30STS), allows the use of arm rests, which the aforementioned do not.	**Strengths:** Level 1 evidence; Jadad Criteria: 3 **Limitations**: Individuals were all admitted to a skilled nursing facility **Risk of harm:** Less harm in allowing individual to use armrest

				p=0.737,p=.01 (discharge-Spearman was 0.727) Minimal Detectable Change (MDC)	The m30STS showed that 73% of individuals were able to perform at least one repetition of standing, and at discharge, 82% were able to perform at least one repetition.	**Feasibility:** The m30STS provides a tool for identifying balance deterioration, ability to toilet, ambulate, and transfer in a safer manner without limiting the individual to not using armrests.
Rule et al., (2021)	Cohort Study	128 community dwelling participants in Sarasota, FL, 60 years of age and older Group 1 was 60-69 years of age Group 2 was 70-79 years of age Group 3 was 80 years of age and older	Manual dexterity Cognition Age Standardized Purdue Pegboard Test-A within 30 seconds (25collars, 45 washers, and 55 pegs)	Mean scores-Sample t-test Statistical significance among the three group-One-way analysis of variance	Individuals were assigned into groups by ages; the first group included those 60-69, the second group were those 70-79, and the third group were those 80 and older. Fifty-nine males, and 69 females were selected of whom 80% were right handed and 20% were left handed. The lowest scoring group was the 80 and older	**Strengths:** Level 2 evidence Jadad Criteria: 2 **Limitations**: Individuals were all admitted to a skilled nursing facility **Risk of harm:** No harm in not being able to place items in proper location

					male group, while the highest scoring group were females in the 60-69 group	**Feasibility:** Finger/hand dexterity declines with age, which limits occupational activities. Further research is needed to identify what is an acceptable baseline value for the older adult population so that treatment or interventions are pre-emptively provided.
Seitz et al., 2018	Systematic Review	1517 Participants Studies conducted in the primary setting as of 2017	Dementias Baseline Mini-Cogs by primary clinicians Detailed Assessment of dementia by dementia speacialists	Quality Assessment of Diagnostic Accuracy Studies (QUADAS-2) Determine sensitivity, specificity, and 95% confidence Inerval-Review	Many studies suggested the sensitivity of the Mini-Cog ranged between 0.76 to 1.00, and its specificity ranged between 0.27 to 0.85. In a particular study done in 2012 the results reported a sensitivity of 0.76 and a specificity of 0.73.	**Strengths:** Level 2 evidence AMSTAR: High **Limitations**: Streamlined Mini-Cog evaluation **Risk of harm:** Incorrectly diagnosing with dementia **Feasibility:** The Mini-Cog is a memory toolkit that can be used in the primary care setting by having

				Manager 5 (RevMan 5)		patients recall three words and an evaluation of drawing a clock with a specific time. It is important to highlight that about 24% of individuals may have false negatives.
Motter et al., 2018	Systematic Review	36 studies Adults 65 years of age or older	BEERS List Screening Tool of Older People's Prescription (STOPP) Fit for the Aged (FORTA) McLeod Criteria Rancourt Criteria French Criteria NORGEP Criteria	Evaluate Explicit Criteria-Delphi Method & Modified Delphi Method	Potentially inappropriate medication (PIM) lists found were 36, identifying 907 medications and medication classes. 536 drug-disease interactions that included 84 diseases, and 159 drug-drug interactions. The two	**Strengths:** Level 1 evidence AMSTAR: High **Limitations**: Lack of variances between patients thus appropriateness for entire medication regimen as well as PIMS lacking alternatives **Risk of harm:** Serious adverse drug events **Feasibility:** Constructing a PIM can reduce exacerbations or reduce altering symptoms; having

			PRISCUS		most reported potentially inappropriate medications for older adults were benzodiazepines and non-steroidal anti-inflammatory drugs.	alternative therapies and other considerations available to the clinician can avoid PIMs.

Appendix B

EBP Intervention	Findings/Statistics	Results of Patient and/or agency outcomes	References Research Study
Video calls for reducing social isolation in older adults	Quasi-randomised trials; included 201 individuals. Using the UCLA loneliness scale-at 3 months' follow up with three studies, mean difference -0.44, 85% CI -3.28 to 2.41 for all 201 participants. At 6 months with 2 studies for 152 individuals-MD -0.34, 95CI -3.41 to 2.72. At 12 months with one study for 90 individuals-MD -2.40, 95%CI -7.20 to 2.40. Using the geriatric depression scale-At three months using 3 studies for all 201 individuals-MD 0.41, 95%CI -0.90 to 1.72. At 6 months using 2 studies with 152 individuals-MD -0.83, 95%CI -2.43 to 0.76. At 12 months using 1 study with 90 individuals- MD -2.04, 95%CI -3.98 to -0.10.	The UCLA loneliness scale-evidence was found to be very uncertain. Using the geriatric depression scale-the researchers had to downgrade the certainty of the evidence by three levels due to limitations of the study regarding impreciseness and indirectness. Individuals who were studies were all in nursing homes and did not include those who lived in their homes.	Noone, C., McSharry, J., Smalle, M., Burns, A., Dwan, K., Devane, D. & Morrissey, E. C. (2020). Video calls for reducing social isolation and loneliness in older people: a rapid review. The Cochrane Database of Systematic Reviews,5,CD013632. doi: 10.1002/14651858.CD013632
Behavioral and educational interventions to improve older adults' ability in taking and adhering to multiple medications.	50 studies that included 14, 269 participants that were comprised of 40 RCTs, 4 quasi-RCTs, and 6 cluster RCTs. Behavioral interventions that included 4 studies, resulted in RR 1.22, 95% CI 1.07 to 1.38. Mixed interventions that	Educational only interventions have very low certainty of improving outcomes. Mixed interventions that include education and behavioral interventions may improve proper medication adherence.	George, J., Cross, A., Elliott, R. A., Petrie, K., Kuruvilla, L. (2020). Interventions for improving medication-taking ability and adherence in older adults prescribed multiple medications. Cochrane Database of Systematic Review, 5. Doi: 10.1002/14651858.CDC12419

	included 12 studies resulted in RR 1.22, 95% CI 1.08 to 1.37. In 5 studies regarding educational only interventions results were SMD 0.16, 95% CI -0.12 to 0.43, while 7 studies resulted in SMD 0.47, 95% CI -0.08 to 1.02.	High quality research is needed to identify the most effective means to improving medication abilities and adherence in the geriatric population.	
Integrative programs using comprehensive geriatric assessment	The systematic literature search found data relating to international data from January 2006 to June 2018 that described integrated care programs for older individuals living at home. The countries that have integrated care programs were Netherlands (n=12), United States (n=5), Canada (n=4), Japan (n=2), France (n=1), Germany (n=1), New Zealand (n=1), and Sweden (n=1)	Geriatric Resources for Assessment and Care of Elders (GRACE), helps to evaluate functional status, decrease excess healthcare use and prevent long term nursing home placement. A useful tool for primary care settings with a focus on low income older people as the target group. It recommends having a geriatrician, an NP/PCP, SW, pharmacist, PT, mental health, and community based service liaison. The Geriatric Evaluation and Self-Management Services (GEMS), is an integrative program that recommends evidence-based prevention oriented interventions provided by an interdisciplinary team. The targeted population involves older people	Stoop, A., Lette, M., Gils, P. F., Nijpels, G., Baan, C. A. & Bruin, S. R. (2019). Comprehensive geriatric assessments in integrated care programs for older people living at home. A scoping review. Health & Social Care in the Community, 27(5), e549-e566. doi:10.1111/hsc.12793

		living in the community with one or more chronic illnesses.	
Sit-to-stand tests to measure transferring skills, and functional lower extremity strength	The sit-to-stand test has a few variations. The most commonly used are the 5-repetition sit-to-stand test (FRSST) and the 30-seconds chair stand test (30s-CST). The modified 30 second sit-to-stand test (m30STS), allows the use of arm rests, which the aforementioned do not. The m30STS showed that 73% of individuals were able to perform at least one repetition of standing, and at discharge, 82% were able to perform at least one repetition.	The m30STS provides a tool for identifying balance deterioration, ability to toilet, ambulate, and transfer in a safer manner without limiting the individual to not using armrests.	McAllister, L., & Palombaro, K. (2020). Modified 30-second sit-to-stand test: reliability and validity in older adults unable to complete traditional sit-to-stand testing. Journal of Geriatric Physical Therapy, 43, 153-158. Doi:10.1519/JPT.0000000000000227
Purdue Pegboard Test	Individuals were assigned into groups by ages; the first group included those 60-69, the second group were those 70-79, and the third group were those 80 and older. Fifty nine males, and 69 females were selected of whom 80% were right handed and 20% were left handed. The lowest scoring group was the 80 and older male group, while the highest scoring group were females in the 60-69 group	Finger/hand dexterity declines with age, which limits occupational activities. Further research is needed to identify what is an acceptable baseline value for the older adult population so that treatment or interventions are pre-emptively provided.	Rule, K., Ferro, J., Hoffman, A., Williams, J., Golshiri, S., Padre, R. Avila, J., Coca, C. & Valdes, K. (2021). Purdue manual dexterity testing: A cohort study of community-dwelling elderly. Journal of Hand Therapy, 34(1), 116-120. doi: 10.1016/j.jht.2019.12.006.
	From 2012 to January 2017 many studies suggested the sensitivity of the Mini-Cog	The Mini-Cog is a memory toolkit that can be used in the primary	Seitz, D. P., Chan, C., Newton, H. T., Gill, S. S., Herrmann, N., Smailagic, N., Nikolaou, V., & Fage, B. A. (2018). Mini-Cog for the diagnosis of Alzheimer's disease dementia and other dementias

Mini-Cog as a brief cognitive screening test for older adults	ranged between 0.76 to 1.00, and its specificity ranged between 0.27 to 0.85. In a particular study done in 2012 the results reported a sensitivity of 0.76 and a specificity of 0.73.	care setting by having patients recall three words and an evaluation of drawing a clock with a specific time. It is important to highlight that about 24% of individuals may have false negatives.	within a primary care setting. Cochrane Database of Systematic Review, 2. Doi:10.1002/14651858.CDC011415
Audit-C to identify unhealthy drinking among older adults.	Response categories include how often do you have a drink containing alcohol (never (0points), monthly or less (1point), 2-4 times per month (2), 2-3 times per week (3 points), >4 times per week (4 points). The second question is how many units of alcohol do you drink on a typical day when you are drinking (1-2 (0 points), 3-4 (1point), 5-6 (2 points), 7-9 (3 points), >10 (4 points)? The last question is, how often have you had 6 or more units for females, and for males 8 or more on a single occasion (Never (0 points), <monthly (1 point), monthly (2 points), weekly (3 points), daily or almost daily (4 points). Results were, adjusted odd ratio (AOR) of 0.86 for positive unhealthy drinking; AOR 1.28 for higher median units per drinking day, and AOR 0.56 for	Relative ease of administration. Takes into account comorbidities and medications. About 70% of surveyed individuals had long-term conditions. Men tended to consume more alcohol per week, days, and units.	Stewart, D., Hewitt, C., & McCambridge, J. (2020). Exploratory validation study of the individual AUDIT-C items among older people. Alcohol and Alcoholism (Oxford,Oxfordshire). Doi: 10.1093/alcalc/agaa080

	drinking for more than 5 days per week.		
Beers List to identify inappropriate medication used in older adults.	Prospective quality improvement done from August 2016 to November 2016 that included 34 patients with a mean age average of 74 provided information using the Beers List guidance. Results were as follows: there was a 33% reduction of high risk medications (P=.0005), 11.39% of medications were discontinued, 7.25% were changed, 24.64% were reduced, in 5.79% patients were unwilling to change medications, regarding clinicians deeming medications as necessary was 14.5% , and 36% had patient education.	The Beers List helps to identify those older adults with potentially high-risk medications thus mitigate adverse drug events.	Stuckey, N., Henriksen, B., Singh, H., Dawson, A., & Waterson, Z. (2018). Interventions to reduce high-risk medication use in the geriatric population. Topics in Geriatric Rehabilitation, 34(3), 178-181. Doi: 10.1097/TGR.0000000000000191
FRAIL Index Scale	The frail scale evaluated ambulation, illness, resistance, fatigue, and weight loss. In this study the test's specificity was 86.8% (95% CI; 84.0% to 89.2%), and its sensitivity of 63.95% (CI: 55.3%-70.8%. The predictive value was a hazard ratio of 2.60 (95%CI: 1.78 to 3.80, P<.001).	A useful tool to predict mortality up to 10 years. Limitations to the scale can be due to set variables.	Thompson, M. Q., Theou, O., Tucker, G. R., Adams, R. J., & Visvanathan, R. (2020). FRAIL scale: predictive validity and diagnostic test accuracy. Australian Journal on Ageing, 39(4), e529. Doi:10.1111/ajag.12829
Home Video Visits	Telehealth is a useful tool for virtual house call. The VA office of rural health utilizes data to that promotes the	Reduces need to travel during pandemic period as well as helps to decrease caregiver burden	Moo, L. R. (2020). Home video visits: Two-dimensional view of the geriatric 5M's. Journal of the American Geriatrics Society, 68(11), 2425-2427. Doi: 10.1111/jgs.16843

	usefulness of Telehealth for older veterans. Clinicians were able to assess mental status, mobility, fall related risks, medication reconciliation, and the patients' daily life that can include internal and external stressors.	with disrupting daily routines. Helps the clinician with insight into the patient and caregivers' environment. Clinicians' are able to see other areas of patients' environment that would be limited with a face-to-face visit.	

Appendix C

Master Data Collection Tables

Individual Patient Collection Sheet			
	Pre (1st Week)	During (6th Week)	Post (12th Week)
Number of medications prescribed per patient			
Percent of medications prescribed that are high risk medications			
Percent of PIMS that could have been avoided			
Number of alternative medications that were suggested to be substituted for high risk medications to lesser risk medications			
Number of Comprehensive Geriatric evaluations completed			
Percentage of CGA that led to PIMs identification			
Health Literacy			
Cognitive Abilty			
Physical Ability			
Caregiver Reliability (if applicable)			

Master Data Collection Sheet			
	Pre (1st Week)	**During (6th Week)**	**Post (12th Week)**
Number of medications prescribed per patient			
Percent of medications prescribed that are high risk medications			
Percent of PIMS that could have been avoided			
Number of alternative medications that were suggested to be substituted for high risk medications to lesser risk medications			
Number of Comprehensive Geriatric evaluations completed			
Percentage of CGA that led to PIMs identification			

Appendix D, Red Flags & High-Risk Medications

Red Flag Medications

NSAIDs	Highly Anticholinergic	Barbiturates	TCA's
Aspirin >325 mg/day	Benztropine	Amobarbital	Amitriptyline
Celecoxib	Brompheniramine	Butabarbital	Amoxapine
Diclofenac	Carbinoxamine	Butalbital	Clomipramine
Diflunisal	Chlorpheniramine	Mephobarbital	Desipramine
Etodolac	Chlorpheniramine	Pentobarbital	Doxepin >6mg
Fenoprofen	Clemastine	Phenobarbital	Imipramine
Ibuprofen	Clidinium-chlordiazepoxide	Secobarbital	Maprotiline
Indomethacin	Cyclobenzaprine		Nortriptyline
Ketoprofen	Cyproheptadine	**Z-Drugs**	Protriptyline
Ketorolac	Darifenacin	Eszopiclone	Trimipramine
Meclofenamate	Dexbrompheniramine	Zaleplon	
Mefenamic acid	Dexchlorpheniramine	Zolpidem	**Antipsychotics**
Meloxicam	Dicyclomine		Chlorpromazine
Nabumetone	Dimenhydrinate	**Heart/Blood**	Fluphenazine
Naproxen	Diphenhydramine	Digoxin >0.125 mg/day	Haloperidol
Oxaprozin	Disopyramide		Loxapine
Piroxicam	Doxylamine	**BZD**	Loxapine
Salsalate	Fesoterodine	Alprazolam	Molindone
Sulindac	Flavoxate	Chlorazepate	Perphenazine
Tolmetin	Homatropine	Chlordiazepoxide	Pimozide
Meloxicam	Hydroxyzine	Clobazam	Prochlorperazine
Nabumetone	Hyoscyamine	Clonazepam	Thioridazine
Naproxen	Meclizine	Diazepam	Thiothixene
Oxaprozin	Methscopolamine	Estazolam	Trifluoperazine
Piroxicam	Orphenadrine	Flurazepam	
Salsalate	Oxybutynin	Lorazepam	**SGA**
Sulindac	Paroxetine	Midazolam	Aripiprazole
Tolmetin	Promantheline	Oxazepam	Asenapine
	Promethazine	Quazepam	Brexipiprazole
	Propantheline	Temazepam	Cariprazine
	Pyrilamine	Triazolam	Clozapine
	Scopolamine		Iloperidone
	Solifenacin		Lurasidone
	Tolterodine		Olanzapine
	Trihexyphenidyl		Paliperidone
	Triprolidine		Pimavanserin
	Trospium		Quetiapine
			Risperidone
			Ziprasidone

High Risk Medications

Insulins (sliding scale)	Anticoagulants/Antiplatelets
Insulin aspart	Abciximab
Insulin lispro	Anagrelide
Regular insulin	Apixaban
U500	Argatroban
	Aspirin and Dipyridamole
Oral Diabetes	Betrixaban
Glimepiride	Bivalirudin
Glyburide	Cangrelor
	Clopidogrel
PPI's	Dabigatran
Dexlansoprazole	Dalteparin
Esomeprazole	Edoxaban
Lansoprazole	Enoxaparin
Omeprazole	Eptifibatide
Pantoprazole	Fondaparinux
Rabeprazole	Prasugrel
	Rivaroxaban
Skeletal Muscle Relaxants	Ticagrelor
Carisoprodol	Ticlopidine
Chlorzoxazone	Tirofiban
Metaxalone	Warfarin
Methocarbamol	
Tizanidine	**Other**
	Megestrol
BP	Testosterone
Clonidine	
Guafacine	**Alpha-Blockers**
Methyldopa	Doxazosin
Nifedipine IR	Prazosin
Reserpine	Terazosin

* Medication list provided by VAAHS