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Research Paper

Medication management interventions in patients enrolled in GRACE Team Care

Kofi K. Quist, MD [a,b,*], Steven R. Counsell, MD [a,b,c,d], Cathy C. Schubert, MD [a,e], Michael Weiner, MD, MPH [a,c,d,e,f]

[a] Division of General Internal Medicine and Geriatrics, Department of Medicine, Indiana University School of Medicine, Indianapolis, IN, USA
[b] Indiana University Health, Indianapolis, IN, USA
[c] Indiana University Center for Aging Research, Indianapolis, IN, USA
[d] Regenstrief Institute, Inc., Indianapolis, IN, USA
[e] Richard L. Roudebush Veterans Affairs Medical Center, Indianapolis, IN, USA
[f] Center for Health Information and Communication, Department of Veterans Affairs, Veterans Health Administration, Health Services Research and Development Service CIN 13-416, Indianapolis, IN, USA

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ABSTRACT

GRACE targets home-based, geriatrics team management, primary care collaboration, and protocols for common conditions. GRACE can improve outcomes and reduce acute-care utilization. We aimed to characterize medication-related GRACE recommendations. Medical record review of Indiana University Health Physicians GRACE patients (June 2012 to September 2013), with six months' follow-up was conducted. Demographics, clinical characteristics, and recommendations were summarized. Mean age (N = 156) was 82 years; 71% were women, 24% black, and 34% living alone, with a mean of 12 medications. Medication management was activated in 99%. Implementation occurred in 96% of 924 recommendations, including reviewing medication lists (N = 153) and purposes (N = 109) with patients, and providing medication lists to providers (N = 119). GRACE recommended and implemented medication-related interventions, facilitating medication reconciliation, education, communication, and coordination of care. Medication management, a key GRACE component, may contribute to reducing hospitalization rates.

Introduction

Most older adults with a geriatrics syndrome do not receive recommended standards of care.[1] Quality of care has been shown to be poor with greater burden of geriatric multimorbidity.[2,3] Medication reconciliation is a standard of care for Centers of Medicare and Medicaid Services and the Joint Commission. Incomplete medication reconciliation, medication non-adherence, prescription of inappropriate medications, and polypharmacy in older adults present a challenge to the health care delivery system. About 20% of community-dwelling adults 65 or more years of age take 10 or more medications.[4] Most older patients are not able to report all of the medications they take during primary care clinic visits. The multiplicity of physician providers involved in the medical care of individual vulnerable elders further compounds the problem. Medications are sometimes prescribed by various physicians without any reconciliation to ensure safety.[5] Duplication of medications, unsafe interactions, and omission of drugs during transitions of care can occur from inadequate medication reconciliation and patients' inadequate understanding of the role of medications in the treatment of their medical conditions.[6]

Adverse drug reactions (ADRs) often result in preventable hospital admissions[7,8] and have been associated with polypharmacy.[9] Obtaining an accurate medication history is, therefore, essential for evaluation and treatment and enables identification of potential

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* Corresponding author. Indiana University School of Medicine, 1633 North Capitol Avenue, Indianapolis, IN 46202, USA. Tel.: +1 317 962 2934; fax: +1 317 962 2070.
E-mail address: kquist@iu.edu (K.K. Quist).

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medication errors and preventable adverse events. It also enables the detection of sub-therapeutic dosage, inexpedient dosage regimens, over-dosage, and medical conditions that are not being treated appropriately.[10] Sino et al demonstrated that about 40% of study participants 75 or more years of age were unable to tell which medications they used, even with the aid of a medication list, and another 50% did not check their medications after delivery. They concluded that a considerable proportion of older adults living independently who received home care and used five or more medications lacked the knowledge and skills needed to manage their own medications independently.[11]

The "brown bag" method, whereby health care providers review a patient's actual medication supplies, is a means of identifying medication-related problems including duplication and wastage.[12] A systematic review by Bayoumi et al revealed a paucity of high-quality evidence demonstrating the effectiveness of medication reconciliation in the primary care setting.[13] Home-based medical evaluation provides an ideal opportunity for performing a comprehensive medication review and reconciliation and ensuring an accurate medication regimen for a patient. Geriatric Resources for Assessment and Care of Elders (GRACE), an innovative model of enhanced primary care, has been shown to improve the quality of medical care for low-income seniors and decrease acute-care utilization including hospital admissions in a high-risk group.[14] The GRACE model includes a deliberate focus on improving medication management and especially via the GRACE nurse practitioner (NP). The GRACE NP initially performs a comprehensive medication review and reconciliation in the patient's home. In collaboration with the interdisciplinary GRACE team's geriatrician and pharmacist, the GRACE NP then makes medication-related recommendations to the primary care physician (PCP) for consideration. At the discretion of the PCP, recommendations are implemented by the PCP or GRACE nurse practitioner.

Two key components of the GRACE program are the medication review and reconciliation in a patient's home and making medication management recommendations based on geriatrics principles.[14] Although implementation of medication management protocol suggestions has been summarized, the specific types of medication management-related recommendations and their corresponding implementation have not been reported. In the original GRACE trial, hospitalization rates were reduced in the high-risk group enrolled in GRACE compared to usual care.[15] Although GRACE is a multifactorial intervention, medication management is thought to be a key factor in reducing hospitalizations in patients enrolled in the program. Thus, as part of the start-up of the Indiana University Health GRACE program, we desired to delineate in detail the specific medication management interventions consistently delivered to GRACE patients. Therefore, we conducted a retrospective, descriptive study involving medical records review of GRACE patients at Indiana University Health Physicians, with the objective of characterizing medication-related recommendations made under the GRACE protocols, and the frequency of their implementation.

Methods

Design overview and procedures

Active GRACE enrollees of the Indiana University Health Physicians GRACE program are 65 or more years of age, residents of Marion County, Indiana, members of the Indiana University Medicare Advantage plan, live independently, are not on renal replacement therapy, and are not enrolled in a hospice program. Patients with less than six months of follow-up by the GRACE team were excluded from the study.

The core of the GRACE intervention consists of a nurse practitioner and a social worker, who conduct comprehensive geriatric assessments of patients in their homes and draft individualized, patient-centered care plans using the 12 GRACE evidence-based protocols listed in Table 1. The GRACE nurse practitioner and social worker then meet with a larger GRACE interdisciplinary team including a geriatrician, pharmacist, and mental-health professional, to finalize the care plan with emphasis on geriatric syndromes. Collaborating with the patient's PCP, the care plan is discussed with the patient and implemented with the help of the GRACE team.[15] During initial comprehensive geriatric assessment, the nurse practitioner performs a comprehensive medication review in the patient's home. Any discrepancies between prescribed and actual medications are discussed and rectified with the PCP and specialty care providers. The GRACE nurse practitioner then generates and reviews with the patient or caregiver the new reconciled medication list. The medication list is then updated in the electronic medical record of the patient, accessible to both PCP and specialty providers for review. A paper copy of the medication list is also provided to the patient.

Setting and participants

This retrospective descriptive study involved review of medical records of patients enrolled in the GRACE program from June 1, 2012 to September 9, 2013. These patients received their primary care at any of the following five Indiana University Health Physicians' offices located in Indianapolis, Indiana: Georgetown, East Washington, Internal Medicine Methodist, Internal Medicine and Family Medicine South, and Indiana University West. Patients were enrolled consecutively within the study period. Referral sources included hospital and skilled nursing facility discharges to home, outpatient PCPs, emergency departments, and the Indiana University Health Plans' Medicare Advantage plan which stratified patients for referral to GRACE when deemed high-risk for high health care utilization and costs. Patients are referred to GRACE by health system providers and staff through various means including phone calls to the GRACE office, secure e-mail requests, and electronic medical record messaging. The acceptance rate was over 90% for those patients referred to GRACE and successfully contacted by telephone by the GRACE coordinator. The Touchworks (Allscripts, Chicago) and Morrisey Concurrent Care Manager (MCCM; Morrisey Associates, Seattle) electronic medical record (EMR) systems, used by the GRACE team for medical documentation, were accessed for the study participants.

Information collected from the medical record review included subjects' baseline characteristics: age, race, marital status, educational level, comorbidities, medications, and person managing home medications. Other relevant information, including referral

Table 1
GRACE protocols.

Medication management
Health maintenance
Advance care planning
Cognitive impairment and dementia
Depression
Difficulty walking and falls
Caregiver burden
Chronic pain
Malnutrition and weight loss
Urinary incontinence
Hearing impairment
Visual impairment

GRACE = Geriatric Resources for Assessment and Care of Elders.