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Comprehensive Primary Care for Older Patients With Multiple Chronic Conditions

"Nobody Rushes You Through"

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PATIENT'S STORY

In late 2004, Ms N was a 77-year-old retiree. She had completed high school and worked for many years as a nursing assistant and a factory worker. Ms N lived alone in a modest senior housing apartment in a middle-class urban neighborhood. She received income from Social Security and support from her only child, a daughter who lived nearby. Her health insurance consisted of coverage by Medicare Parts A and B and her state's Medicaid program.

She had a history of hypertension with left ventricular hypertrophy, peripheral vascular disease with a left below-knee amputation, chronic obstructive pulmonary disease (COPD), glaucoma, keratitis, osteoarthritis with chronic right shoulder pain, and degenerative intervertebral disk disease. In conversation, she was alert, conversant, and oriented to time, place, and person. Physical examination did not detect abnormality of her heart, lungs, abdomen, nervous system, or skin. She had a well-healed left lower tibial stump and nonpalpable right dorsalis pedis and posterior tibial pulses. Her seated brachial blood pressure was 100/78 mm Hg; her intraocular pressures were 28 mm Hg (right eye) and 21 mm Hg (left eye). Her routine red and white blood cell counts, platelets, serum electrolytes, liver function studies, creatinine, and blood urea nitrogen values were normal.

Despite having a lower-leg prosthesis, she was nonambulatory and unable to shop, do housekeeping or laundry, drive, or use public transportation. She required assistance with food preparation, medication management, bathing,

Older patients with multiple chronic health conditions and complex health care needs often receive care that is fragmented, incomplete, inefficient, and ineffective. This article describes the case of an older woman whose case cannot be managed effectively through the customary approach of simply diagnosing and treating her individual diseases. Based on expert consensus about the available evidence, this article identifies 4 proactive, continuous processes that can substantially improve the primary care of community-dwelling older patients who have multiple chronic conditions: comprehensive assessment, evidence-based care planning and monitoring, promotion of patients' and (family caregivers') active engagement in care, and coordination of professionals in care of the patient—all tailored to the patient's goals and preferences. Three models of chronic care that include these processes and that appear to improve some aspects of the effectiveness and the efficiency of complex primary care—the Geriatric Resources for Assessment and Care of Elders (GRACE) model, Guided Care, and the Program of All-inclusive Care for the Elderly (PACE)—are described briefly, and steps toward their implementation are discussed.

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and transferring in and out of her wheelchair and bed. Her score on the Folstein Mini-Mental State Examination was 23 (out of a possible 30).

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See also p 1948.



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Ms N's prescribed medications included amlodipine, furosemide, potassium chloride, theophylline, albuterol, clopidogrel, enteric-coated aspirin, gabapentin, and quinine sulfate. She saw a primary care physician and an ophthalmologist regularly. She used a pill box to organize her medications, but she missed some doses nonetheless. She no longer smoked or used alcohol. She did not restrict her diet or engage in regular exercise or physical activity.

During 2002-2003, Ms N had been admitted to several hospitals and skilled nursing facilities for treatment of a ruptured lumbar intervertebral disk, *Clostridium difficile* colitis, an exacerbation of her COPD, and an ischemic foot ulcer that had become gangrenous. She had undergone a lumbar laminectomy, a left femoral-popliteal bypass procedure, a below-the-knee amputation, and prosthetic rehabilitation. She had received annual influenza vaccinations, but no screening tests. Her multiple chronic issues caused her daughter to refer her for eligibility evaluation to a local Program of All-Inclusive Care of the Elderly (PACE), where she was enrolled.

Ms N and her PACE primary care physician, Dr R, were interviewed by a Care of the Aging Patient editor in December 2009.

THE PATIENT'S NEEDS IN PERSPECTIVE

Ms N: *I had [in 2004] poor circulation, an amputation, emphysema, and arthritis in my right shoulder. I had a prosthesis, but it just wasn't working. It made my stump not sore but tender. I kept it off most of the time. I would only put it on if I had to go out.*

Dr R: *Her main thing was that she had severe peripheral vascular disease and a left below-knee amputation. Her stump was repeatedly breaking down, and she had very poor circulation in her right leg. Plus, she had several other chronic diseases, and she took 9 prescribed medications.*

Ms N is typical of the 10 million US residents who are older, living with 4 or more chronic health conditions, and in noninstitutional residences. Their lives (and sometimes their family caregivers' lives) are dominated by disease-related symptoms, disabilities, tests, treatments, and visits to health care clinicians. Their care is very costly, accounting for 80% of the Medicare program's annual expenditures.¹

Good primary care physicians are often overwhelmed by the many needs for basic care in this population.² Medical school and residency training typically address provision of preventive services, care for acute illnesses and injuries, and diagnosis and treatment of 1 chronic disease at a time. However, many primary care physicians have not been trained to provide comprehensive care for patients with complex needs who have multiple chronic conditions, prescription medications, functional limitations, and a variety of health care professionals providing their care.³

Primary care physicians therefore face a perplexing dilemma—a steadily increasing number of chronically ill pa-

tients, but little opportunity to collaborate with the nurses, social workers, pharmacists, and rehabilitation therapists who could help meet the complex care needs of these patients. Underlying and exacerbating this crisis are 4 infrastructure deficiencies: (1) most primary care physicians and many other health professionals have not been trained to work in teams to provide complex chronic care; (2) sophisticated health information technologies, such as interoperative electronic health records, telemonitoring devices, and patient portals that could facilitate the essential processes of chronic care are not widely installed; (3) most current public and private health insurers' payment policies, which are based on fee-for-service payments, do not support the supplemental services provided by the newer models for providing complex chronic care; and (4) the payment for and the provision of medical and social services are separate and not integrated.

As a result, many primary care physicians cannot facilitate the essential components of high-quality, cost-effective, complex care for their chronically ill patients. Simply trying harder and working smarter cannot overcome these fundamental obstacles.

The consensus of experts, based on currently available evidence, indicates that high-quality, cost-effective health care for older patients with multiple chronic conditions is often associated with 4 concurrent, interacting processes that transcend and support the diagnosis and treatment of individual diseases.

- Comprehensive assessment of all of the patient's diseases, disabilities, cognitive abilities, medications, health-related devices, other treatments, self-care behaviors, health-related lifestyle habits, psychological conditions, environmental risks, family (or friend) supports, and other resources—plus the patient's relevant values and preferences for care.^{4,5}

- Creation, implementation, and monitoring of a comprehensive, evidence-based plan of care that addresses all of the patient's health-related needs in the context of the patient's preferences.^{5,6}

- Communication and coordination with all who provide care for the patient, including specialist physicians, hospital and emergency staff, rehabilitation therapists, mental health professionals, home care providers, social workers, and community-based agencies (eg, adult day health care facilities, exercise programs, and support groups)—especially during transitions between hospitals and other sites of care.⁷

- Promotion of the patient's (and caregiver's) active engagement in his or her health care—through self-management classes (when available) and ongoing encouragement, direction, and reinforcement.⁸⁻¹¹

Unfortunately, mainstream primary care in the United States in 2010 rarely includes these 4 processes; therefore, patients with complex needs like Ms N often receive care that is noncomprehensive, nonevidence-based, frag-

mented, and inefficient.¹² Care is often further undermined by poor patient adherence^{13,14} and limited assistance from families and friends.¹⁵

METHODS

The Evidence: The Effects of New Models of Primary Care

We searched MEDLINE for English-language articles published between September 1, 1999 and August 30, 2010, that reported the results of studies about the effects of US models of comprehensive primary care for older patients with multiple chronic conditions. We used the search terms: *primary health care, comprehensive health care, patient care team, care coordination, frail older adults, health services, and outcome assessment* (health care). From the articles identified, we selected those for which the abstract indicated that the reported analysis compared an intervention group with an equivalent concurrent control group to evaluate the effect of the intervention on quality of health care, quality of life or functional status, and the use or cost of health services. We excluded articles that reported the use of weak study designs (eg, historical controls), inadequate numbers of older participants with multiple chronic conditions, the use of unvalidated or unreliable measures, or inappropriate statistical analyses. We also searched the Web site of Mathematica Policy Research,¹⁶ which contracted with the Centers for Medicare & Medicaid Services to evaluate the effect of PACE on the quality of care.

RESULTS OF EVIDENCE REVIEW

Complete results of the studies meeting the inclusion criteria are shown in the eTable (available at <http://www.jama.com>). A 12-month randomized controlled trial (RCT) measured the effects of home-based primary care among participants (N=1966) who were terminally ill and those who were not.¹⁷ No effects on functional status (as measured by the Barthel Index or the Short Form-36 [SF-36]) were seen in either group. The nonterminally ill group had significantly better satisfaction with care on a number of parameters and better caregiver-rated SF-36 scores, compared with the control group. Caregivers in both groups reported significantly higher satisfaction with care. Total health care costs for participants who received home-based primary care were significantly higher than total costs for those who received usual care.

The Geriatric Resources for Assessment and Care of Elders (GRACE) model was evaluated in an RCT conducted over 2 years (N=951).¹⁸ During the first year, participants receiving the GRACE intervention were significantly more likely than control participants to receive a flu shot (74% vs 67%), newly identify a primary care physician (81% vs 63%), have a follow-up primary care visit within 6 weeks of a hospital discharge (83% vs 54%), newly receive a medication list (58% vs 38%), and newly report having a health care representative or a liv-

ing will (44% vs 17%).¹⁹ Those receiving the GRACE intervention were also more likely to report the identification of, referral for, and receipt of information about geriatric conditions including difficulty walking or falls, urinary incontinence, depression, and hearing impairment (audiology or ear, nose, and throat clinic visits among individuals with baseline impairment).

After 2 years, there were no differences between the groups' performance of activities of daily living or instrumental activities of daily living, SF-36 Physical Component Summary scores, days spent in bed at home, or satisfaction with care, although the GRACE group's mean SF-36 Mental Component Summary score was significantly better (treatment effect [SE] = 2.4 [10.5]).²⁰ Visits to emergency departments were reduced by 17% ($P = .03$), but the groups' admissions to hospitals and total health care costs were similar. In a pre-planned analysis of a subgroup of participants at high risk of hospitalization (probability of repeated admission [PRA] score ≥ 0.4), the GRACE group had fewer hospital admissions in year 2, less cost related to hospitalization, more cost related to chronic and preventive care, no difference in total costs at 1 and 2 years, and lower total costs during year 3, at 1 year postintervention.²¹

Several effects of Guided Care were assessed in a cluster RCT (N=904). Boyd et al²² used the Patient Assessment of Chronic Illness Care (PACIC) scale to measure care quality as experienced and reported by participants. After 18 months, participants were more likely to give high-quality ratings to Guided Care than to usual care (adjusted odds ratio [OR], 2.13; 95% confidence interval [CI], 1.30-3.50). In the same study, participants' family caregivers (N=196) also completed the PACIC in rating the quality of care provided to their care recipients.²³ Again, Guided Care was rated more highly on aggregate quality and most of the PACIC subscales; caregiver strain and depression did not differ between the groups. Using insurance claims from the first 8 months of this same cluster RCT (N=835), Leff et al²⁴ found trends toward reduced utilization and costs of health care by Guided Care patients, but the differences were not statistically significant. Marsteller et al²⁵ studied the effects of Guided Care on primary care physicians (N=49 physicians) during the first year of this same cluster RCT. This study found higher physician satisfaction with patient and family communication and better physician knowledge of patients' clinical characteristics, but no significant difference in physicians' ratings of other aspects of care.

PACE was evaluated in 1 cross-sectional time series and 3 cohort studies, each of which compared participants in the PACE group with control participants who were receiving different packages of medical and supportive services in their local communities. In the cross-sectional time series (N=1285; 20 107 person-months, comparisons unadjusted for any confounding),²⁶ PACE had significantly fewer hospital admissions and preventable hospital admissions per

thousand patients per month (35.7 vs 52.8, and 8.6 vs 13.3, respectively), as well as fewer total and preventable emergency department visits, compared with a community-based analog of PACE in which medical care was provided by independent primary care physicians (eTable). Differences in the groups' hospital days and average length of hospital stay were not statistically significant.

A 6-year cohort study (N=1215) compared PACE participants with similarly disabled Medicaid enrollees who were receiving community-based supportive services.²⁷ The final survey (2½-6 years after enrollment) indicated that PACE participants had less pain and fewer unmet needs for assistance in bathing, dressing, and getting around; the 2 groups did not differ significantly in self-rated health, difficulty performing activities of daily living, recent falls, weight loss, unmet needs for help with toileting and getting out of bed, and most behavioral problems (reported by proxies) and depressive symptoms. Satisfaction with personal assistance and the overall quality of medical care was similar. During the year before the survey, PACE participants were less likely to have been hospitalized and were more likely to have had a hearing screening, a vision screening, an influenza vaccination, and an advanced directive. PACE participants were more likely to have had a nursing home stay—probably reflecting PACE's use of nursing homes for subacute, post-acute, and respite care.

A 12-month cohort study compared the use of hospital and nursing home services by participants in PACE and those in a Medicaid-sponsored, managed long-term care plan (N=2679).²⁸ PACE enrollees had fewer hospitalizations, more nursing home stays, and shorter median lengths of stay than participants receiving nurse-provided case management in the managed care plan. Finally, a 5-year cohort study (N=2040) found longer median survival among individuals enrolled in PACE than in those who received case management and community services. The difference was statistically significant among patients with high mortality risk at baseline.²⁹

Studies of other US models of comprehensive primary care for complex older patients reported isolated promising findings, but they did not evaluate the outcomes required for inclusion in this review.³⁰⁻³² Modest findings were also identified from studies of related models in 3 countries with global health budgets: Canada,³³ Great Britain,³⁴ and the Netherlands.³⁵ These studies did not offer additional insights of value to the US health care system.

ALTERNATIVE MODELS OF CARE

Based on the literature review, 3 comprehensive primary care models appear to have the greatest potential to improve quality of care and quality of life for older patients with complex health care needs, while reducing or at least not increasing the costs of their health care: the GRACE model, Guided Care, and PACE. Each represents a different approach to enacting the 4 primary care processes described

previously, and each incorporates several of the structural elements of the chronic care model for improving health-related outcomes for patients with multiple chronic conditions.^{36,37}

How the Alternative Models Work

All 3 models are based on care by teams of professionals—including primary care physicians, registered nurses, and other health professionals—that are based in primary care settings. Teams in all 3 models provide many of the same services to older patients with complex health care needs including

- Comprehensive assessment
- Development of a comprehensive care plan that incorporates evidence-based protocols
- Implementation of the plan over time
- Proactive monitoring of the patient's clinical status and adherence to the care plan
- Coordination of primary care, specialty care, hospitals, emergency departments, skilled nursing facilities, other medical institutions, and community agencies
- Facilitation of the patient's transitions from hospitals to postacute settings
- Facilitation of the patient's access to community resources, such as meals programs, handicapped-accessible transportation, adult day care centers, support groups, and exercise programs

These models differ significantly, however, in other aspects of their structures and operations.

How the Alternative Models Differ

GRACE. In the GRACE model, primary care physicians and on-site support teams provide comprehensive primary care for low-income older patients receiving care through community health centers (TABLE). The support teams meet with off-site geriatrics interdisciplinary teams to review each patient's clinical status at least quarterly.³⁸ Most of the services provided by the support team and the geriatrics interdisciplinary team (average cost ≈ \$105/patient per month) are not covered by fee-for-service Medicare, Medicaid, or private health insurance. Thus, primary care physicians' opportunities to use the GRACE model are currently limited to geographic areas³⁹ where practices participating in regional pilot tests or demonstrations of the "medical home" or "advanced primary care" concepts might incorporate GRACE resources to improve their care. Most of these programs are being conducted and funded by Medicare Advantage plans, large employers, the Veterans Health Administration, or private payers.

Guided Care. In the Guided Care model (Table), 2 to 5 primary care physicians partner with a registered nurse practicing at the same site, to provide comprehensive primary care to 55 to 60 older patients who are at high risk for using extensive health services during the following year. This risk is estimated by computing each patient's hierarchical con-

Table. Models of Comprehensive Primary Care for Older Patients With Multiple Chronic Conditions

	GRACE	Guided Care	PACE
Year program began	2002	2006	1990
Primary care clinician	Established primary care physician	Established primary care physician	PACE staff physician ^a
Other team members	On-site advanced practice nurse and social worker; off-site geriatrician, physical therapist, mental health social worker, pharmacist, community liaison	Registered nurse	Registered nurse, social worker, physical therapist, occupational therapist, recreational therapist, pharmacist, dietitian, home care coordinator, personal care aide, driver, site manager
Service base	Community-based health center	Primary care office	Day health center
Patient eligibility	Low-income	Hierarchical condition category score in highest quartile ^b	Certified as requiring long-term care
Frequency of contact	Monthly	Monthly	1-5 days per week
Services covered by Medicare	No ^c	No	Yes
Medicaid	No	No	Yes

Abbreviations: GRACE, Geriatric Resources for Assessment and Care of Elders; PACE, Program of All-Inclusive Care for the Elderly.

^aAt some sites, PACE contracts with community-based physicians.

^bIndicates risk of using extensive health services during the following year.

^cOnly home visits by advanced practice nurses are covered.

dition category (HCC) score from the diagnoses on all health insurance claims generated by the patient during the past year.⁴⁰

Each Guided Care nurse completes a 40-hour online course, earns the Certificate in Guided Care Nursing from the American Nurses Credentialing Center, and is employed by the practice. The nurse encourages patients to engage in productive health-related behaviors by helping them to create personal action plans, referring them to 6-session chronic disease self-management courses,⁴¹ and using motivational interviewing⁴² during their monthly contacts with the patients. The nurse also assesses family caregivers and provides them with educational material, suggestions, referral to community agencies, and emotional support.⁴³ Details about the Guided Care model are available in print⁴⁴ and on the Internet.⁴⁵

The services of Guided Care nurses (average cost ≈ \$150/patient per month) are not reimbursable under the fee-for-service Medicare program, state Medicaid programs, or most private insurance plans. Thus, as with the GRACE model, primary care physicians' opportunities to adopt Guided Care are now limited to geographic areas where regional pilot tests or demonstrations of the medical home or advanced primary care concepts are being conducted.³⁹ Technical assistance for primary care practices, including an implementation manual, a patient education booklet, and online courses for nurses, practice leaders, and primary care physicians, is now available.^{44,46}

PACE. PACE provides many of the same care processes as the GRACE and Guided Care models, although it differs in terms of patient population, scope of services, organization, and financing. Each PACE site serves local patients who are aged 55 years or older and state certified as eligible for nursing home care, but able (with PACE services) to continue living safely in the community. Like Ms N, most pa-

tients (89%) are medically complex, low-income, and enrolled in both Medicare and Medicaid (ie, "dual eligibles"); unlike Ms N, however, most have disabilities that are irreversible. Approximately half have dementia, and more than half are dependent on others to help them with at least 3 basic activities of daily living.⁴⁷

Each PACE site provides to its patients, either directly or by contract, a comprehensive set of services: primary, specialty, emergency, hospital, home, palliative, and institutional long-term care; case management, prescription drugs, dentistry, laboratory tests, radiology, adult day care, transportation, prosthetics, durable medical equipment, meals; and for family caregivers, respite, education and support. PACE participants are transported by PACE vans from their homes to the PACE day health center several times each week for health care, education, and social activities. PACE clinicians provide care in the PACE day health center and in patients' homes, assisted living facilities, and nursing homes. The PACE interdisciplinary team, which is based in the PACE day health center, includes a wide range of health professionals (Table). The largest PACE organization currently serves nearly 2400 patients, but most serve fewer than 300.⁴⁸⁻⁵⁰

Each PACE site operates as a managed care plan that receives capitated payments from Medicare and Medicaid and uses these funds to pay for all of the health-related services required by its patients. Since 1997, PACE has been recognized as a "provider" (as in physicians and hospitals) by the Medicare program, and all state Medicaid programs have had the option to recognize and contract with PACE organizations to provide care for eligible individuals enrolled in both Medicare and Medicaid. Despite PACE's attractive features, operational challenges have limited its geographic reach (recognition by 29 states) and aggregate size (21 000 patients).⁵¹⁻⁵³ In contrast, 600 000 similarly complex, dis-

abled persons receive supportive care at home through Medicaid “aged and disabled” service programs,⁵⁴ and 875 000 reside in nursing homes.^{55,56}

THE PATIENT'S STORY, CONTINUED

Ms N met all of the local PACE program's requirements. She joined the local PACE in December 2004 and has received all of her care there for the past 6 years.

Ms N [in 2009]: *We are picked up from our homes. The drivers are patient and good with the seniors. The center has nice hot lunches, coffee, tea, and snacks. The doctors are patient. They have the time, and they give you the care you need. Nobody rushes you through. We also have music, brain words, drawing, sculpting, singing, exercise, and meditation. We are blessed to have all this.*

Dr R: *Ever since Ms N came to PACE in 2004, our physical therapist and I have paid close attention to her prosthesis; we've worked closely with a prosthetist. Now I forget that she has a prosthetic leg because she walks on it so well. We have also worked with her on her lipids, her emphysema, and her arthritis.*

The Process of Chronic Care

For the past 6 years, PACE has provided Ms N with all 4 of the concurrent, interacting processes needed to supplement the prevention and treatment of individual diseases to produce high-quality, cost-effective chronic care.

Comprehensive Assessment. Upon enrolling in PACE, Ms N underwent a multidisciplinary assessment by the PACE team: the medical director, a nurse practitioner, a nurse, a social worker, a pharmacist, a physical therapist, an occupational therapist, a dietician, and a nurse's aide. Besides clarifying her medical diagnoses, this assessment revealed previously undiagnosed depression, a poorly-fitting leg prosthesis, inadequately treated pain, suboptimal medication adherence, lack of exercise and social interaction, and excessive intake of dietary sodium and fat.

Evidence-Based Care Planning and Implementation. Beginning with published evidence-based guidelines, the PACE team collaborated in drafting a plan, consistent with Ms N's goals for care, for optimizing each of her conditions and health-related behaviors. Through the next several months, the team consulted a prosthetist for revision of her leg prosthesis and worked with Ms N and her daughter to rehabilitate the skin of her stump, begin physical therapy for her shoulder and back pain, reduce her intake of hydrocodone, improve her sleep, obtain a multidose medication box to organize her daily doses, recognize and treat the early signs of bacterial respiratory infection, begin a mild daily exercise routine, begin gradual reduction of sodium and fat in her diet, and join several ongoing social activities with other patients at the PACE day health center.

Coordination With Other Providers. Building on PACE's long-standing relationships with community providers, members of the PACE team collaborated with her

ophthalmologist and her prosthetist in providing Ms N's ongoing care.

Patient and Family Engagement in Self-care. The PACE nurse helped Ms N to begin exercising, modifying her diet, and taking her medications consistently. The program nurse also provided Ms N's daughter with information about Ms N's health conditions and encouraged her to help her mother fulfill her crucial role in managing her health at home, eg, with proper diet, exercise, medication adherence, blood pressure checks, and early treatment of respiratory infections.

Ms N's Results

Ms N [in 2009]: *They got my prosthesis to fit so it's comfortable. It's no problem now. Most people don't even know I wear a prosthesis. I only take it off when I'm ready to go to bed. I love coming here. The nurses, the doctor, the physical therapists, everybody who works here, we are just one big family.*

Dr R: *I've been carefully treating her lipids to minimize progression of her peripheral vascular disease; it's been very stable since I met her 6 years ago. Her emphysema and shoulder arthritis have been well controlled, too. She's had zero hospitalizations since I've known her. At the first sign of trouble with her COPD or skin breakdown, we see her in clinic and start treatment right away.*

Six years after enrolling in PACE, Ms N continues to live independently, exercising 3 times each week, limiting the salt in her diet, and taking all of her doses of medication as prescribed.

The skin on her left leg stump and her right lower extremity is intact. Her blood pressure, serum lipid levels, and intraocular pressures are within the target ranges. The arthritic pain in her spine and right shoulder is well controlled, and her keratitis has resolved. She walks without assistance, performs most of her activities of daily living independently or with assistive devices, and receives assistance only with shopping, transportation, heavy chores, and bathing. She volunteers at the PACE center as a greeter for other patients.

During the 2 years before she enrolled in PACE, Ms N was admitted to hospitals several times for respiratory infections and 3 major nonelective surgical procedures, after which she spent many months receiving postacute wound care and prosthetic rehabilitation in skilled nursing facilities. During the 6 years after she enrolled in PACE, she has visited the hospital only once for an elective outpatient excision of a lipoma. Ms N's case is anecdotal but illustrates the ways in which the components of the PACE program addressed her multitude of issues in a systematic way—improving her independence and helping prevent hospital and nursing home admissions.

CHRONIC CARE IN PRIMARY CARE PRACTICE

Primary care physicians without access to GRACE and Guided Care options for their patients have a few alternatives. One is to refer eligible patients to a PACE site, if avail-

able,⁵⁷ but referred patients must usually transfer their medical care from their primary care physicians to PACE physicians. Another possible action for clinicians in states where PACE is a Medicaid-covered option is to support local coalitions that seek to establish local PACE sites. Those in other regions can urge their state Medicaid programs to designate PACE as a covered option.

Primary care physicians without these options can refer their chronically ill patients who need supportive services to local resources such as Area Agencies on Aging, state-sponsored home and community-based services (for Medicaid recipients), and other community-based voluntary and philanthropic service organizations. Unfortunately, such referrals seldom establish the bidirectional interactions between health care professions who provide medical and social services that are characteristic of GRACE, Guided Care, and PACE.⁵⁸

Finally, some primary care clinicians may wish to transform their practices into medical homes, advanced primary care practices, or accountable care organizations that can provide cost-effective complex services to their chronically ill patients. However, such a transformation usually requires hiring new staff, acquiring health information technology, supplemental training of physicians and office staff, revamping workflows, and transient reductions in productivity. These costly changes generally are feasible only in the context of pilot programs or demonstrations that provide sufficient technical assistance and supplemental revenue to offset the costs of transformation and the practice's subsequent expanded clinical services. Many such pilot programs and demonstrations are in various stages of development or operation.³⁹

As the United States implements new models of chronic care, such as the 3 described here, more research is needed to define the optimal methods for identifying the patients who will benefit most, for providing the essential clinical processes, for disseminating and expanding the reach of these models, and for paying for excellent chronic care. Also necessary will be significant advances in the education of health care professionals and the managerial infrastructure that underlies new models of care.^{59,60}

As progress is made, in part through initiatives launched by the Patient Protection and Affordable Care Act of 2010, a growing cadre of US primary care providers will have new opportunities to care for their chronically ill patients more effectively and efficiently. They will more nearly meet the goals of maximizing patients' independence and function and reducing the need for admission to hospitals and nursing homes.

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