

# **Complementary Smart Card Guidance for the WEDI Health Identification Card Implementation Guide**

A Smart Card Alliance Healthcare Council Publication

Publication Date: October 2011 Publication Number: HCC-11002

Smart Card Alliance 191 Clarksville Rd. Princeton Junction, NJ 08550 www.smartcardalliance.org

#### About the Smart Card Alliance

The Smart Card Alliance is a not-for-profit, multi-industry association working to stimulate the understanding, adoption, use and widespread application of smart card technology. Through specific projects such as education programs, market research, advocacy, industry relations and open forums, the Alliance keeps its members connected to industry leaders and innovative thought. The Alliance is the single industry voice for smart cards, leading industry discussion on the impact and value of smart cards in the U.S. and Latin America. For more information please visit <a href="http://www.smartcardalliance.org">http://www.smartcardalliance.org</a>.

Copyright © 2011 Smart Card Alliance, Inc. All rights reserved. Reproduction or distribution of this publication in any form is forbidden without prior permission from the Smart Card Alliance. The Smart Card Alliance has used best efforts to ensure, but cannot guarantee, that the information described in this report is accurate as of the publication date. The Smart Card Alliance disclaims all warranties as to the accuracy, completeness or adequacy of information in this report.

Smart Card Alliance © 2011

# TABLE OF CONTENTS

1	INTROD	INTRODUCTION						
2	WHAT IS A SMART CARD?5							
3	HOW SN	ART CARDS CAN IMPROVE HEALTHCARE	7					
	3.1 SM/	art Card Benefits for Private and Public Health Plans and Pharmacy Benefits Managers	8					
	3.1.1	Reduction in Medical Fraud	8					
	3.1.2	Accurate, Positive Identification of the Insured Individual	8					
	3.1.3	Accurate Information on Eligibility and Health Plan	8					
	3.1.4	Elimination of Card Re-issuance Cost	9					
	3.1.5	Reduction in Duplicate Tests and Payments	9					
	3.1.6	Enforcement of Formulary Compliance	9					
	3.1.7	Immediate Adjudication at the Point of Care	10					
	3.1.8	Integration with Health Savings Accounts	10					
	3.1.9	Secure, Authenticated Access to Private Information	10					
	3.2 Sm/	ART CARD BENEFITS FOR HEALTHCARE DELIVERY ORGANIZATIONS	10					
	3.2.1 Streamlined Patient Registration							
	3.2.2	Compliance with Government Requirements for Identity Verification	10					
	3.2.3	Support for Health Information Exchange	10					
	3.2.4	Improved Patient Privacy and Security	11					
	3.2.5	Prevention of Duplicate Records	11					
	3.2.6	Consistent Branding	11					
	3.2.7	Real-time, Portable Electronic Health Record	12					
	3.2.8 Immediate Emergency Access to Patient Health Information							
	3.2.9	HIPAA Compliance	12					
	3.2.10	Support for Meaningful Use Requirements	12					
	3.2.11	Reduced Costs	13					
4	SMART	CARDS VERSUS OTHER ID TECHNOLOGIES	14					
5	5 EXAMPLE WEDI-COMPLIANT SMART HEALTH ID CARD DESIGNS							
6	SUMMARY AND CONCLUSIONS							
7	PUBLICATION ACKNOWLEDGEMENTS							
8	8 APPENDIX: RESOURCES							
8	3.1 Sm/	art Card Alliance Healthcare Resources						
5	3.2 SM/	ART CARD ALLIANCE HEALTHCARE REPORTS	20					

# 1 Introduction

Version 1.1 of the Workgroup for Electronic Data Interchange's (WEDI) Health Identification Card Implementation Guide includes Integrated Circuit Cards (ICC), commonly known as smart cards, as an appropriate card type.

For organizations considering upgrading their member identity cards to smart cards, this document serves as a supplement to the WEDI Health Identification Card Implementation Guide.<sup>1</sup> It provides WEDI-compliant smart card designs and includes a discussion of the features and benefits of smart ID cards for healthcare providers and payers.

This Guide has not been approved by WEDI, but has been approved by the Board of Directors of the Smart Card Alliance.

<sup>&</sup>lt;sup>1</sup> Health Identification Card Implementation Guide, Version 1.1, Workgroup for Electronic Data Interchange, April 28, 2011, http://www.wedi.org/snip/public/articles/details~74.shtml

# 2 What Is a Smart Card?

Smart card technology incorporates a small computer chip in a card (or other form factor). A smart card is a device that includes an embedded integrated circuit chip (ICC). The embedded computer chip (the ICC) provides smart cards with built-in tamper resistance and the unique ability to store large amounts of data securely, carry out functions on the card itself, and interact intelligently with a smart card reader. Smart card technology conforms to international standards (ISO/IEC 7816 and ISO/IEC 14443) and is available in a variety of form factors, including plastic cards, fobs, subscriber identity modules (SIMs) used in GSM mobile phones, and USB-based tokens.

Smart cards communicate with a reader through either a contact or contactless interface.



Figure 1. Contact Smart Card<sup>2</sup>

A contact smart card (Figure 1) must be inserted into a smart card reader with a direct connection to a conductive contact plate on the surface of the card (typically gold plated). Transmission of commands, data, and card status takes place over these physical contact points.



Figure 2. Contactless Smart Card

A contactless card (Figure 2) requires only close proximity to a reader. Both the reader and the card have antennae, and the two communicate using radio frequencies (RF) over this contactless link. Most contactless cards also derive power for the internal chip from this electromagnetic signal. The range is typically one-half to three inches for non-battery-powered cards, ideal for applications such as building entry and payment.

Dual-interface and hybrid smart cards are also available that support both contact and contactless interfaces.

Smart cards are used in many applications worldwide, including:

- Healthcare applications citizen health ID cards, physician ID cards, portable medical record cards
- Secure identity applications employee ID badges, citizen ID documents, electronic passports, driver's licenses, online authentication devices

<sup>&</sup>lt;sup>2</sup> Illustrations courtesy of Gemalto.

- Payment applications contact and contactless credit/debit cards, transit payment cards
- Telecommunications applications GSM Subscriber Identity Modules, pay telephone payment cards

Over 5 billion smart cards are shipped annually.<sup>3</sup> Smart card-based healthcare ID cards are issued in many countries; France and Germany, for example, have issued over 140 million smart healthcare ID cards to their citizens. Smart card technology is currently used in the Department of Defense Common Access Card (CAC), the Federal Information Processing Standard (FIPS) 201 Personal Identity Verification (PIV) card (with over 5 million issued to all federal employees and subcontractors), the Transportation Worker Identification Credential (TWIC), and the U.S. electronic passport. Smart card technology is also built into every GSM mobile phone's subscriber identity module (SIM) and in the contactless credit and debit cards issued by the financial industry.

Globally, the payments industry is migrating from magnetic stripe bank cards and infrastructure to smart payment cards based on the Europay MasterCard Visa (EMV) specification. Over 1.2 billion smart cardbased credit and debit cards are now issued globally and 18.7 million point-of-sale (POS) terminals accept EMV cards as of Q1 2011. Eighty countries globally are in various stages of EMV chip migration, including Canada and countries in Europe, Latin America and Asia. Migration to EMV smart payment cards is now starting in the U.S. In August 2011, Visa announced plans to accelerate chip migration and adoption of mobile payments in the United States, through retailer incentives, processing infrastructure acceptance requirements and counterfeit card liability shift.<sup>4</sup>

U.S. issuers are starting to issue EMV credit and debit cards, initially focused on international travelers.<sup>5</sup> Major merchants indicate that they will upgrade their POS infrastructure to support EMV cards.<sup>6</sup> The Visa announcement is expected to accelerate the U.S. move to EMV. Merchants that accept credit and debit cards, including healthcare delivery organizations, will need to upgrade their point-of-sale infrastructure with POS terminals that have built-in smart card readers to accept EMV payment cards.

ICC (contact smart cards) and contactless integrated circuit cards (CICC) are included in the ANSI INCITS 284 standard for Health Care Identification Cards. The WEDI's Health Identification Card Implementation Guide is based on this standard.

<sup>&</sup>lt;sup>3</sup> Source: Eurosmart, http://www.eurosmart.com/

<sup>&</sup>lt;sup>4</sup> Visa Announces Plans to Accelerate Chip Migration and Adoption of Mobile Payments, August 9, 2011, http://www.smartcardalliance.org/articles/2011/08/09/visa-announces-plans-to-accelerate-chip-migration-andadoption-of-mobile-payments.

<sup>&</sup>lt;sup>5</sup> *EMV Resources*, Smart Card Alliance, http://www.smartcardalliance.org/pages/smart-cards-applications-emv

<sup>&</sup>lt;sup>6</sup> EMV Comes to U.S. for International Travelers, Wal-Mart Calls for Chip and PIN, Smart Card Alliance press release, May 25, 2011, http://www.smartcardalliance.org/articles/2010/05/25/emv-comes-to-u-s-for-internationaltravelers-wal-mart-calls-for-chip-and-pin

# 3 How Smart Cards Can Improve Healthcare

Over the past few years, smart card use in the U.S. healthcare sector has grown significantly. Current programs focus on patient identification: streamlining admissions, managing payments, and moving patient data from point to point. Four factors have driven smart card use to date:

- Identification and patient authentication
- Matching patients to their particular data
- Synchronizing data from disparate sources
- Security and access control

Numerous benefits devolve to different healthcare stakeholders from using smart cards. Table 2 lists many of these benefits and this section summarizes key benefits to healthcare payers and providers.

Stakeholder	Benefit						
Payer (Insurance, Pharmacy Benefits Manager)	<ul> <li>Positive identification of the insured</li> <li>Verification of eligibility and health plan information</li> <li>Reduction in medical fraud</li> <li>Reduction of duplicate tests and reduction in payments</li> <li>Enforced formulary compliance</li> <li>Immediate adjudication at point of care</li> <li>Potential integration with health savings account (HSA) cards</li> </ul>						
Healthcare Delivery Organization	<ul> <li>Accurate patient identity</li> <li>Reduced medical record maintenance costs (duplicate/overlaid)</li> <li>Streamlined administrative processing</li> <li>Increased awareness of provider brand, in and out of the service area</li> <li>Strengthened voluntary physician/referral relationships</li> <li>Ability to support value-added service to patient community</li> </ul>						
Patient	<ul> <li>Positive identification at initial registration</li> <li>Secure and portable health record</li> <li>Personal ownership and control of access to medical records</li> <li>Easier and faster registration</li> <li>Improved and faster treatment and medical care</li> <li>Positive identification for payer coverage, treatment, and billing</li> <li>Accelerated treatment in emergencies</li> <li>Audit trail through a course of treatment that crosses multiple organizations</li> </ul>						

#### Table 1. Smart Card Benefits

Stakeholder	Benefit							
Healthcare Provider	<ul> <li>Instant patient identification</li> <li>Accurate link between patients and institutional medical records</li> <li>Elimination of duplicate and overlaid records</li> <li>Faster care delivery in emergency care settings</li> <li>Rapid accessibility to patient medical history</li> <li>Potential reduction in adverse events and medical errors due to lack of patient information</li> <li>Reduction in claims denials</li> <li>Faster access to key medical record data</li> <li>Integration with legacy systems with nominal IT costs</li> <li>Audit trail through a course of treatment that crosses multiple organizations</li> <li>Reduction in unnecessary/duplicate diagnostic tests or procedures by showing results from other medical providers</li> </ul>							
Healthcare Employer	<ul> <li>Highly secure identity credential for both physical and logical access</li> <li>Single sign-on capabilities (reduction in help desk calls/password management requirements)</li> <li>Link to other employee services (ID badge, parking, cafeteria)</li> </ul>							

# 3.1 Smart Card Benefits for Private and Public Health Plans and Pharmacy Benefits Managers

Smart health ID cards can deliver significant benefits to private and public health plans and pharmacy benefits managers.

#### 3.1.1 Reduction in Medical Fraud

Smart cards can help to proactively address and reduce medical insurance fraud. The annual fraud, waste and abuse numbers in our nation's healthcare system are staggering – in excess of \$100 billion per year.<sup>7</sup> Proactively attacking the fraud, waste and abuse in the system is critical to reducing the overall cost of healthcare in the U.S. Reactive fraud detection systems – those systems that attempt to identify and mitigate fraud after it has been committed – will not be cost-effective or efficient in achieving results.

Using a smart card-based digital identity credential to identify and authenticate patients, providers and suppliers can proactively eliminate examples of fraud such as phantom billing, stolen national provider identifiers, false claims and patient "card swapping."

# 3.1.2 Accurate, Positive Identification of the Insured Individual

Smart health ID cards provide positive identification of the insured (eliminating card swapping). Unlike the typical paper or plastic ID card with a magnetic stripe or barcode, smart cards can positively identity that the patient is who he or she claims be. A personal identification number (PIN) or even a biometric (such as a facial image or fingerprint template securely stored on the chip on the smart card) can be used with the card as a second authentication factor.

# 3.1.3 Accurate Information on Eligibility and Health Plan

Smart health ID cards support the verification of eligibility and health plan information. The ability to write and re-write data to the smart card move the health insurance card from a stagnant card to one that can be updated regularly. This can potentially eliminate the need for providers to verify benefits with the insurer at the time of appointment.

<sup>&</sup>lt;sup>7</sup> Healthcare: A Goldmine for Fraudsters, CNNMoney, January 13, 2010, http://money.cnn.com/2010/01/13/news/economy/health\_care\_fraud/

# 3.1.4 Elimination of Card Re-issuance Cost

Smart health ID cards eliminate the costs and expense that are required to re-issue cards when a patient's status changes. By securely storing eligibility and health plan information within the smart card chip and not printing this information on the face of the card, any status changes can be stored and updated on the chip.

In addition, smart cards can be manufactured using a variety of card bodies which can last as long as ten years, negating the need to issue new cards every one or two years.

### 3.1.5 Reduction in Duplicate Tests and Payments

Smart health ID cards can reduce duplicate tests and payments. Duplicate testing is done when clinicians do not have all of the patient medical data. Rates of demographic duplication were as high as 5.2% and, more importantly, up to 26.9% in treatment data due to data entry errors and misinterpretation of data from documents.<sup>8</sup>

Once electronic health records (EHRs) are implemented, duplicate testing will be reduced, but without proper patient identification, disparate groups and duplicate records will continue to riddle the industry. Smart cards provide a positive patient ID to multiple medical records using one unique identifier, thus bridging the gaps of connectivity to all medical record numbers and medical records across all EHRs. By correctly evoking the same medical record through one unique identifier on the smart card at each patient visit or procedure, the provider can eliminate duplicate testing due to: 1) a patient's inability to communicate proper history, or 2) a provider providing care without proper knowledge of previous care or based on an error in creating a new record or test, or worse, evoking another patient's medical record in error.

The smart card's ability to store clinical data, date-stamp the event, and track the patient's visits can take this portability even further. Key information upon discharge can be recorded on the smart card; when a patient returns to the original or even a different provider, the provider will have an electronic record of the patient's clinical visits and accurate medical data accessible by noted audit trails.

# 3.1.6 Enforcement of Formulary Compliance

Smart health ID cards can help to enforce formulary compliance. Smart card-based portable medical technology allows clinical data exchanges across multiple systems, providers, pharmacies and payers. The patient, provider, insurer and pharmacist can track the quantity of prescriptions and their interaction; this helps to ensure that the patient has not been "over or inaccurately prescribed" due to multiple prescriptions from various providers regardless of the pharmacy benefit managers (PBM).

It is important to note that even e-prescribing does not eliminate the opportunity for a patient to access multiple prescriptions, using multiple physicians that are connected to different pharmacy benefit managers (PBM). The PBMs are not connected and do not share data. Each one can locate prescription codes and dispense, but not police or validate drug interaction if a patient chooses to use different physicians with disparate EHRs and PBMs. By forcing the use of smart cards and auditing prescription distribution, duplicate prescriptions and drug interaction errors can be avoided. Insurance companies are combating this problem by forcing the use of one PBM. This does not address cash-paying consumers for non-insurance prescriptions.

Health ID smart cards are a portable medical record that can be accessed by approved personnel in natural disasters or emergencies, when a victim cannot remember or know the brands, dosages or quantity of a current or near-current medication.

Additionally the portability of the smart card provides patients with the peace-of-mind that incompatible medication (e.g., due to allergies) will not be administered in the event they are unable to communicate.

<sup>&</sup>lt;sup>8</sup> Saving Billions of Dollars and Physicians Time by Streamlining Medical Billing, Health Affairs Web First, April 29, 2010, http://content.healthaffairs.org/content/29/6/1248.abstract

# 3.1.7 Immediate Adjudication at the Point of Care

Smart health ID cards can support immediate and accurate adjudication at point of care by storing up-todate patient insurance information on the card and transmitting the information electronically to the correct health plan at time of adjudication. Each time the patient visits any provider, the insurance information is updated on the card, ensuring insurance details are current.

Using a patient smart card to validate eligibility reduces time and manual key strokes, electronically confirming the procedure or service is covered under the patient's current insurance plan and eliminating the potential need to re-submit an incomplete or inaccurate claim.

Accurately verifying and processing claims in real-time can also indicate if additional expenses not covered by the plan are to be charged or debited from the patient's private payment sources (e.g., health savings account, credit card account).

It is estimated that one of five claims is delayed or denied by insurers causing resubmission and delayed payments. The cost of denied claims on physician organizations alone was \$6 million in 2010.<sup>9</sup> Smart cards authenticate identity electronically so human error is eliminated alleviating the need to re-submit incomplete or erroneous data.

# 3.1.8 Integration with Health Savings Accounts

Smart health ID cards can potentially integrate with health savings account (HSA) cards by having both a smart chip and magnetic stripe on the same card. The smart health ID card positively identifies the patient as the valid cardholder, preventing fraudulent debits on the HSA card.

#### 3.1.9 Secure, Authenticated Access to Private Information

Smart health ID cards can help meet the National Strategy for Trusted Identities in Cyberspace (NSTIC) requirements for providing secure, authenticated access to private information. A smart health ID card can provide two-factor authentication for health plan members logging into patient portals, protecting patient privacy and securing access to private information.

# 3.2 Smart Card Benefits for Healthcare Delivery Organizations

Smart health ID cards provide additional benefits to healthcare delivery organizations.

# 3.2.1 Streamlined Patient Registration

Smart health ID cards streamline patient registration. With one quick scan of the patient's smart health ID card at registration or admission desk, healthcare organizations can decrease patient wait times, improve quality and heighten efficiency by instantly confirming a patient's identity, checking-in/registering the patient and verifying insurance. Because the process does not rely on human data entry or transcription, errors are virtually eliminated.

#### 3.2.2 Compliance with Government Requirements for Identity Verification

A smart healthcare provider card fulfills government requirements for identity verification. Smart provider cards can help healthcare delivery organizations comply with the Drug Enforcement Administration's (DEA) two-factor authentication requirement for ePrescribing controlled substances and the forthcoming requirement from the Department of Health and Human Services (HHS) to use two-factor authentication to access and exchange EHRs.

#### 3.2.3 Support for Health Information Exchange

Smart health ID cards support health information exchange. A one-time initial patient registration can feed the same data across all reader-equipped outpatient clinics and in-patient facilities organizationwide. Further, by pre-populating verification and registration screens with patient information and key data (e.g., demographics, photos, signatures, and insurance and health data), coordination of care is

<sup>&</sup>lt;sup>9</sup> Analysis of Data Errors in Clinical Research Database, AMIA 2008 Symposium Proceedings.

facilitated, preventing patients from needing to register at multiple locations. In addition, data can be up/downloaded, stored and updated to and from EHR patient portals and other health information exchange (HIE) sources.

### 3.2.4 Improved Patient Privacy and Security

Both privacy and security must be considered fundamental design goals for any patient identity management system and must be factored into the specification of the ID system's policies, processes, architectures, and technologies. The use of smart cards strengthens the ability of the system to protect individual privacy and secure personal information.

Unlike other identification technologies, smart cards can provide authenticated and authorized information access, implementing a personal firewall for the individual and releasing only the information required when the card is presented. Smart card technology provides strong privacy-enabling features for patient identity management system designers, including the ability to:

- · Segregate multiple applications on the card
- Provide authentication of other system components
- Provide on-card matching of cardholder verification information (for example, a PIN or biometric)
- Implement strong security for both the ID card and personal data

Smart cards provide solutions that can enhance privacy protection and guard against identity theft in different identity management system architectures.

Smart health ID cards meet or exceed all mandates and requirements for patient privacy and safety, and records and system security and confidentiality. All stored data can be encrypted, and all data transmitted can comply with HL7<sup>10</sup>, SnoMed<sup>11</sup> and ISO standards. Medicare and Medicaid data and statistics can be maintained per federal requirements.<sup>12</sup> Smart cards can also provide automated time-based reporting and reviewing of patient data, protecting healthcare information with sophisticated encryption algorithms that allow access only by authorized readers. In addition, smart cards can provide multi-factor authentication, requiring the use of a second security factor such as a PIN or biometric (e.g., a fingerprint), which satisfies requirements such as those for ePrescribing controlled substances. A smart health ID card can also support secure access to online health records, by providing strong authentication, digital signatures, and security through encryption.

#### 3.2.5 Prevention of Duplicate Records

Smart health ID cards can prevent duplicate records. Smart cards can significantly decrease the incidence of and expenses associated with duplicate record creation. Linking patients to their health records seems like a simple process; however, human errors, such as transcription of a wrong medical record number, can lead to issues such as matching a patient to an incorrect record or creating a duplicate record when the correct one cannot be located. Smart health ID cards can incorporate authenticated identifiers on the card to match patients to their individual medical records, improving administrative functions such as billing and registration and enhancing continuity of care.

# 3.2.6 Consistent Branding

Smart health ID cards provide consistent branding across the organization and beyond. By providing a single tool for patient identity management, healthcare organization identification, and provider

<sup>&</sup>lt;sup>10</sup> http://www.hl7.org/

<sup>11</sup> http://www.nlm.nih.gov/research/umls/Snomed/snomed\_main.html

<sup>&</sup>lt;sup>12</sup> https://www.cms.gov/informationsecurity/downloads/ssl.pdf : CMS has defined eleven (11) information types processed on or by CMS information systems. For each information type, CMS used FIPS 199 to determine its associated security category by evaluating the potential impact value (i.e., High, Moderate, or Low) for each of the three (3) FISMA/FIPS 199 security objectives (i.e., confidentiality, integrity and availability [CIA]). For each information type, CMS also used OMB M-04-04 to determine its e-Authentication assurance level (i.e., Levels 1–4) by evaluating the degree of authentication confidence required to protect the information.

group/practice management affiliation, the smart health ID card works to build stronger community alliances between healthcare organizations, integrated delivery networks, hospital systems, provider networks and auxiliary services. The smart card can replace a host of cards that a patient would otherwise need to carry (e.g., insurance IDs, allergy cards, registration cards) in order to be known throughout the organization. In addition, the smart health ID card makes the patient's healthcare provider organization of record immediately known and recognized to other members of the healthcare community (e.g., pharmacies, durable equipment providers).

# 3.2.7 Real-time, Portable Electronic Health Record

Smart health ID cards can hold real-time, portable mini electronic health records. The smart health ID card can contain encrypted patient demographics such as name, date of birth, height, updatable weight and body mass index, and other key information. In addition, the smart card is capable of storing other key health data components such as current medications, allergies, immunizations, conditions/problem list, smoking status, surgeries and hospitalizations. The smart health ID card can also be configured to store important patient information such as implanted devices, pacemakers, artificial valves, defibrillators, advance directives and organ donation status. Of course, unlike standard EHRs, the smart card is mobile and goes with the patient; coupled with EHRs stored in the cloud, the smart health ID card delivers even greater value in terms of portability and accessibility.

# 3.2.8 Immediate Emergency Access to Patient Health Information

Smart health ID cards provide emergency responders with potentially life-saving patient information. In an emergency, smart health ID cards can enable the immediate identification of a patient and access to the patient's medical record with a portable reader carried by the emergency responder. Regardless of whether or not the patient is conscious, is emotionally or physically unable to accurately convey the entire medical picture, or has language barriers that impede effective communication, the smart card can provide the key health information necessary in critical situations. While patients benefit from improved and faster treatment and medical care, hospitals and medical centers benefit from more effective management and coordination of care from the emergency responders through the emergency room department to inpatient care. When emergency responders access information from the smart card via the portable reader, they can view vital medical data and use that data to evaluate the patient or deliver care at the scene or en route to the hospital.

# 3.2.9 HIPAA Compliance

Smart health ID cards facilitate compliance with Health Insurance Portability and Accountability Act (HIPAA) requirements. The smart health ID card offers HIPAA covered entities an effective tool to facilitate compliance with the HIPAA Privacy Rule. One of the key provisions of the HIPAA Privacy Rule is to assure that an individual's health information is properly protected and that individuals can control how their health information is accessed and used. Providing healthcare organization employees as well as patients with smart cards helps to ensure that health information is accessed only by those with the appropriate credentials. Many recent high-profile breaches of protected health information have occurred because data was kept on unsecured, unencrypted devices such as CDs and thumb drives, or because entities have been able to access medical records without proper authorization,<sup>13</sup> Smart credentials minimize or eliminate such breaches by enabling strong authentication for information access. Embedded secure smart chip technology, encryption and other cryptography measures make it extremely difficult for unauthorized users to access or use information on the smart card or to create duplicate cards. These capabilities help to protect patients from identity theft, protect healthcare institutions from medical fraud, and help healthcare providers meet HIPAA privacy and security requirements.

# 3.2.10 Support for Meaningful Use Requirements

Smart health ID cards bridge the gap for several meaningful use measures. The smart health ID card used in conjunction with cloud technology can help an eligible hospital or provider satisfy federal

<sup>&</sup>lt;sup>13</sup> New Ponemon Institute Study Finds Data Breaches Cost Hospitals \$6 Billion; Patient Privacy in Jeopardy, FierceHealthcare, November 9, 2010, http://www.fiercehealthcare.com/press-releases/new-ponemon-institutestudy-finds-data-breaches-cost-hospitals-6-billion-pa

meaningful use requirements by offering solutions for the following Stage 1 measures: electronic provision of discharge instructions, accessibility to patient education; provision of a health information exchange; and provision of privacy and security of electronic health records.<sup>14</sup>

# 3.2.11 Reduced Costs

A major advantage of using smart cards in healthcare is the reduction in costs that results from improving the efficiency of handling medical and administrative information, which also increases the quality of service. Smart cards support strong authentication of the patient's identity and quickly deliver accurate patient information to the provider. Smart cards can be integrated into current systems and processes within the healthcare industry to provide numerous cost benefits:

- Reduced administrative time and cost by automating patient identification
- Reduced duplication of records
- Fewer errors and adverse events through the use of accurate and timely information
- Reduced number of rejected claims and faster payments, by using accurate patient information
- Reduced fraud and abuse through proper patient identification
- Reduced claims processing costs through real-time adjudication of claims and insurance coverage verification
- Reduced cost of card re-issuance, since data stored on the smart card can be updated

<sup>&</sup>lt;sup>14</sup> Additional information on how smart cards can support meaningful use requirements can be found in the Smart Card Alliance white paper, Getting to Meaningful Use and Beyond: How Smart Card Technology Can Support Meaningful Use of Electronic Health Records, http://www.smartcardalliance.org/pages/publications-getting-tomeaningful-use-and-beyond

# 4 Smart Cards versus other ID Technologies

As described in Section 3, adoption of smart cards within the healthcare environment offers numerous benefits to benefit administrators, delivery organizations, and patients.

With the current shift to electronic health records and the overall focus on reducing costs within the healthcare system, it is a given that strong identification and authentication processes and practices will need to be a cornerstone of an effective healthcare IT strategy.

Other, non-smart card ID technologies exist in the market; these could support some of the benefits outlined in Section 3. Examples include non-chip cards, magnetic stripe (mag stripe) and barcode technologies, and username/password in the online environment. In comparison to these technologies, only smart card technology offers strong authentication, non-repudiation (digital signatures), and secure, rewriteable data storage. As such, smart card technology is uniquely positioned to support the delivery of multiple benefits simultaneously, including the delivery of value-added services, process automation, and fraud/cost reductions.

The advantages of smart card technology have resulted in mass adoption of this technology in other industries that have moved from paper processes to digital and online services, especially where sensitive data exists. Payment cards in the financial industry and citizen identification are two such examples. The move within healthcare to electronic health records is analogous to the financial industry's evolution from cash and brick-and-mortar transactions to cashless payments and eCommerce. Smart card deployments started in this industry a decade ago, and today, over 40 percent of all financial cards in circulation are smart cards.<sup>15</sup> Additionally, driven by the security concerns raised from the events of 9/11, the need to improve government-to-citizen services, and the need to reduce fraud in these programs, smart cards are now being issued as citizen ID cards in many countries globally. Together, over one billion smart cards are issued in these industries annually, with costs declining and implementations becoming easier.<sup>16</sup>

While strong identity authentication in healthcare will likely continue to evolve with the services, solutions, and regulatory requirements that emerge as part of the move to electronic health records, the history in other industries suggests that a focus on smart card technology at the advent will save costs both short-and long-term and provide the best overall value for all parties involved.

Table 2 maps the benefits described above against the various ID technologies that could be adopted to provide the benefit.

<sup>&</sup>lt;sup>15</sup> Source: EMVCo, http://www.emvco.com

<sup>&</sup>lt;sup>16</sup> Source: Eurosmart, http://www.eurosmart.com

Table 2. Technology Comparison		Business Requirements	Functional Theme					Strength of Fit (xxxxx = strongest fit)						
			Privacy	Fraud (Cost)	Improved Service	Accuracy of Delivery	Compliance	Automation (Cost)	Payments / Benefits Distro	Portability	Branding	Smart Card	Barcode / Mag Stripe	Paper/ Plastic ID Card with no Electronic Readability
and	3.1.1	Reduction in Medical Fraud		•								ххххх	ххх	x
Plan	3.1.2	Accurate, Positive Identification of the Insured Individual		٠								ххххх	ххх	×
ealth	313	Accurate Information on Eligibility and Health Plan			٠							ххххх	ххх	×
olic H nefits	2.1.4	Elimination of Card Re-issuance			•			•				ххххх	ххх	
id Put	3.1.4	Reduction in Duplicate Tests and				•			•	•		ххххх	ххх	
ate an arma	3.1.5	Enforcement of Formulary			•					•		<b>XXXXX</b>		
r Priv Ph	3.1.6	Compliance Immediate Adjudication at the Point						•					~~~	
fits fo	3.1. <b>7</b>	of Care Integration with Health Savings		•	•			•	•					
Bene	3.1.8	Accounts Secure, Authenticated Access to		•	•			•	•			XXXXX	xxx	
	3.1.9	Private Information	•	•	•		•					ххххх		
	3.2.1	Streamlined Patient Registration			٠	•		٠				ххххх	ххх	
suc	3.2.2	Requirements for Identity Verification	٠				•					ххххх	ххх	
nizati	3.2.3	Support for Health Information Exchange	•				•	•				ххххх	ххх	
Orgai	324	Improved Patient Privacy and Security	•	•			٠					ххххх		
elivery	3.2.5	Prevention of Duplicate Records				•		•				ххххх	ххх	
are D	3.2.6	Consistent Branding			٠						•	ххххх	ххх	х
ealthc	327	Real-time, Portable Electronic Health Record			٠	•				•		ххххх		
for He	3.2.8	Immediate Emergency Access to Patient Health Information	٠		٠	٠				٠		ххххх		
enefits	3.2.9	HIPAA Compliance	•		٠							ххххх	x	
Be	2 2 10	Support for Meaningful Use	٠				٠	٠				ххххх	x	
	2 2 11	Reduced Costs	•	•	•	•	•	•				ххххх	ххх	
	5.2.11	Post issuance modification					=			=		Y	Mag only	
		Support for logical access (LA) and physical access (PA)										Both	PA primary	РА
		Cost of ID device										M	L	L
		Cost of readers										L	M	N/A N/A
us		Storage capacity										н	-	N/A
leratio		Support for multiple sets of										Y	L	L
. Consid		Support for two-factor authentication for accessing										Y		
Other		electronic health records (NSTIC) Support for digital signatures to enable strong audit										Y		
		Financial applications										Y	Mag only	
		Standards support										Y	Y	
		On-card biometric storage										Y	Barcode	
		On-card biometric match										Y		

# 5 Example WEDI-Compliant Smart Health ID Card Designs

Figure 3 shows the health ID card layout that is displayed in WEDI Health Identification Card Implementation Guide.<sup>17</sup>

Health Plan LOGO & Name	Health & Drug Card Logo
Subscriber SUSAN B JONES-SMITH Subscriber ID ABC 2468-97531 Group Plan (80840) 9210 567 898	Health Plan (80840) 9210 567 898 Subscriber ID ABC 2468-97531 Subscriber SUSAN B JONES-SMITH RxBIN 654321 RxPCN ABC1234567 MedicareR
	CMS 55555 XXX
Example Showing Name First	Example Showing Card Issuer First

Figure 3. WEDI Health ID Card Layout

Figure 4 shows an example of a WEDI-compliant hospital-issued smart health ID card with a standard patient record ID. The ISO/IEC 7816 smart card standard specifies the location of the smart card chip contacts. As shown in Figure 4 below, printed information on the card will need to be placed to accommodate the smart card chip location.

Smart cards can be used in all environments. With a smart health ID card, patient information can be stored in the smart card chip and accessed from authorized readers; a patient photo can also be included on the health ID card.

Issuers also have the option to remove printed personal and confidential information from the card and store it securely in the smart card, protecting patient privacy. While this may conflict with the WEDI guidelines, the Smart Card Alliance firmly believes that personally identifiable information should be removed from the card and put in the chip to protect patient privacy and prevent medial identity theft.



Figure 4. Smart Health ID Cards with Standard Patient Record ID

<sup>&</sup>lt;sup>17</sup> WEDI Health Identification Card Implementation Guide, Version 1.1, April 28, 2011, p. 7.

Figure 5 shows examples of a WEDI-compliant smart health and drug card and card versions with personal information stored in the smart card chip.



Figure 5. Smart Health & Drug ID Cards with Subscriber Information

Figure 6 shows examples of a WEDI-compliant smart health record bank card with confidential patient ID, and card versions with personal information stored in the smart card chip.



Figure 6. Smart Health Record Bank ID Cards with Subscriber Information

# 6 Summary and Conclusions

The Smart Card Alliance supports the WEDI Health Identification Card Implementation Guide and its intent to enable automated and interoperable identification using standardized machine-readable health identification cards in an effort to bring uniformity of information, appearance, and technology to the over 100 million cards now issued by healthcare providers, health plans, government programs, and others.

Although the purpose of a health ID card is use by a consumer to convey identity information to healthcare providers or others, only cards based on smart card technology can provide identity assurance and authentication while increasing patient privacy and security. Additionally, smart cards bring operational efficiencies to the healthcare system that reduce costs, reduce fraud, and increase patient satisfaction. As EHRs and personal health records (PHRs) move to the mainstream, smart health ID cards can also be used as a two-factor authentication mechanism into a provider or insurer web portal. Smart health ID cards protect patient privacy and security when accessing online records and support the National Strategy for Trusted Identities in Cyberspace (NSTIC),<sup>18</sup> which identifies consumer access to online electronic health records as warranting two-factor authentication.

Smart card technology is used globally for secure identity, access and payment applications. Within the U.S., smart card technology is currently used for a wide variety of applications: government and enterprise identity cards, the U.S. ePassport, contactless credit and debit cards, transit fare payment cards and GSM mobile phones. In addition, Visa's announcement to accelerate U.S. migration to EMV smart credit and debit cards is a major step in moving the U.S. payment system from insecure magnetic stripe technology to secure smart card technology to reduce fraud and to bring the U.S. in line with the payments infrastructure in the rest of the world.

As a standards-based technology, smart card solutions for patient identity management are deployed around the world and are available from numerous vendors. Smart card technology provides a strong foundation for health ID cards, enabling improvement in healthcare processes and in patient identity verification, while securing patient information and protecting patient privacy.

<sup>18</sup> http://www.nist.gov/nstic/

# 7 Publication Acknowledgements

This document was developed by the Smart Card Alliance Healthcare Council to serve as a supplement to the WEDI Health Identification Card Implementation Guide, provide WEDI-compliant smart card designs and discuss the features and benefits of smart ID cards for healthcare providers and payers.

Publication of this document by the Smart Card Alliance does not imply the endorsement of any of the member organizations of the Alliance.

The Smart Card Alliance thanks the Council members for their contributions. Participants involved in the development of this document included: CSC; Datacard Group; Gemalto; Identive Group – SCM Microsystems; LifeMed ID, Inc.; Oberthur Technologies; OTI America; SCM Microsystems; WatchData Technologies USA; XTec, Inc.

Special thanks to **Michael Magrath**, Gemalto, who led this project and to **Peter T. Barry**, WEDI SNIP Health ID Card Subworkgroup Co-Chair, for his comments on the draft document.

Healthcare Council members who participated in the development and review of the white paper included:

- David Batchelor, LifeMed ID, Inc.
- Mike Berman, Datacard Group
- Louis Bianchin, WatchData Technologies
- Rachelle Blake, LifeMed Card Inc.
- Anna Fernezian, CSC
- Josh Jabs, Datacard Group
- Kevin Johnson, Datacard Group

- Michael Magrath, Gemalto
- Gurpreet Manes, Oberthur Technologies
- Cathy Medich, Smart Card Alliance
- Bob Merkert, SCM Microsystems
- Rick Pratt, XTec, Inc.
- John Rego, OTI America

#### About the Smart Card Alliance Healthcare Council

The Smart Card Alliance Healthcare Council brings together payers, providers, and technologists to promote the adoption of smart cards in U.S. healthcare organizations. The Healthcare Council provides a forum where all stakeholders can collaborate to educate the market on how smart cards can be used and to work on issues inhibiting the industry. Healthcare Council participation is open to any Smart Card Alliance member who wishes to contribute to the Council projects.

# 8 Appendix: Resources

### 8.1 Smart Card Alliance Healthcare Resources

• <u>Healthcare Identity Resources</u>. This resource page lists Smart Card Alliance reports and industry organizations, resources and news relating to healthcare identity.

### 8.2 Smart Card Alliance Healthcare Reports

- <u>A Healthcare CFO's Guide to Smart Card Technology and Applications</u>. Developed for healthcare CFOs, this white paper outlines the key benefits and business case for using smart cards for healthcare applications. The white paper identifies some of the major challenges faced by healthcare CFOs and discusses how smart card technology can provide innovative, practical and cost-effective solutions.
- Effective Healthcare Identity Management: A Necessary First Step for Improving U.S. Healthcare Information Systems A Smart Card Alliance Brief for Government Policy Makers and Other Stakeholders. Government policy makers are looking carefully at the best ways to improve the efficiency of information systems in the healthcare industry. Much emphasis has been placed on the need for electronic health records for every American, and at ways to exchange those records at the regional, state and national levels. But this is putting the cart before the horse. Such an effort must start with the accurate identification of each person receiving healthcare services or participating in healthcare benefit programs. Next, there must be a way to uniquely and securely authenticate that person across the healthcare system, including over the Internet, in a secure and privacy sensitive way. This brief was developed by the Smart Card Alliance Healthcare and Identity Councils to introduce the current problems with healthcare identity management, security and privacy, and propose leveraging existing federal standards and technologies already used in other government identity programs.
- <u>Getting to Meaningful Use and Beyond: How Smart Card Technology Can Support Meaningful</u> <u>Use of Electronic Health Records</u>. "Meaningful use" has the top priority of today's healthcare industry. In 2010, the government, healthcare organizations, consumers and technology providers came together to move toward interoperable electronic health records that can transform the healthcare industry. This white paper outlines the ways in which smart card-based systems can better position healthcare organizations and providers for meaningful use of electronic health records, while addressing many of the security and privacy challenges that come with electronic health records and health data exchange.
- <u>Healthcare Identity Management: The Foundation for a Secure and Trusted National Health</u> <u>Information Network</u>. Policy makers are looking carefully at the best ways to improve our healthcare system with much emphasis being placed on the need for electronic health records for every American. This effort also includes creating an infrastructure to allow the exchange of these records at the regional, state and national levels. This paper introduces the current challenges and explains why identity management in healthcare is an essential and foundational element that must be made a priority by policy makers in order to achieve the goals of widespread use of electronic health records to support the secure and seamless exchange of healthcare information. The paper also recommends best practices for introducing a healthcare identity management infrastructure–one that provides the needed security and privacy controls that should be specified by policy makers.
- <u>HIPAA Compliance and Smart Cards: Solutions to Privacy and Security Requirements</u>. This
  report describes how smart cards can be used to meet HIPAA Security Rule and Privacy Rule
  requirements.
- <u>Identity Management in Healthcare</u> webinar. Accurately linking patients with their personal medical information and managing patient information are significant problems today for hospitals, other healthcare providers and healthcare payers that impact administrative efficiency, revenue collection, legislative compliance and patient quality of care. This educational webinar

provided a detailed review of how healthcare organizations are facing increasing regulatory challenges that will require new approaches to address patient identification and securely authenticating patient health data.

- <u>Medical Identity Theft</u> webinar. Medical identity theft is a serious and growing threat. This web seminar reviewed of the scope of the medical identity theft problem, the impact that electronic health records and health information exchanges have on privacy, the critical policy requirements that address medical identity theft, and the approaches being taken to protect patient health records.
- <u>Medical Identity Theft in Healthcare</u>. Healthcare data breaches and medical identity theft are growing problems as the healthcare industry moves to electronic health records and health information exchanges. This brief describes the security and privacy issues that the healthcare industry is facing and advocates that the industry move to strong identity management practices and technology solutions to improve the privacy and security of health information systems and electronic health records.
- Protecting Your Health Information: Raising Public Awareness of the Privacy and Security <u>Challenges of Healthcare Information Management</u>. The Smart Card Alliance and Secure ID Coalition held a briefing at the National Press Club to discuss security and privacy concerns with health information. The briefing featured a panel of experts who discussed how healthcare information privacy, identity management, access and authentication are critical elements in getting the nation's healthcare infrastructure right. <u>Video from the event is available</u>.
- Smart Card Alliance Healthcare Council
- <u>Smart Card Applications in the U.S. Healthcare Industry</u>. This report describes the value that smart cards deliver in a variety of U.S. healthcare applications. The report reviews key challenges that the U.S. healthcare provider industry faces and examines the key drivers for implementing smart card-based systems to address these challenges.
- <u>Smart Card Technology in Healthcare: Frequently Asked Questions</u>. Smart cards are used worldwide to improve security and privacy of payment and identity applications. The Smart Card Alliance Healthcare Council developed this document to answer questions about how smart cards work and how the technology is used to manage patient identity and protect a healthcare consumer's personal information.
- <u>Smart Cards in U.S. Healthcare: Benefits for Patients, Providers and Payers</u>. This white paper describes the challenges within the healthcare industry and the clear opportunities for the use of smart card technology for security and privacy in healthcare. The paper examines smart card use in healthcare today and suggests additional applications for consideration.
- <u>Smart Health ID Cards: Addressing Challenges with Patient Identity Management and Authentication Webinar</u>. Accurately identifying and authenticating patients are significant problems for hospitals, other healthcare providers and healthcare payers that impact administrative efficiency, revenue collection, legislative compliance and patient quality of care. This webinar focused on smart health ID cards for patients, reviewing the key challenges with patient identity management and authentication today and discussing how patient ID cards and smart card technology can address the critical issues. The American Medical Association Health Security Card pilot and the Wyckoff Heights Medical Center medical smart cards were featured as examples of smart health ID card programs.