*Practice Concepts*_____

Guided Care for Multimorbid Older Adults

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Purpose: The purpose of this study was to test the feasibility of a new model of health care designed to improve the quality of life and the efficiency of resource use for older adults with multimorbidity. ***Design and Methods:*** Guided Care enhances primary care by infusing the operative principles of seven chronic care innovations: disease management, self-management, case management, lifestyle modification, transitional care, caregiver education and support, and geriatric evaluation and management. To practice Guided Care, a registered nurse completes an educational program and uses a customized electronic health record in working with two to five primary care physicians to meet the health care needs of 50 to 60 older patients with multimorbidity. For each patient, the nurse performs a standardized comprehensive home assessment and then collaborates with the physician, the patient, and the caregiver to create two comprehensive, evidence-based management plans: a Care Guide for health care professionals, and an Action Plan for the patient and caregiver. Based in the primary care office, the nurse then regularly monitors the patient's chronic conditions, coaches the patient in self-management, coordinates the efforts of all involved health care professionals, smoothes the patient's transitions between sites of care, provides education and support for family caregivers, and facilitates access to community resources. ***Results:*** A 1-year pilot test in a community-based primary care practice suggested that Guided Care is feasible and acceptable to physicians, patients, and caregivers. ***Implications:*** If successful in a controlled trial, Guided Care could improve the quality of life and efficiency of health care for older adults with multimorbidity.

Key Words: Chronic disease, Nursing, Primary care, Multimorbidity

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Background

The present system of American health care is a loose array of

> physician groups, hospitals, and other health care organizations [that] operate as silos, often providing care without the benefit of complete information about the patient's condition, medical history, services provided in other settings, or medications prescribed by other clinicians … It is not surprising, then, that studies of patient experience document that the health system for some is a "nightmare to navigate." (Institute of Medicine, 2001, p. 4)

This system often succeeds in meeting the episodic needs of healthy people who experience acute illnesses and injuries, but it often often fails older adults who have several chronic conditions (multimorbidity) and complex care needs. The mismatch between the acute care orientation of the delivery system and the chronic care needs of this vulnerable population induces many failures: medical error, underdiagnosis, inconsistent monitoring of chronic conditions, lack of attention to the preferences of individual patients and their caregivers, insufficient health education and encouragement for patients and unpaid caregivers to participate in their own health care (Holman & Lorig, 2000), adverse drug reactions (Gandhi et al., 2003; Gurwitz et al., 2003; Juurlink, Mamdani, Kopp, Laupacis, & Redelmeier, 2003), duplication of some health-related services, inappropriate omission of others, and preventable injuries occurring soon after discharge from hospitals (Forster, Murff, Peterson, Gandhi, & Bates, 2003).

These failings produce predictable results: poor quality of health care (McGlynn et al., 2003), low levels of satisfaction, and very high costs. Spending for the 62% of older Americans with multimorbidity consumes 96% of the Medicare budget, and beneficiaries with four or more chronic conditions are 99 times more likely to have potentially preventable hospital admissions for "ambulatory care sensitive conditions" than beneficiaries with none (Wolff, Starfield, & Anderson, 2002). Physicians feel inadequately prepared to care for chronically ill patients (Darer, Hwang, Pham, Bass & Anderson, 2004). The physical and emotional burden on the unpaid caregivers of chronically ill older people is associated with depressive symptoms, poor health, and increased risk of premature mortality (Schulz & Beach, 1999).

Conceptual Basis

To bridge the gap between society's growing need for high-quality chronic care and its present fragmented, acute-care-oriented delivery system, researchers have proposed new conceptual models for improving chronic care. The Chronic Care Model posits that redesign of the delivery system, enhanced decision support, improved clinical information systems, support for self-management, and better access to community resources will improve outcomes for people with chronic conditions (Bodenheimer, Wagner, & Grumbach, 2002). In support of the chronic care model, studies have shown that innovations in these domains can improve clinical and/or financial outcomes in outpatient settings (Boult et al., 2001; Cohen et al., 2002; Phelan, Williams, Penninx, LoGerfo, & Leveille, 2004; Reuben, Frank, Hirsch, McGuigan, & Maly, 1999; Sommers, Marton, Barbaccia, & Randolph, 2000; Unutzer et al., 2002), in hospitals (Landefeld, Palmer, Kresevic, Fortinsky, & Kowal, 1995), in emergency departments (Miller, Lewis, Nork, & Morley, 1996), in nursing homes (Joseph & Boult, 1998; Kane, Homyak, Bershadsky, Flood, & Zhang, 2004; Reuben, Schnelle, et al., 1999), in the home (Stuck, Egger, Hammer, Minder, & Beck, 2002), and during transitions between sites of care (Naylor et al., 1999). Likewise, interventions that focus on the caregivers of individuals with dementia have delayed nursing home placement (Mittelman, Ferris, Shulman, Steinberg, & Levin, 1996) and improved caregivers' well-being (Mittelman, Roth, Coon, & Haley, 2004). Comprehensive multidisciplinary interventions for chronically ill older adults have reduced caregiver burden (Weuve, Boult, & Morishita, 2000). A six-session, small-group chronic disease self-management course, led by trained lay leaders, has helped older adults with multimorbidity set and pursue personal goals for their health and, thereby, improve their quality life and reduce their use of hospitals (Lorig et al., 2001). Table 1 summarizes the nature and effects of seven successful community-based innovations in chronic care, each of which addresses one component of the Chronic Care Model (see Figure 1). As shown in Table 2, each innovation addresses only a subset of the challenges faced by older people with chronic conditions; rarely have more than two of these innovations been combined in practice (Eng, Pedulla, Eleazer, McCann, & Fox, 1997; Newcomer, Harrington, & Kane, 2000).

Methods

To improve this population's quality of life and efficiency of resource use, we enhanced their primary care by infusing the operative principles of the seven chronic care innovations summarized in Table 1. In the enhanced model, called Guided Care, a registered nurse completes an educational program and then uses a customized electronic health record (EHR) in working with two to five primary care physicians to meet the complex needs of 50 to 60 older patients with multimorbidity. The Guided Care nurse (GCN) is based in the primary care office. The GCN's eight clinical activities, described below, are guided by scientific evidence, by patients' priorities, and by the EHR.

Assessment

Using standardized instruments, the GCN performs an initial assessment of the patient's medical, functional, cognitive, affective, psychosocial, nutritional, and environmental status during a home visit. The instruments

Table 1. Successful Innovations in Health Care for Older People With Chronic Conditions

Model	Provider(s)	Effects
Outpatient geriatric evaluation management	Nurse, SW, physician, physical therapist	↑ function, $ (Reuben, Frank, et al., 1999)
	Nurse, SW, physician	↑ function, $, satisfaction with care (Cohen et al., 2002)
	Nurse, SW, physician	↓ depression, caregiver burden; ↑ function (Boult et al., 2001)
Disease management	Nurse, physician	↑ quality of life, function, satisfaction with care (Ofman et al., 2004; Unutzer et al., 2002)
Chronic disease self-management	Lay leaders	↑ health, ↓ hospital days (Lorig et al., 2001)
Health enhancement program	Nurse practitioner	↓ hospital days, $, disability (Phelan et al., 2002, 2004)
Case management	SW	↓ $ (Boult et al., 2000)
Transitional care	Advance practice nurse	↓ hospital admission, days, $ (Naylor et al., 1999)
	Nurse, dietician, SW, physician	↓ hospital readmissions, $ (Rich et al., 1995)
Caregiver education and support	SW, psychologist	↓ nursing home admissions (Mittelman et al., 1996)

Note: SW = social worker; $ = costs.

include inventories of impairment in instrumental activities of daily living and activities of daily living; the Nutrition Screening Initiative checklist (White et al., 1992); the Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975); the Get Up & Go test (Podsiadlo & Richardson, 1991); the Geriatric Depression Scale (Yesavage et al., 1982); the CAGE alcoholism scale (Mayfield, McLeod, & Hall, 1974); and screening questions for hearing impairment, falls, and urinary incontinence. The GCN also asks the patient to identify his or her highest priorities for optimizing health and quality of life.

Planning

The EHR merges these individual assessment data with evidence-based best practice recommendations to create a preliminary Care Guide that lists medical and behavioral plans for managing and monitoring each of

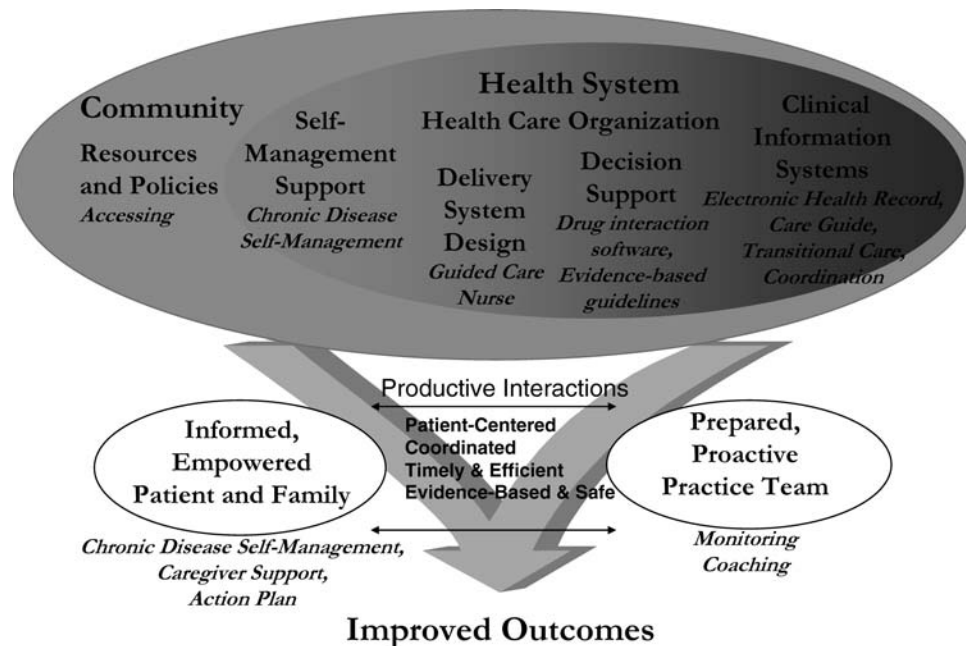Figure 1. Guided Care and the chronic care model. Source: Wagner, E. H. (1998). Chronic disease management: What will it take to improve care for chronic illness? *Effective Clinical Practices*, 1, 2–4. Reproduced with permission. The Improving Chronic Illness Care program is supported by The Robert Wood Johnson Foundation, with direction and technical assistance provided by Group Health's MacColl Institute for Healthcare Innovation.

Table 2. Needs Assessment by Innovations in Chronic Care

Model	Comprehensive Patient Evaluation	Individual Care Planning	Promote Adherence With Evidence-Based Guidelines	Empower Patient	Promote Healthy Lifestyle	Coordinate Care of Multiple Conditions	Coordinate Care Across Provider Settings	Caregiver Support and Education	Access to Community Resources
Geriatric evaluation and management	XX	XX	X	X	X	X	X	X	X
Disease management		XX	XX		X		X	X	X
Self-management				XX	X				X
Health enhancement program	X	X		X	XX			X	X
Case management	X	X			X	XX	X		
Transitional care		X				X	XX		
Caregiver support								XX	X
Guided care	XX	XX	XX	XX	XX	XX	XX	XX	XX

Source: Reproduced with permission from Wolff, J. L., & Boult, C. (2005). Moving beyond round pegs and square holes: Restructuring Medicare to improve chronic care. *Annals of Internal Medicine, 143,* 439–445.

Note: X = addresses need partially; XX = addresses need thoroughly.

the patient's chronic conditions. The GCN and the primary care physician then personalize this preliminary Care Guide to align it with the unique circumstances of the individual patient. The GCN then discusses the preliminary Care Guide with the patient and caregiver and modifies it further for consistency with their preferences, priorities, and intentions. The final Care Guide provides all involved health care professionals with a concise summary of the patient's status and plans; the GCN updates it regularly. A patient-friendly version, called My Action Plan, is written in lay language and displayed prominently in the patient's home.

Chronic Disease Self-Management (CDSM)

The GCN promotes the patient's self-efficacy in managing chronic conditions by referring him or her to a free, local, 15-hr (six-session) CDSM course (Lorig & Holman, 2003) that is led by trained lay people and supported by the GCN. In this course, developed at Stanford University, the patient learns to refine and implement the Action Plan. Reinforced by simple, easy-to-read schedules and reminders, the Action Plan facilitates the patient's steps toward healthy eating, sleeping, exercising, and use of medication, as well as self-monitoring, using the health care system, and avoiding tobacco and alcohol abuse.

Monitoring

With reminders from the EHR, the GCN monitors each patient at least monthly by telephone to detect and address emerging problems promptly. When problems appear, the GCN discusses them with the primary care physician and takes appropriate action. On weekdays, the GCN is directly accessible by telephone to the patient and caregiver for questions and concerns.

Coaching

In conjunction with the monthly monitoring calls, the GCN uses motivational interviewing (Bennett et al., 2005) to facilitate the patient's participation in care and to reinforce adherence to the Action Plan. This coaching interaction is based on the Transtheoretical Model of Change (Prochaska & DiClemente, 1984), which recognizes that individuals are at various stages in making health behavior changes. GCNs are trained in motivational interviewing principles and strategies (Rollnick, Mason, & Butler, 1999) and use them to identify patient preferences, assist the patient in developing and maintaining healthy behaviors, and encourage the patient and caregiver to participate in CDSM classes. During coaching sessions, the GCN expresses empathy, clarifies discrepancies between current behavior and health goals, avoids arguing, and supports self-efficacy.

Coordinating Transitions Between Sites and Providers of Care

The GCN coordinates the efforts of all of the health care professionals who treat Guided Care patients in emergency departments, hospitals, rehabilitation facilities, offices, nursing homes, and at home. Each patient

is encouraged to contact his or her GCN before or during admissions to emergency departments and hospitals. The GCN does not usurp the duties of other professionals but instead provides each with current information (the patient's Care Guide), explains the GCN role, visits the patient during stays in institutions, and helps plan and execute follow-up. Thus, the GCN smoothes the patient's path between all sites and providers of care, focusing most intensively on transitions through hospitals, and keeps the primary care physician informed of the patient's current status.

Educating and Supporting Caregivers

For the family or other unpaid caregivers of patients with functional impairment or difficulty with health care tasks, the GCN offers individual and group assistance: initial assessment, a free self-management course for caregivers (10 hr over 6 weeks), monthly support group meetings, and ad hoc telephone consultation.

Accessing Community Resources

The GCN facilitates access to community resources to meet the patient's and the caregiver's needs. The GCN may suggest, for example, that the patient or caregiver contact a transportation service, Meals on Wheels, the Area Agency on Aging, or the local Alzheimer's Association. Table 3 shows a GCN's allocation of time among these activities.

The GCN uses a laptop computer to access a secure, custom-designed, Web-based EHR to conduct initial assessments, check for potential drug interactions, create Care Guides, monitor and coach patients, and document clinical encounters. The EHR, used only by the GCN, provides printed reports that supplement the Guided Care patient's other medical records.

Identifying the patients who are most likely to benefit from Guided Care (i.e., those with multimorbidity, complex health care needs, and high expenditures for health care) is crucial to the cost effectiveness of Guided Care. Although clinicians are capable of identifying patients with multimorbidity, electronic predictive modeling, which uses administrative data and diagnoses from insurance claims to estimate a patient's future health care needs, can identify such patients more consistently and efficiently (Institute for Health Policy Solutions, 2005). Insurers or provider organizations analyze the previous year's insurance claims using the hierarchical condition category predictive model (Ash et al., 2000) to select for Guided Care the 25% of older patients in primary care panels who have the highest estimated need for complex health care in the future. No high-risk patients are excluded because of a condition (e.g., dementia) or place of residence (e.g., nursing home), although some are unable to participate in CDSM.

Qualities that make registered nurses well suited to becoming GCNs include proficiency in communication, flexibility in complex problem solving, cultural

Table 3. Allocation of Time in a Typical Week of a Guided Care Nurse

Task	Average hr/week
Monitoring patients	10
Coordinating transitions between sites and providers of care	10
Coaching	6
Updating the electronic health record	5
Educating and supporting caregivers	4
Accessing community resources	2
Communicating with primary care physicians	2
Supporting the chronic disease self-management program	1

competence, comfort with interdisciplinary team care, experience in geriatric and community nursing, and enthusiasm for coaching patients and caregivers in self-management. To prepare for the GCN role, nurses complete an educational program that emphasizes skill development through interactive role-playing in simulated situations and is supplemented by readings and brief lectures. Topics include using the EHR, comprehensive assessment and planning, monitoring, coaching to enhance self-management by patients and caregivers, transitional care, cultural competence, communication with other health care professionals, elder abuse, health insurance, and community resources.

Groups of primary care physicians (general internists and family physicians) that together care for at least 400 older (aged 65+) patients are likely to have at least 50 to 60 older patients with multimorbidity who could benefit from Guided Care and would like to receive it. To initiate Guided Care, a practice provides an onsite office and integrates the GCN into the work flow of the physicians and the office staff over 3 to 4 months. During this integration process, the GCN observes the physicians' practice styles and patient interactions; discusses cases with them; reads medical records; becomes acquainted with the office staff members' roles and interactions; learns the office's operating procedures; develops an identity as a member of the office staff; and becomes familiar with local community resources, such as the Area Agency on Aging, senior centers, hospitals, and other health care providers. The physicians introduce the GCN to their patients, and the GCN–physician dyads develop patterns for communicating about their patients.

Results

From October 2003 to September 2004, we tested the feasibility of implementing a pilot version of Guided Care that included six of its eight core processes. The pilot version excluded CDSM and caregiver education and support because of budgetary constraints. A registered nurse recruited from the local community was trained and introduced into the practice of two general internists at a nonacademic primary care practice in urban Baltimore.

Using predictive modeling software, we identified these internists' older patients who had multimorbidity and were likely to benefit from Guided Care. The GCN worked with the two physicians and their office staff to assess and plan care for these patients, and then to provide them with monitoring, coaching, care coordination, and access to community resources.

As reported elsewhere (Sylvia et al., 2006), the patients identified for this pilot test of Guided Care had multimorbidity ($M = 3.0$ chronic conditions per person) and functional disability (36% had difficulty performing activities of daily living, 58% had difficulty performing instrumental activities of daily living), and they had generated high insurance expenditures for health care ($M = \$22,800$ per person per year).

Integrating the GCN into the work flow of the office practice required several months of orientation and problem solving. The support of the physicians, who were initially somewhat skeptical about Guided Care, was essential in developing effective teamwork in the practice.

In informal debriefings at the end of the pilot year, the physicians expressed appreciation and enthusiasm for Guided Care. They observed that the GCN had improved the quality of the patients' chronic care, especially the communication and coordination among providers. They estimated that the time they had devoted to communicating with the GCN had been offset by reductions in the time they had to devote to unreimbursed tasks, such as requesting referrals, responding to telephone calls, and coordinating care with other providers. Both physicians expressed a strong desire to work with a GCN again in the future. Anecdotal reports indicated that the patients and families were happy to have received Guided Care. In summary, this 1-year pilot test supported the feasibility and acceptability of recruiting, training, and deploying a GCN to implement six of the eight major components of the Guided Care model.

Funded by the John A. Hartford Foundation, the Agency for Healthcare Research and Quality, the National Institute on Aging, and the Jacob and Valeria Langeloth Foundation, a 2-year cluster-randomized controlled trial of Guided Care is now underway (2006–2008) at eight nonacademic urban and suburban primary care practices in the Baltimore/Washington, DC, area. This study is evaluating the effects of Guided Care on older patients with multimorbidity (physical and mental health, quality and costs of care, and satisfaction with care), caregivers (strain, costs, health, and quality of care), primary care practices (physician satisfaction, organizational dynamics), and GCNs (job satisfaction). The pilot test and early phases of the randomized controlled trial have provided four valuable lessons about implementing Guided Care.

1. GCN applicants should receive in writing a detailed description of the role, responsibilities, and scope of the GCN position. Some applicants may otherwise assume erroneously that the job has the narrower scope of case management or disease management, or that it could be done primarily by telephone.

2. Registered nurses with different backgrounds can acquire the knowledge and skills required to practice Guided Care. Experience with case management, counseling, and geriatric nursing is helpful, but it is not essential. The ability to learn to use the EHR is essential.

3. The educational program that prepares registered nurses to practice Guided Care should emphasize topics that are specific to Guided Care, such as using the EHR, developing Care Guides with physicians and patients, conducting motivational interviewing, educating and supporting caregivers, and facilitating transitional care. Topics related to traditional nursing should be reviewed in less detail.

4. Support from primary care physicians is vital to the success of Guided Care. Introductory letters from physicians increase their patients' willingness to participate, and physicians' cooperation with the GCN is crucial to personalizing the patients' Care Guides.

These early experiences have also identified several limitations in the capacity of Guided Care to improve chronic care. Although the GCN facilitates access to existing community resources, he or she cannot provide funds to overcome obstacles that some patients experience, such as transportation, medication, equipment, or home renovations. Furthermore, the nurse's services are limited to patients served by outpatient physician groups and are limited to normal business hours.

Discussion

Guided Care is the product of translating some of the previous two decades' most successful innovations in chronic care into enhanced primary care for older adults with multimorbidity. We designed Guided Care to be attractive to American patients, caregivers, providers, and insurers.

If the results of the ongoing multisite controlled trial support the hypothesized beneficial effects of Guided Care, we will begin efforts to diffuse Guided Care throughout American health care. We will measure the success of these efforts by the extent to which target institutions adopt Guided Care, the extent of the program's reach into the target population, the consistency of its implementation, its effectiveness in the field, and the maintenance of its effects over time (Berwick, 2003; Casalino et al., 2003; Glasgow, Vogt, & Boles, 1999). Three specific issues will challenge the diffusion of Guided Care.

Financial Sustainability

The study will provide health insurers with detailed information about expenditures for health care. We designed Guided Care to reduce health care costs by averting the need for some hospital care, thus offsetting its operating costs. Either budget neutrality or net savings would provide a rationale for insurance programs, such as Medicare, to cover Guided Care

services, especially if they also improve quality of care, quality of life, and satisfaction with care.

Adequacy of the Nursing Workforce

Thousands of registered nurses will need to learn and practice the Guided Care model of nursing. Although there is a shortage of hospital nurses in the United States, the supply of nurses interested in community-based positions may be sufficient. Guided Care appeals to experienced nurses who seek to make a difference in patients' lives. Nurses working in related fields (such as case management) report very high job satisfaction (93%) that exceeds the national average for nurses by 20%. Once hired, few nurses leave these positions (annual turnover rate = 3.0% vs 14.5% in hospitals). The U.S. nursing profession's *Nursing Agenda for the Future* confirmed that promoting "integrated practice models across practice settings" is one of its "primary strategies" for attracting and retaining qualified candidates for careers in nursing (American Nurses Association, 2002, p. 11).

Adoptability

Adopting the Guided Care model does not require deep organizational or structural change in the existing health care delivery system, nor does it require chronically ill older people to change primary care physicians or limit their choice of other providers. It is important to note that Guided Care is well suited not only to large sophisticated health care organizations, but also to the small-to-medium-sized groups in which a majority of the nation's primary physicians practice.

To facilitate the anticipated diffusion of Guided Care throughout American health care, a stakeholder advisory committee is helping to guide the ongoing controlled trial. Representatives of the health insurance industry, provider organizations, nursing education, health care regulators, consumers, and policy makers are advising the investigators to ensure that Guided Care will be adoptable and positioned for widespread diffusion upon completion of the study.

Conclusion

For the past two decades, many investigators and innovators have discovered ways to improve the quality and outcomes of several processes of health care for several subgroups of chronically ill older people. Guided Care translates and integrates the lessons from many such experiments, spanning all of the major components of the Chronic Care Model, in an effort to transform America's system of health care for vulnerable older people with multiple chronic conditions.

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