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Wireless health care

When your carpet calls your doctor

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The coming convergence of wireless communications, social networking and medicine will transform health care



IS IT possible that amid all the hoopla about Apple's iPad, one potential use has been overlooked? Larry Nathanson, head of emergency-medicine "informatics" at one of Harvard Medical School's hospitals, has experimented with using the device in the casualty ward. He writes that "initial tests with our clinical applications went amazingly well...the EKGs look better onscreen than on paper. It was great having all of the clinical information right at the bedside to discuss with the patient."

Dr Nathanson's enthusiasm hints at the potential of wireless gadgets to improve health care, and to ensure more personalised treatment in particular. Pundits have long predicted that advances in genetics will usher in a golden age of individually tailored therapies. But in fact it is much lower-tech wireless devices and internet-based health software that are precipitating the mass customisation of health care, and creating entirely new business models in the process.

Wireless health is "becoming omnipresent" in hospitals, according to Kalorama Information, a market-research firm; it estimates that the market for such devices and services in America alone will grow from \$2.7 billion in 2007 to \$9.6 billion in 2012. Don Jones of Qualcomm, a maker of networking technology, argues that the trend speeds diagnosis and treatment, and saves doctors' and nurses' time. GE, an industrial giant, and Sprint, an American mobile operator, have joined forces to offer hospitals such services. GE's Carescape software allows the secure monitoring of patients' health via mobile phones, as does rival software from Airstrip.

Doctors are an obvious early target for wireless health. A forthcoming report by the California HealthCare Foundation (CHCF), a think tank, estimates that two-thirds of American physicians already have smart-phones. Over one-third of American doctors use Epocrates, a program for mobiles and laptops which offers instant information on drug-to-drug interactions, treatment recommendations and so on. The software will soon be able to access electronic health records (EHRs) via mobiles—which the author of the CHCF's report thinks could be "the killer application" of wireless health.

The hope is that nimble new technologies, from smart-phones to EHRs to health-monitoring devices, will empower patients and doctors, and thus improve outcomes while cutting costs. The near ubiquity of mobile phones is the chief reason to think this optimistic scenario may come true. Patients with fancy smart-phones can certainly benefit from interactive "wellness" applications that track diet, exercise and vital signs. Apple's App Store, for example, offers thousands of health-related applications. Jitterbug, an American mobile operator that offers easy-to-use phones for the elderly, recently added more health services; rival mobile carriers are doing much the same.

But Carolyn Buck-Luce of Ernst & Young, a consultancy, points out that "mHealth" is transforming health care in poor countries as well as rich ones. Medcall Home, a Mexican outfit that provides medical consultations by mobile, already has millions of customers. Paul Meyer of Voxiva, an American technology firm that has set up mHealth systems in Rwanda and Peru, among other places, says that such schemes have been so successful in the developing world that they are now being adopted in the rich world too. His firm has helped the American government with its recent launch of Text4Baby, a public-health campaign to educate pregnant mothers (they receive free text messages with medical advice) that will soon become the biggest such effort in the world.

What is more, mobile phones are but one part of a broader wireless trend in health care that McKinsey, a consultancy, estimates may soon be worth up to \$60 billion globally. Many companies are coming up with "home health" devices embedded with wireless technology. Some are overtly clinical in nature: Medtronic, a devices giant, is developing a bedside monitor that wirelessly tracks the blood sugar levels in diabetic children sleeping nearby. GE has come up with "body sensor networks", tiny wireless devices that track the vital signs of those who wear them.

The most successful gadgets may be, as Eric Dishman of Intel puts it, "surreptitious". His firm, a big chipmaker, is investing in devices to track the health of the elderly, such as "magic carpets" that sense erratic movements and thus can predict a fall. Continua, an industry coalition, is developing shared standards so that blood-pressure monitors and scales can wirelessly transfer readings to doctors' offices or personal EHR services like Google Health.

All these devices and services do not just allow doctors to make more accurate diagnoses, prescribe more effective treatments and keep better track of patients' conditions. They also allow health services to tailor treatments depending on patients' personal preferences and behavioural foibles. Studies show, for example, that although some patients with chronic conditions are fastidious about taking pills or insulin properly, others are careless or forgetful. Some prefer efficient electronic reminders, whereas others respond best when a nurse calls home. A global consumer survey released on April 6th by PricewaterhouseCoopers (PWC), a consultancy, finds that the elderly prefer high-quality care with lots of personal attention, whereas younger types prefer low-cost care and wellness schemes.

Many health systems, PWC's accompanying report finds, are beginning to divide customers into different categories and customise treatments accordingly. For example, Discovery Health, a South African insurer, uses a variety of different methods to get patients with chronic diseases to follow through on their treatments, from text messages reminding them to take their pills to rewards for good behaviour.

A similar scheme run by HealthMedia, a wellness firm owned by Johnson & Johnson, a big drugs firm, uses online tools (it calls them "digital health coaches") to help patients manage diabetes and lose weight. Its studies suggest that half of the digitally coached do lose weight, and the improved health of those with chronic conditions is worth \$1,000 a year to their employers.

Virgin HealthMiles, an American rival, has taken the same idea a step further, using online social networks, through which co-workers or family members can cheer on or nag patients electronically, in order to encourage exercise or weight loss. Patients seem to like this kind of thing: one patient who suffers from ulcerative colitis, for example, has created a forum for fellow sufferers that can be accessed through an iPhone application.

All these initiatives are particularly promising because they help bring about behavioural change, normally the hardest element of any treatment. Patients often ignore doctors' lectures, but are more inclined to listen to supportive friends and family. By the same token, doctors and nurses are not always on hand to encourage healthy behaviour, but mobile phones and other wireless gadgets can be. That is something that even personalised genetic therapies could not offer.