Automated people-care

Robotic assisted care and remote monitoring provide economically viable support for the sick and elderly so people can stay home for longer.

One of the key challenges for healthcare providers is to provide ongoing medical support of the elderly and the chronically sick at home. Given that people are living longer and the costs of hospital-based care are so great, or, as in the case of many emerging economies, simply not available, many countries are increasingly focused on providing solutions that help people within their own space. The traditional approach to this has been through using carers who either live with patients or visit them on a regular timetable to monitor their health, advise on diet and exercise, and alleviate isolation and loneliness. It has been argued consistently that supporting people in this way avoids, or at least delays, the need to admit them into primary or secondary healthcare units, which saves both the social and financial costs of entering hospitals or care homes. Many cultures and societies traditionally encourage long-term family cohesion and recognise home-care to be far better for the individual than the institutional alternatives. However, with escalating costs, increasing dependency ratios and the mushrooming of the populations over 65 in many countries, this is fast becoming economically unsustainable. As one workshop participant explained: 'We can no longer afford to provide our elders with the level of personal support they have traditionally had but we also need to keep them out of hospitals for longer.'

Similar levels of support are also provided to those in younger age brackets who suffer from long-term chronic diseases such as diabetes, asthma, heart conditions and HIV and AIDS. The latter is particularly pertinent to South Africa where an estimated 5.7 million people are currently living with the condition. These diseases typically require daily monitoring and diagnosis coupled with informed support. In response, a host of programmes are currently being designed which will not only allow healthcare workers to have access to more detailed information and so give better support in the field but will also help patients to manage their condition independently.

Over the next decade, many predict that automated people-care, where assistance is provided either remotely or by technology-enabled products within the home, will be a major focus of attention for many different sectors. Beyond pure healthcare providers, automated people-care has become an increasingly attractive arena for telecoms companies, software developers and IT hardware manufacturers. In the UK, one of the last pieces of legislation passed by the outgoing Labour administration in 2010 was the Personal Care Bill which ensured free personal care at home for around 400,000 people with the greatest needs. Given the economic considerations, this level of support can only be achieved with significant technological input. In South Africa, the hope is that 'e-health' will help to increase public access to the limited number of healthcare workers and, in particular, give people access to health information

so that they are better prepared to manage their conditions.

Today, growing numbers of public and private organisations have moved on from basic systems of nurse visits and are already providing telehealth-based support to monitor vital signs through data links, give advice over the phone and even allow remote imaging. Text-based support of multiple patients has proved highly effective from both therapeutic and economic perspectives in many countries – from the Philippines and Brazil to Germany and South Africa, services have been launched to help diabetes, TB, HIV and Alzheimer's patients as well as to improve the more day-to-day check-ups. Given the impact that can be achieved, McKinsey estimates the telehealth or mhealth industry to be worth over $50 billion by the end of the decade. Alongside the mobile phone networks, firms like GE, Philips and Siemens are all placing big bets in this area. Telemedicine connectivity will therefore soon be providing widespread 24/7 medical data sharing between patients and healthcare professionals. Over the next couple of years, additional services planned for rollout include the use of video links, fully wearable monitoring equipment as well as in-home sensors to track movement, body temperature and other vital signs. In addition, remote dispensing and monitoring of drugs is on the cards for many conditions.

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One interesting development in this area is the combination and integration of telecare, remote monitoring, virtual support and robotics: iRobot, a company known equally for the Roomba robotic vacuum cleaner and the bomb-disposal remote guided vehicles used in many battlefield environments, is also active in people-care. In 2009, iRobot established a healthcare business unit and launched its prototype robotic telepresence nurse:

"iRobot believes that next-generation practical robots have the potential to help caregivers perform critical work and extend the time that people can live independently. Robots may be capable of assisting in senior care in a variety of real-life situations, including household chores and the on-time administration of medication. This could ultimately lower the cost of care."

With advances such as these, many see that the assisted living arena will be one of significant innovation and investment. In the US, current healthcare costs are around 17% of GDP, or over $2 trillion dollars a year. As such, and with the increasingly ageing population, any solutions that act to both reduce and prevent the onset of significant healthcare support requirements are being embraced by government, HMOs and healthcare insurance companies alike.

A recent study by Plum Consulting quantified some of the key arguments and concluded that the ageing population in the UK will increase demand for social care by nearly 50% over the next twenty years while the supply of informal carers will hardly have changed. Given the higher dependency ratios, the statistics are even more challenging in countries like Japan, Korea and Italy. With continuing improvement in price/performance of electronic devices and the growing ubiquity of always-on fixed and wireless

broadband communications, over the next decade we can expect to see strong demand for assisted-living services. These will include telehealth services, which use a combination of sensors, hubs and remote servers to provide better and more cost-efficient management of chronic conditions; telecare services, which provide continuous lifestyle monitoring of older and disabled people in the home; augmented reality services for those with cognitive disabilities, and services to locate dementia sufferers who wander and become lost; and digital participation services, which will connect, engage, stimulate and entertain people with disabilities and the elderly in their homes.

Many of the enabling technologies are already available but rapid take-up of such services is by no means guaranteed: the way in which organisations delivering health and social care respond to options for change will be crucial. Whether funded through insurance-based schemes or directly by government, there are several hurdles ahead. These include the need for large-scale, controlled trials (some of which are now being scheduled); training and building up expertise; and, most critically, the rollout of integrated electronic patient care records that help to make everything function.

By 2020, industry experts see that, in many economies, 'we will have an advanced integrated system of automated people-care in place.' As a consequence, patients will be enabled to retain their independent lives for longer and so better enjoy life outside the mainstream care system. Many commentators therefore envisage a slow-down in the recent growth of nursing homes as a greater share of the elderly remain living at home. While for some this could mean greater physical isolation, the ambition for many in the healthcare sector is to use technology to prevent people feeling isolated. In a world where, on average, family support for the older generation will continue to decline and the cost of providing personal carers will continue to rise, patients with long-term chronic diseases and the elderly are increasingly likely to see some step changes in support over the next few years.

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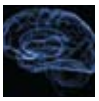
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