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are meaningful to both us and the people we care for and eliminating those that are not.

Solutions will not be easy, since the problems are entangled in the high cost of health care,

An audio interview with Dr. Rosenthal is available at NEJM.org

reimbursement for our work, and obstacles to health care reform. But we

can start by recalling the original purpose of physicians' work: to witness others' suffering and provide comfort and care. That remains the privilege at the heart of the medical profession.

Disclosure forms provided by the authors are available at NEJM.org.

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# Personal Health Budgets for Patients with Complex Needs

Luke O'Shea, M.A., and Andrew B. Bindman, M.D.

are for people with multiple medical conditions accounts for the majority of U.S. health care spending. Some of the highest-cost patients have functional impairments and social needs that necessitate long-term services and supports, and there is much debate about designing higher-value, more patient-centered services for them. One approach from England entails the creation of "personal health budgets," a model for self-directed support that may be worth considering in the United States.

Current policy reforms in England mirror U.S. reforms, with a shift toward care integration and related payment changes. These reforms create financial incentives to better manage the care of patients with complex conditions. In 2015, a total of 50 sites in England were selected for the New Care Models program to deliver integrated care by groups of providers, using a single budget for a defined population.

Though these provider groups resemble U.S. accountable care organizations, one difference is their plan to use personal health budgets1: patients are given control over a budget to buy their own services, which can be defined more broadly than traditional care options, allowing patients to tailor their care to their situation. The approach is consistent with wider policy and English law, which in 2013 established a right to a personal health budget for people receiving long-term, complex care funded by the National Health Service (NHS). People with chronic conditions including diabetes, chronic obstructive pulmonary disease, Parkinson's disease, and serious mental illness have also been offered budgets. The average annual budget is approximately £10,000 (about \$15,000 at the time the program was evaluated), but budgets for patients with the most complex needs may exceed £300,000 (\$450,000).<sup>2</sup>

The approach relies on a goalsetting and care-planning process in which patients and their health teams consider medical and social needs. Patients determine their own service priorities but have incentives to pursue better-value care — a goal advanced by transparency regarding spending. Patients and health teams negotiate a care plan within the agreed budget, which requires NHS approval.

Budgets are designed to meet all assessed needs and may be informed by the patient's historical and predicted costs for homebased, community-based, and other long-term care services. Access to NHS primary care and acute care services (hospital-based specialty and inpatient services) is not capped, and these services are excluded from the budget calculation.

Patients have considerable freedom in the services they can purchase with their budget. Most choose to spend the largest part on home-based support services, choosing whom to employ and for what functions. But the budgets also cover such services as transport, psychological and physical therapies, nursing, podiatry, and leisure and equipment that address a health goal.

For example, patients with mental health needs may reduce their psychologist visits and instead pay for help in securing stable housing. The parents of a PERSPECTIVE PERSONAL HEALTH BUDGETS

One-Year Change in Expenditures for Patients with and without Personal Health Budgets.*							
Group or Comparison	Social and Community-Based Expenditures				Primary Care and Hospital Expenditures		
	Well-being	Social Supports	Community Nursing and Therapy	Other Community Health Services	Primary Care	Inpatient Care	Outpatient and Emergency Hospital Care
				pounds sterling			
Personal health budget group (N=1171)	510	2310	80	120	60	-2150	-130
Traditional services group (N=1064)	0	2720	-10	70	70	-830	-100
Difference in differences between groups	510†	-410	90	50 <b>‡</b>	-10	−1320‡	-30
Subtotal differences between groups	240			−136 <b>0</b> ‡			
Total cost difference				-1120			

<sup>\*</sup> At the time of the study, £1 was equivalent to \$1.52. This table was adapted from the report on Evaluation of the Personal Health Budget Pilot Programme.² Personal health budgets were used to pay for social and community-based services but not primary care and hospital services. The comparison group received social, community, primary care, and hospital services purchased by the NHS and were not eligible for well-being services. Well-being services include leisure, exercise, education, and training. Social supports include support for activities of daily living, transportation, meals, and home care. Community nursing and therapy includes nursing, physical and occupational therapy, and rehabilitation services. Other community services include dental, podiatry, and mental health services in the community. † P<0.001.

child with complex health needs have built a team of home-based providers offering flexible support according to the child's fluctuating needs and purchased special equipment for learning, play, and mobility, in place of institutional care. One man with dementia used day-center funding to purchase a garden shed where he could safely spend time on his hobbies within sight of his caregiver when she was gardening. With these budgets, people gain flexibility to prioritize their choices. Other than primary and acute care, patients relinquish an open-ended commitment to home, community, and other long-term care services, while accepting greater responsibility for managing arrangements for their chosen services.

An independent research team used a difference-in-differences model to compare the year-before and year-after costs for a group of patients using personal health budgets with those of a group using traditional services and funding, randomly sampled from the same geographic areas. Overall, use of personal health budgets

was cost-effective relative to traditional care and was associated with improved quality of life for patients and caregivers.<sup>3</sup> The greatest savings (mean, £3,100 [\$4,650] relative to the traditional care group) were observed among patients with annual budgets of more than £1,000 (\$1,500). The subgroup with budgets of £1,000 or less saw a £170 (\$255) cost increase. NHS policymakers are therefore focusing the program on higher-need patients.

Patients with personal health budgets used fewer acute care services than their counterparts, instead increasing their personal expenditures on such social and well-being services as help from more flexible support workers, information technology, mobility equipment, physical activities, leisure, training, and education (see table). The evaluation was not designed to explain the observed relative reduction in acute care use, but the evaluators speculated that it might be attributable to a change in the mix of services and to patients' increased control over their use.

There are challenges to implementing these budgets. Headlines in England have characterized budgets spent on horseback riding for a disabled child and a £7 (\$10) pedal-boat rental as public money being "spent on treats." Some physicians have expressed unease regarding spending on untested, nonmedical services and about the perceived risks of fraud and of beneficiaries running out of money for needed services.

In practice, there are ways to promote good spending decisions and accountability. The NHS team meets with beneficiaries to review spending and outcomes within the first 3 months, with subsequent financial reviews and controls dependent on the budget's size and the type of services purchased. Although most people spend their full budget, some have unspent funds that are returned at the end of the year. Transparency can be increased by having third-party organizations hold the budgets to pay for the services a beneficiary selects.

Self-directed care models are not entirely new to the United

<sup>‡</sup> P<0.05.

PERSPECTIVE PERSONAL HEALTH BUDGETS

States. Demonstration projects conducted under Medicaid waivers have permitted self-directed care for patients with long-term care needs, improving quality of life.<sup>5</sup> Most such U.S. models, however, have been limited to the hiring and supervising of personal assistants for a specified number of hours per week. Whereas in England direct cash payment is possible, U.S. officials have been reluctant to relinquish such control to patients.

Medicaid waivers have been used to broaden the home- and community-based services offered. and some of these services appear similar to those purchased with personal health budgets in England. But service specifications and providers are tightly controlled in these Medicaid initiatives. For example, beneficiaries may be offered set hours for personal care, home-delivered meals, and standardized equipment. The English experience suggests that if offered a personal health budget, some people choose to focus resources on items such as custom-designed wheelchairs, even though they are left with less money for other services.

Adoption of more ambitious models that shift public funds to

individual control would probably face political scrutiny in the United States, as it has in England. Yet the emergence of capitated health plans as nongovernmental intermediaries managing the finances and care of Medicaid and dually eligible (Medicare and Medicaid) beneficiaries may facilitate this approach, since such plans' spending patterns may draw less public attention than those of government agencies.

Under the Affordable Care Act, 13 states are conducting demonstration projects in which health plans are responsible for managing overall expenditures for dually eligible patients. These plans can offer flexible benefits outside traditional health care and are providing some such as home modifications, appliances, and cell phones as part of a case-management approach for populations with complex needs. These plans could provide even greater flexibility and patient control. Plans could use service history to assess a patient's expenses for homeand community-based services and then allow the patient to work with a case manager to develop a budget addressing personal needs and health goals.

As the U.S. system strives to

redesign care for high-cost patients, we believe that greater consideration should be given to self-directed care, informed by lessons from international models. The evidence from England suggests that patients themselves can help to design higher-value care.

The views expressed in this article are those of the authors and do not necessarily represent those of AHRQ or the U.S. Department of Health and Human Services.

Disclosure forms provided by the authors are available at NEJM.org.

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# Vitamin D Deficiency — Is There Really a Pandemic?

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In recent years, numerous clinical research articles have concluded that large proportions of North American and global populations are "deficient" in vitamin D.<sup>1-3</sup> Most of the evidence cited focuses on one of two observations: that many people have serum concentrations of vitamin D (i.e., 25-hydroxyvitamin D

[25(OH)D]) below 20 ng per milliliter (50 nmol per liter), which the Institute of Medicine (IOM) estimated in 2011 was the appropriate level<sup>4</sup>; or that supplementation with 600 to 800 IU per day — the IOM Recommended Dietary Allowance (RDA) for adults — or more fails to achieve serum concentrations above 20 ng per milliliter

in some study participants. Such conclusions, however, are based on misinterpretation and misapplication of the IOM reference values for vitamin D. Because such misunderstandings can have adverse implications for patient care, including unnecessary vitamin D screening and supplementation as well as escalating health care costs