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OCCASIONAL
PAPER

Health and Well-Being in the Home

A Global Analysis of Needs, Expectations, and Priorities for Home Health Care Technology

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Summary

Background

An increasing number of countries are experiencing the so-called "epidemiological transition": Chronic diseases with the need for long-term treatment have begun to replace infections as the primary cause of death in these aging societies. This shift is not confined to the developed world. While noncommunicable diseases accounted for 44 percent of the burden of disease in low- and middle-income countries in 2002, it has been estimated that, by 2030, this share will reach 54 percent (Lopez et al., 2006). As a result, there is growing concern about the sustainability of the current system of health care delivery, which is compounded by rapidly rising costs and workforce shortages. This concern has triggered an interest in approaches to mitigate the impact of chronic disease and disability on population health, economic productivity, and health care spending.

Several medical and technological innovations have theoretically framed this challenge as an opportunity and have caused the health care sector to rethink current paradigms of health care delivery. For example, promoting tools for aging in place and for transforming the current provider-driven model into a patient-centric system not only would objectively improve health status but would also enable patients with chronic conditions to live an active and fulfilling life as an integrated segment of society.

Advances in home health care products and services are attractive, promising, and, perhaps, even necessary solutions to mitigate the current pressure on the health care system while improving the patients' well-being beyond the physiological parameters of disease control. These innovations allow the shifting of care from institutional and professional settings to patients' homes and enable patients to self-manage their conditions, assisted by formal or informal caregivers as needed.

Home health care and self-management devices and services span a broad spectrum. Depending on the interpretation of the terminology, they can include everything from mobility support tools to basic diagnostic and therapeutic tools, such as glucose meters, to telemedicine solutions and care delivered by home health care professionals. For our purposes here, we focus on home health care technologies and solutions and do not address durable medical equipment (e.g., walkers), supplies (e.g., wound care products), or professional services, such as in-person home care.

Technological advances have pushed the frontier of care management into the home setting, and today's tools go well beyond mere monitoring and narrow functionalities; they allow the integration of monitoring and therapeutic systems, provide educational content, and enable communication and data flow between the patient and professional health care providers. Such

solutions have the potential to not only support current care delivery but also fundamentally change the model to a more efficient and patient-centered one. They also make it easier for patients to age in place, if they prefer, and avoid institutionalization.

To better understand the current and future roles of home health care technologies, we conducted a global study of the needs, priorities, and expectations of key stakeholders regarding home health care in six countries (China, France, Germany, Singapore, the United Kingdom, and the United States). The sample was selected to include a variety of health care systems, geographic areas, cultural traditions, and economic development. We conducted interviews with a broad range of stakeholders (government officials, researchers, regulators, providers, insurers, manufacturers, distributers, and patient organizations), an analysis of existing data, and a literature review to develop country case studies as well as an integrated global view. This paper summarizes the results of that research.

The Case for the Use of Home Health Care Technology

The increase in the elderly population, together with improved survivability of many diseases, is projected to result in significantly higher numbers of people living with chronic conditions. This trend started in the developed world but is increasingly affecting developing and transitional economies. Singapore, for example, has become the world's most rapidly aging country, and 80 percent of all deaths in China are now caused by chronic diseases.

These changes in demographics and disease patterns are expected to further accelerate the growth of health care spending. In the United States, for example, the elderly (age 65 years or older) account for only 12 percent of the total population yet incur 34 percent of total health care spending (CMS, 2004). Since health care spending is already growing faster than gross domestic product (GDP) in most countries, there is growing concern about the financial sustainability of current care delivery systems.

Home health care technology is seen as an attractive solution because it empowers patients to self-manage their conditions to a greater extent and helps shift care from high-cost institutional and professional settings to patients' homes and communities. This shift could not only reduce cost but also alleviate pressure on health care systems that are already suffering from workforce shortages and capacity constraints.

In addition, shifting parts of in-person care to home health care solutions would be consistent with fundamental cultural changes with respect to aging and care provision. Informal care by family members, particularly women, has traditionally been the main source of long-term care. However, demographic and economic trends are eroding this traditional arrangement. Smaller families, increased labor-market participation among women, and higher mobility have left fewer intergenerational families with the ability to provide care informally (Timonen, 2009). This shift started in Western countries after World War II and is now affecting Asian countries, such as China and Singapore, despite strong cultural norms that children are expected to take care of their parents in their old age (Gu, Dupre, and Liu, 2007). In the United States, the proportion of elderly persons receiving only informal care decreased concurrently with an increase in formal or institutional care between 1984 and 1994 (Spillman and Pezzin, 2000). In parallel to this transition, the attitudes of the elderly have also changed in that many prefer to live active and independent lives in their homes and communities, potentially supported by tools and technologies, for as long as possible.

Obstacles to the Adoption of Home Health Care Technology

Policymakers

Policymakers and the experts who advise them have expressed strong interest in home health care technologies, especially advanced solutions with the potential to fundamentally change care delivery. Several initiatives have been launched to study those technologies. The main driver for this interest is the hope that these technological applications can become partial substitutes for increasingly scarce professional labor or can support professional care delivery while reducing cost.

Patients

Despite interest at the policy level, uptake of home health care technology, especially the more advanced solutions (such as telemedicine), remains limited in the countries assessed in our study. A key obstacle is that patients, particularly the current generation of elderly and care-dependent persons, have strong reservations about the greater use of home health care technologies. Our analysis showed that patients and their informal caregivers lacked the familiarity with technology, health literacy, and self-efficacy to effectively use home health care solutions for self-management. They also were not fully aware of the range of products and their benefits. Affordability was also seen as an issue, as home health care products are often not covered by insurance, and the discretionary income of the elderly and disabled remains limited. Further, patients have access to affordable or subsidized domestic helpers in many countries, making the relative cost of home health care products high. Finally, cultural factors can drive patient reluctance to adopt home health care devices, including fear of stigmatization, concerns about increasing isolation and loss of human contact, and data privacy concerns.

Providers

Patient reluctance is compounded by limited support among providers, driven by limited evidence of the clinical effectiveness of these new technologies. Because most home health care devices can be approved based on manufacturers' data and without clinical trials, many providers remain skeptical about whether the attractive functionalities of such technologies actually translate into better management of diseases and disability—and into better outcomes for patients. Providers are also concerned about the lack of integration of home health care technologies into the current system of care delivery, as well as the potential threat to their business model if office visits are replaced by remote interactions.

Insurers and Payers

Our study showed that home health care products are less comprehensively covered than other medical care and even medical technologies used by providers. In Singapore and China, products for home health care are generally not covered by insurance. In Western countries, many first-generation devices, such as glucose meters and continuous positive airway pressure (CPAP) machines, are usually covered by health insurance, but advanced technologies, like remote monitoring or telemedicine solutions, are generally not. Backdoors to coverage are pilot and demonstration projects and care management programs, whose operators contract with insurers to coordinate care for complex patients with the goal of improving care and reducing costly exacerbations, which sometimes provide such technologies to patients.

This theme of limited coverage is partly the result of the history of insurance provision. Countries typically started providing insurance for medical care delivered by professionals and are now only gradually expanding coverage for self-care. But there are two fundamental obstacles that inhibit coverage decisions for home health care technologies.

The first is incongruence with established payment systems, which were set up based on the historic priority of providing care for acute illness. Thus, coverage of care is typically linked to encounters (e.g., office visits, hospital admissions) or products (e.g., drugs, durable medical equipment). Payment systems have not evolved to better reflect the needs of patients with chronic conditions that require ongoing management rather than episodic treatment. Thus, there is often no suitable mechanism to pay for solutions that are ongoing services, such as telemedicine, which requires providers' attention to data submitted from patients' homes outside of a direct encounter. Another issue is that payment systems and budgets are commonly established according to care sector, and funds are not fungible across sectors. This can create a distortion of incentives for innovations that bridge different sectors, because cost may accrue to one sector while benefits accrue to another. An often-discussed example is electronic health records. Although electronic health records can make the provision of care safer and more efficient, providers are reluctant to adopt them because they would incur the investment and training cost while insurers would reap the financial benefits.

A second fundamental obstacle to coverage of home health care technology is the limited evidence for its impact on patient outcomes and health care cost. While many small pilot projects have shown health benefits, particularly for first-generation devices and connected solutions to manage heart failure (see, e.g., McManus et al., 2010), the wider impact on the health care system has not been sufficiently assessed.

Regulators

In general, market approval for home health care products is straightforward. Devices are mostly classified as low-risk, and regulatory approval only requires manufacturing data and functionality testing but not clinical trials. But regulatory obstacles can arise for newer generations of home health care products because these devices can fall under the jurisdiction of several regulators, such as medical device and telecommunication regulators (in the case of connected devices). Other issues include whether some home health care services would have to be regulated as the provision of medical services with substantial implications for liability and restrictions on who may provide such services. Finally, restrictions on the distribution channels for home health care devices are seen as creating a barrier to market entry and increasing costs to consumers.

Options to Remove Obstacles to Adoption

Our analysis shows that removing these obstacles to the adoption of home health care tools is not a trivial task; it will require concerted efforts from many stakeholders. We argue that both the policy environment and the products themselves must be designed to yield the highest benefit from both the individual and societal perspectives, carefully considering the existing health care system and the vision for its future development.

Policymakers

Policymakers, such as health ministry officials, will play an important part, as they will have to shape a vision for the appropriate role of home health care in their jurisdictions and drive the agenda to implement that vision. Key components of that agenda will be the alignment of payment systems and incentives with policy goals, clarification of the regulatory framework for home health care technology, and efforts to promote patient receptiveness to new models of care delivery. We have seen signs that home health care is on policymakers' radar in many countries and that there are efforts that can be used as a foundation for constructive debates with the wider stakeholder community. But given the mounting pressure on the health care system, the visibility and intensity of these efforts will have to be increased.

Industry

Home health care technology companies can support these efforts in two important ways. First and foremost, tools must be developed in accordance with patient needs, i.e., they must have an intuitive and simple design and be affordable. To meet patient needs, companies will also have to think about their offerings as solutions rather than merely products. This means that these companies must provide ongoing support for patients and their informal caregivers and integrate their services and data with those of other professional care providers. Second, companies will have to demonstrate to stakeholders the value of their products in a convincing fashion. Regulatory approval and attractive design will be a necessary first step, but companies will have to develop robust evidence for the clinical effectiveness and cost-effectiveness of their products compared to treatment alternatives in an effort to convince providers and payers. A good example of such an assessment is the ongoing Whole Systems Demonstrator (WSD) trial in the United Kingdom, currently the largest randomized control trial of telehealth and telecare in the world (UK Department of Health, 2009).[1]

Providers

Because patients rely heavily on their providers for medical advice, providers' knowledge about the range of existing products and the benefits of their use is essential. But providers also need to shift from being paternalistic caregivers to being partners of patients in the care process.

Conclusions

Against a background of concerns about the sustainability of current systems to deliver health care, driven by rapidly increasing costs and workforce shortages, we find evidence that home health care devices can be a potential solution. Stakeholders agree that these tools could give patients a greater ability to self-manage their conditions in partnership with their providers and could help them improve their health status and overall well-being. Shifting more responsibility to patients could also reduce cost and free up capacity in delivery systems.

However, while such devices have theoretical appeal, they challenge and disrupt current paradigms and structures. Increasing uptake will require major changes that can be achieved

[1] The WSD is a two-year project funded by the UK Department of Health that aims to determine how technology—particularly telehealth and telecare—can help people manage their diseases. For more information about the project, see UK Department of Health (2009).

only through the concerted efforts of a broad set of stakeholders. Indeed, stakeholders have to take an integrated view and work together to achieve a new paradigm that is focused on providing patient-centric care. Under this paradigm, incentive structures will allow health care providers to allocate time to educate and guide patients in the correct usage of home health care devices.

Our analysis shows that stakeholders from a heterogeneous sample of countries have similar hopes and concerns with regard to the adoption of home health care technologies. There is broad-based agreement that fundamental changes are necessary to reap the potential benefits of these devices. However, stakeholders also pointed out that it is important to take into account cross-country differences in health care delivery, as well as cultural and socioeconomic contexts, when designing a roadmap for implementing home health care solutions. Indeed, differences in health care provision (e.g., insurance arrangements, patients' level of health literacy and empowerment, patients' willingness to pay) will have important implications for the types of devices that may prove most useful, from which patients will benefit the most, and the type of supportive tools (guidelines, training) that should be provided to ensure optimal health outcomes and the largest efficiency gains.