
REEVALUATING MEDICAL RECORDS IN A DIGITAL WORLD

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With the 21st century well underway and technology abounding, the health care systems of many nations are catching up. In an effort to increase efficiency and lower administrative costs, many countries are introducing smart cards in their healthcare systems. However, several critics of smart cards have claimed the technology has not yet advanced to the United States' security standards, requires too steep of a cost, and can only be effective in a national health insurance program. Nevertheless, health smart cards have proven effective in France, Germany, and Taiwan as a means of keeping electronic medical records (EMRs) and have the potential to be adopted in the United States.

France is consistently ranked as having one of the premier healthcare systems in the world, in part because of the *carte vitale*.¹ The smart card keeps patients' EMRs dating back to 1998 and carries information including doctor's visits, referrals, vaccinations, operations, diagnostic tests and imaging, prescriptions, and billing and insurance records. Doctors only need to swipe the card through a reader to view and update a patient's medical records.² Overall, France spends 10% of its GDP on healthcare while the United States expends approximately 17% of its GDP on such costs. In other words, the French save approximately \$600 billion annually compared to the United States.³ Many of these savings can

be attributed to a reduction in administrative costs from the *carte vitale*. The French require 67% fewer administrative workers than Americans, an efficiency that leads to fewer waiting lines and payment delays that prevent patients from receiving treatment and doctors from receiving paychecks.⁴ Germany, with one of the most expensive healthcare systems in the world, held similar concerns regarding administrative costs. Therefore, they turned to a universal health smart card system, or *die elektronischen Gesundheitskarte*, in 2008.⁵ Because the patient's insurance information is kept on the card, payment is automatic, allowing insurance companies to pay doctors within three days and allowing doctors to save the expense of denial management companies. In that same year, Taiwan gained autonomy and had the privilege of designing its own healthcare system. To keep spending costs low, the Taiwanese decided to adopt the health smart card system as a means of documenting patients' medical and billing information.⁶ France, Germany and Taiwan have discovered the benefits of a health smart card system as a means of reducing the cost of spending and increasing efficiency.

While health smart card systems have proven their efficacy in several countries, there are several critiques of enacting such a system in the United States. One valid approach

of smart cards is security. For one, in a nation that highly values patient privacy and security of medical records, it is questionable how organizations could demonstrate HIPAA compliance in an electronic system that lacks standardization. Additionally, there is always a concern the system could crash, leaving the healthcare industry in a state of panic.⁷ From technology experts, it has been noted that smart cards have slower performance in encrypting and messaging information than Pentium-based PCs, which increases the ability of malicious users to intercept and hack EMRs.⁸ In an attempt to study medical staff and patient perceptions of health smart cards, a research group from Melbourne, Australia conducted a study surveying both emergency department (ED) staff and patients. The study found the majority of staff and approximately half of the patients had concerns regarding security, confidentiality, and privacy of EMRs with a smart card system.⁹

ED Staff and Patient Perceptions of Health Smart Card Issues

Concern	No. of ED Staff (%)	No. of Patients (%)
Security Issues	68.5	49.3
Confidentiality Issues	71.7	48.2
Privacy Issues	73.9	55.6

Data from Rosli, Reizal Mohd, et. Al

While this data only provides staff members' and patients' perceptions of potential security issues, such perceptions could be critical to the industry's adoption of and compliance with smart cards.

Although a health smart card system could provide many cost-saving benefits, the cost of implementation could inhibit the adoption of such a system. One case study had to

spend \$86,000 to install a smart card system within one organization for 12,000 people.¹⁰ A simple card reader with minimal security features can cost upwards of \$250 in addition to the price of individual cards, ranging from \$10 to \$30 and a \$100 software-licensing fee. In total, the initial investment for an organization could be over \$100,000, an expenditure that could prove exorbitant.¹¹ When the "public healthcare sector is chronically short of cash...the costs of using the next feature-rich component outweigh the benefits" of potential future cost reduction.¹²

Furthermore, smart card systems tend to work best in a setting of universality, yet the United States healthcare system remains fragmented. These systems tend to excel in a national health insurance program as a system that works in every medical facility.¹³ The key potential benefit of a smart card system is the transferability of information between insurers and HMOs; in a system with numerous plans varying from citizen to citizen, such transferability would be virtually impossible.¹⁴ Because several healthcare systems are already in place between providers and insurers, the advent of several electronic card systems does not allow for user mobility but adds to system complexity.¹⁵ Moreover, the study of ED staff and patients found that 52.8% of staff and 60.0% of patients wanted the card system to be optional. With only certain citizens opting to use the smart cards, administrative costs would not be reduced and two record systems would exist.¹⁶ Additionally, a 2001 Canadian study published in *Social Science & Medicine* found that "professionals would not adopt health smart cards in their practice if their use was optional to patients."¹⁷ Clearly, the universality of the smart card system is key to its implementation in the medical sector.

The high expenditure on healthcare in the United States

must be addressed, and cutting administrative costs would be a proficient first step. While the price of implementation may be high, the continuation of a paper records increases the cost of programs such as Medicare by 1% each year after 2015.¹⁸ EMRs would also reduce “duplicate records—estimated to cost \$60 to \$100 per patient.”¹⁹ Furthermore, a card system could be a step toward making the American healthcare system more cohesive, particularly in programs such as Medicare or Veterans’ Affairs. There are reasonable concerns that such a system could lack security, have a high implementation cost, and fail in the United States’ fragmented healthcare system, but the benefits of EMRs have the potential to greatly advance the American healthcare system through a reduction in administrative costs and an increase in efficiency.

ENDNOTES

1. T. R. Reid, *The Healing of America: A Global Quest for Better, Cheaper, and Fairer Health Care* (London: Penguin, 2010): 54.

2. *Ibid.*, 57–8.

3. *Ibid.*, 52–3.

4. *Ibid.*, 59, 62–3.

5. *Ibid.*, 68.

6. *Ibid.*, 172.

7. Dennis Emmett and Reagan Bundy, *Providing Better Patient Services Utilizing Smart Card Technology: A Case Example* (Marshall University, 2005): 93.

8. David Chadwick, “Smart Cards Aren’t Always the Smart Choice,” *IEEE Computer* 32.12: 142–3 (1999). 143.

9. Reizal Mohd Rosli David McD Taylor, Jonathan C. Knott, Atandriela Das, and Andrew W. Dent, “Health Smart Cards: Differing Perceptions of Emergency Department Patients and Staff,” *Australian Health Review* (33.1, 2009): 136–43.

10. Emmett and Bundy, 95.

11. Chadwick, 143.

12. *Ibid.*, 2.

13. Emmett, 96.

14. *Ibid.*, 92.

15. Chadwick, 142.

16. Rosli, et. al., 140.

17. *Ibid.*, 142.

18. Changrui Xiao and Arthur Yu, “Medical Smart Card System for Patient Record Management” Bears Breaking Boundaries: Science, Technology, and Energy Policy White Paper Competition (UC Berkeley, 2009): 4.

19. *Ibid.*, 8.