

Connected Health
Bringing Medicine into the
Information Age



Prepared by Cisco Systems, Inc
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From anaesthesia and penicillin to biotechnology and the human genome project, every century has brought dramatic improvements in medical capabilities. But the next revolution in healthcare is not about medicine; it is about using information to drive patient-centric, safe, and efficient care.

Changing the way that information is handled may not seem like a development to rival antibiotics or X-rays, but it has the potential to be every bit as revolutionary. Apart from saving money through more efficient use of resources, a detailed, up-to-date, and shared record of every patient's healthcare history could save thousands of lives. According to the U.S. Institute of Medicine, nearly 100,000 people die in hospitals every year in the United States as a direct result of medical errors.¹ This means that medical errors are bigger killers for U.S. citizens than breast cancer, automobile accidents, or AIDS.² Research in the United Kingdom suggests that one in 10 patients admitted to hospitals suffers some harm as a result of an adverse event on admission.³ These problems are not the result of negligence by individual clinicians; they are caused by systemic failures. Information, or the lack of it, is to blame.

Faced with an aging and more demanding population, governments have no choice but to improve the use of information in delivering healthcare. Without a vastly more efficient system, even the richest country won't have enough money or enough medical staff to meet the needs of its citizens.

Integrated, Patient-Centric Healthcare

Connected Health defines a world where patient needs, rather than those of institutions and professions, determine pathways through care. Services offered by the myriad bodies that make up the healthcare sector (such as the local doctor, acute hospital, pharmacy, optician, dentist, and laboratory) are provided in an integrated, rather than a fragmented, way.

This vision is based on using technology to transform the efficiency of all the activities that relate to healthcare—from putting the processes and decision-making involved in prescribing pharmaceuticals online to providing millions of healthcare professionals with continual professional development via online learning delivered by video-on-demand and Web-based interactive teaching. Tele-surgery and tele-consultation allow the skills of the expert to be scaled beyond the local hospital, while home monitoring cuts back on the length of hospital stays, simultaneously improving quality of life for patients.

At the heart of the revolution are improved information flows. The information held by different organizations needs to be brought together in a cohesive record, covering

each individual's every interaction with the healthcare system. This creates the scope for the direct involvement of patients in the determination and administration of their own healthcare.

The days of the patient as a passive recipient of care (what historian Roy Porter called "medical body-snatching") are drawing to a close.⁴ The wealth of information unleashed by, among other things, the Internet means that patients—and particularly those with chronic conditions—are often as informed about their illnesses as their doctors. This untapped resource of patient knowledge offers the potential for significant savings.

The U.K. Wanless Report, which looked at the best uses of funding for 21st century healthcare, concluded that patient self-care could decrease visits to the doctor by as much as 40 percent and reduce hospital visits by 17 percent. The report estimated that every £100 spent on encouraging self-care could generate returns for the National Health Service of £150.⁵

The Journey to Connected Health

Healthcare sectors in all countries are under enormous cost pressures. Finding the funds and building the business case for a long-term investment program that cuts across institutions and potentially across countries are huge undertakings. Furthermore, the healthcare sector has a history of low investment in IT. Whereas the financial services industry has been investing as much as 8 percent in IT, the comparable figure in healthcare has been approximately 1 percent.

Securing the buy-in of medical professionals is another significant obstacle. Many see IT investment as a distraction from the real business of improving patient care—a view that is often reinforced by their past experience of technology apparently designed to make their lives easier. Nonetheless, there is evidence of change. Research firm International Data Corporation (IDC) found that one-third of healthcare organizations in Europe expected to increase their IT budgets in 2004. By 2010, the European Commission predicts that 5 percent of national health budgets will be invested in e-health systems and services.

Perhaps the biggest obstacle to Connected Health, however, is driving systematic change across such a large number of organizations. It is the number of agencies involved in providing care that makes a transferable record necessary, but how do you standardize across ten thousands of organizations? And do you standardize at a regional level, a country level, or across countries? In addition, while standards require central coordination, they need to be introduced in a way that imposes sufficient uniformity without stifling innovation and variation at the local level.

Privacy and Trust

Privacy provides a different kind of challenge. In the past, confidentiality was largely ensured by default, because the poor quality of medical records—and the lack of common access to them—made it difficult for anyone to view a patient’s entire medical history in one place. In contrast, the prospect of an integrated healthcare record raises issues of security and confidentiality. Inappropriate sharing of information could give rise to a number of problems, not least of which is the access to care and treatment that a person with a particular history may receive (or be denied).

However, that risk needs to be weighed against the balance of benefits that wider access will provide. In an emergency, for example, few patients are likely to raise the issue of confidentiality when access to information about their medical history is literally a matter of life or death. The solution lies in recognizing that there are risks and benefits attached to sharing information and in promoting governance structures that can win patients’ trust by, for example, giving patients an element of choice in how easily their confidential data is shared with different groups of people.

Implementing a Successful Connected Health Strategy

Although there is now no shortage of inspirational IT initiatives in individual hospitals and healthcare communities, the real challenge is to improve the cost, speed, and quality of healthcare across entire countries and even groups of countries. Without ruthless standardization, the benefits of interoperability are not possible, and system-wide efficiencies will not be achieved.

Networks of increasing size and scope are being built as healthcare organizations work together to develop “infostructures.” For example, Germany has adopted a medium-term strategy for healthcare telematics based on information and communications technology (ICT) and the establishment of a legal and economic framework. Independent contractors at the federal level work together within the Aktionsforum Telematik im Gesundheitswesen (ATG) to create a framework for all German healthcare service providers and government departments. Public- and private-sector priorities (such as the best time to introduce an electronic health passport for all citizens) are coordinated. This ensures that legal frameworks account for competition and cost-savings at the contractual level without compromising individuals’ rights.

Similarly, in Italy, a framework agreement has now been signed, paving the way for a new national healthcare information system. This agreement is designed to encourage local autonomy, while providing support to all parties within the Servizio Sanitario Nazionale (SSN), or national healthcare service. The system is based on the idea of open information access and of plugging gaps in existing healthcare records by provid-

ing seamless access to IT. Though yet to be fully implemented, the new system is based on the principles of collaboration and integrated planning around patients' needs.

The Need for Leadership

These developments reflect a growing awareness of the need for reliable, secure, and coordinated infrastructures that support controlled access to information. But in health-care, even national initiatives may be too limited. To enable citizens to receive care across country borders, the European Union has launched an action plan to coordinate regional and national supporting agencies. This action plan should reduce the cost, speed the pace, and increase the quality of e-health initiatives.

Delivering Connected Health will require great leadership. The value that information management support for healthcare can bring is immense, offering everything from shorter hospital stays and waiting times for operations to radically lower costs of healthcare over a patient's entire life. But obtaining these benefits requires a much more cohesive approach at community, regional, national, and international levels—a change from the past when activities have been mainly at local levels. Implemented properly, Connected Health will mean a much more efficient healthcare system, but also one that helps people manage their health more effectively by giving them wider access to information and a greater understanding of how to interpret that information.

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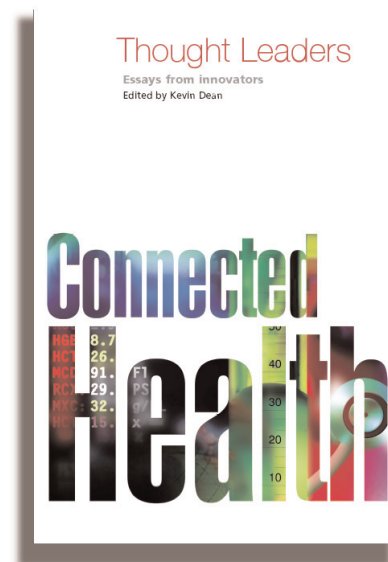
- 1 To Err Is Human: Building a Safer Health System, Nov. 1999.
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- 3 Department of Health, An Organization with a Memory: Report of an Expert Group on Learning from Adverse Events in the NHS, Chaired by the Chief Medical Officer, June 13, 2000.
- 4 The Greatest Benefit to Mankind: A Medical History of Humanity, HarperCollins Publishers, Ltd., 1997.
- 5 Derek Wanless, "Securing Our Future Health: Taking a Long-Term View," April 2002. This report has become known as the U.K. Wanless Report.

Additional Reading

An in-depth discussion of these topics is covered in *Connected Health*—one of a series of thought leadership books published by Cisco® IBSG. The series covers important issues for public sector decision makers. Each book sets out a Cisco Systems perspective and includes a dozen essays giving practical experience and advice from some of the world's leading experts in their sector.

More details are available at:

<http://www.cisco.com/en/US/about/ac79/wp/ctd/index.html>



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