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Smart Cards and Healthcare:Learning from Europe

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Having already proven themselves in Europe, smart cards hold immense promise for all segments of the US healthcare industry: insurers, public and private sector providers and patients. Convenient, portable, intelligent and secure, smart cards combine storage and processing capacities. Implementation of a smart card system could well be a major component in the Obama Administration's plan to modernise healthcare and cuts costs by making all health records standardised and electronic.

The typical healthcare smart card is the size of a credit card and is embedded with a microcontroller, microprocessor or memory chip that contains compressed, encrypted data that can be read from and written to at point-of-care using an intelligent reader linked to a computer system. Alternatively, smart cards can be read with a remote contactless electron magnetic interface.

Europe's State-dominated healthcare and health insurance system has meant that take-up of smart cards has been far more rapid than the US. A decision by the European Commission to mandate the introduction of a card-based replacement to its E- 111 paper form for cross-border healthcare provided the impetus for an explosive growth in their use. Some estimates place the number of smart cards in use in the European healthcare system at about 200 million. Countries like France boast world leadership in terms of features and functionalities on their healthcare smart cards, not least in terms of security.

The US has however lagged Europe in this field. Indeed it has lagged Europe in the adoption of electronic medical records (EMRs).

There is a major gap between the amount of money which the US spends on healthcare (the world's highest per capita) and the use of electronic healthcare records. The U.S. healthcare delivery system is an information-intensive industry that is complex, inefficient, and highly fragmented, with estimated spending of $2.2 trillion in 2007. Of this, according to the American Hospital Association over 21% or $465 billion is spent on administration. For every hour spent on patient care in hospitals, skilled nursing facilities or home healthcare, 30 to 60 minutes are spent on paperwork. Despite all the time spent on paperwork, incomplete information is a leading cause of medical errors that claim the lives of nearly 100,000 patients each year. Only about 8% of the nation's 5,700 hospitals and 17% of its 800,000 physicians currently use the kind of common computerized record-keeping systems that newly inaugurated US President Barack Obama envisions for the whole nation.

As of 2005, most so-called smart cards in use in healthcare in the US were in fact magnetic strip cards, that is a card with a strip of magnetic tape material attached that can store a few hundred bytes of read only memory. These cards have no active security feature, although sensitive information such as account numbers can be encrypted.

While many observers apply the term 'smart card' to both magnetic strip cards and cards with embedded microprocessors, others do not consider magnetic-strip cards to be true 'smart' cards. True smart cards have several advantages:

Ó Both simplify and enforce information access management.

Ó Make certain that users are adhering to security standards.

Ó Can be used for both physical and logical access.

Ó Serve as secure, convenient, portable data carriers

controlled by patients and healthcare providers and personnel.

Ó Facilitate compliance with the strictest privacy and security

policies, thanks to built-in intelligence, processing

capabilities and standards-based cryptography.

Ó Allow for the implementation of new applications to improve the delivery of accessible and convenient medical care, as well as the delivery of administrative benefits.

A well-implemented smart card programme can:

Ó Provide timely, secure access to medical and insurance data while protecting patient confidentiality.

Ó Improve patient care.

Ó Provide emergency medical information.

Ó Reduce medical and billing errors.

Ó Streamline operations and improve productivity.

Ó Improve cash flow.

Ó Improve medical provider relations.

Ó Wring costs out of the system.

Such capabilities make smart cards an excellent technology for fulfilling the requirements of the US's Health Insurance Portability and Accountability Act of 1996 (HIPAA), which aims to:

Ó Protect health insurance coverage for workers and their families.

Ó Encourage the development of a health information system by establishing standards and requirements for the secure electronic transmission of certain health information.

Ó Make health insurance portable.

Ó Simplify the administration of health care information.

HIPAA mandates that access to and storage of healthcare information meets three basic requirements: availability, integrity and confidentiality of data.

Scenarios for Development and Use of Smart Cards in the US Healthcare Industry

There are three basic format scenarios for the development and use of smart cards in the healthcare industry, each with increasing levels of functionality:

1. Providers and health plans design magnetic swipe cards for the purposes of pre-registration and verifying plan member eligibility.

2. Providers and health plans design magnetic swipe cards that add a stored value component or can access health saving accounts. In addition to identification, such cards can be used to handle expenditures, replacing out-of-pocket payments for office visits and copays for prescriptions on the part of the patient. These cards would benefit both insurers and providers. Additionally they could obviate the need for patient submission of paper claims for reimbursement to their benefit plans.

3. Providers, health plans and vendors design a microchip-embedded card that identifies each patient's insurance carrier, contains details on the features of the patient's plan and formulary information, identifies the primary care physician; lists chronic conditions, current medications, and allergies; and carries other critical clinical and emergency information. This data may be incorporated into electronic medical record (EMR) systems. Data can be updated (uploaded and downloaded) real time at point of service locations such as hospitals and medical practices.

Applications

Under the third scenario above, smart cards permit a number of interesting applications. Dual card systems can be designed to meet the specific needs of healthcare professionals as well as patients.

Barriers

For all their potential benefits, smart cards have been slow to catch on in the US. Barriers to acceptance are formidable, not least because of the fragmented nature of the healthcare system in the country.

Ó Unlike Europe where smart cards are widely used in healthcare applications, the United States does not have a unified national healthcare system. Rather, its massive system is highly fragmented, with healthcare provided by a wide variety of private and public sector payers and providers, many of whom are in competition with one another.

Ó Faster claims processing means that insurers must pay sooner; and if payers don't support smart cards, healthcare organisations may be discouraged from using them.

Ó High programme costs are a significant barrier to largescale deployment, especially as reimbursement for patient care has been declining steadily.

Ó Healthcare providers have lacked the necessary card readers, but some computers are now manufactured with built-in readers, and insurers and vendors are coming up with more user-friendly technology, including contactless cards.

Ó Despite gains, smart card technology is still relatively new in the US, and many Americans have not yet been persuaded that it is a good thing.

> Americans are concerned that smart cards may jeopardise their privacy and make it easier for employers and insurers to exclude those with existing (costly) conditions.

> They are also concerned that such cards would and make it easier for identity theft artists to operate.

Ó Interoperability has been considered a big problem.

Smart cards only work on readers from the same supplier, where other forms of authentication such as passwords and tokens will work on any computer.

> No standards exist to ensure that cards can be used at different sites. There is a real need for the industry to develop interoperability. According to the Smart Card Alliance Healthcare Council until now, no one has wanted to fund the interoperability effort required to move to electronic medical records. However, about to be enacted US government mandates and funding are likely to change the picture substantially (see below).

The Smart Card Investment: Costs

Implementation of a smart card programme can be very labour and cost-intensive — or less so — depending on the extent and complexity of the desired features, number of covered lives, geographic coverage, and whether the insurer develops the programme in-house or contracts with an outside integrator to create the plan from scratch.

Ó Costs can range from hundreds of thousands of dollars for a small programme, to hundreds of millions for a national system.

Ó The key cost components are: cards, readers, software purchase or development, project design, data base modification, systems integration, installation. Cards and readers account for only 10% of the total cost.

Ó Independent studies from Harvard, RAND and the Commonwealth Fund have shown that getting EMRs up and running in the US could cost at least $75 billion to $100 billion over the ten years.

The Smart Card Investment: RoI

Despite the high costs of installing a system, payers could stand to reap a considerable return on its investment. Elements to consider include:

Ó Replacement of manual, paper processes

Ó Elimination of the need to reissue member cards annually

Ó Real-time and accurate access to eligibility, benefit and formulary data

Ó Elimination of costly phone queries to insurers call centres

Ó Ability to make payments from consumer-driven healthcare accounts (health savings account [HSA], health reimbursement account [HRA] and flexible spending account [FSA])

Ó Provision of health outcomes data

Ó Reduction of medical errors

Ó Reduction of duplicate tests

Ó Improvement of healthcare provider relations

Ó Facilitation of HIPAA compliance

Ó New levels of security

Ó Flexibility and intelligence in transaction processing.

Outlook for Smart Cards in the US

To date, US healthcare system has been slow to adopt smart cards. The key challenge is to develop a system which offers providers an integrated view of a patient's health status and medical history, which experts believe would cap costs, reduce medical errors and improve access to information. At the moment, this is a tough call as most healthcare providers cannot share data with other providers.

Ó To correct this situation, there have been discussions on regional health information organisations (RHIOs) as means to lay the foundations for a national healthcare information network (NHIN).

Ó A few major commercial and government smart card programmes, like American Express's 'Blue Card' and access cards being implemented by the Departments of State and Defense, indicate that smart cards are beginning

to catch on.

Ó New wireless technologies, permitting contactless card use, may solve the reader problem.

Programmes designed by the new Obama administration may slice through this Gordian knot. President Obama is proposing a massive effort to modernise health care, while wringing costs out of the system by making all health records standardized within five years. The new president forecasts that having insurers and providers to adopt electronic claims systems, electronic medical records, and patient safety reporting systems, will cut overall health care costs by up to 10 percent or more. The Obama administration plans to make the "immediate investments necessary to ensure that within five years, all of America's medical records are computerized." Obama has proposed investing $10 billion a year for five years to move toward standards-based electronic health care systems.

The just passed House version of Obama's stimulus bill contains provisions requiring:

Ó Health information technology architecture that will support the nationwide electronic exchange and use of health information in a secure, private, and accurate manner, including connecting health information exchanges . . .

Ó Funding for acquisition of hardware or software or for the use of an electronic health or medical record, will

only be allowed for certified products that would permit the full and accurate electronic exchange and use of health information in a medical record, including standards for security, privacy, and quality improvement functions adopted by the Office of the National Coordinator for Health Information Technology.

To meet these mandates, such a system will have no choice but to take serious account of the role of smart cards.

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