PATIENT FRIENDLY BILLING®
Data Coordination White Paper

Current State

Every day, patients enter our facilities, where they face a blizzard of forms, repeatedly asking the same questions. It is the timeless exercise of collecting and maintaining information to manage the revenue cycle. Patients feel as though they are under interrogation: name, rank, and serial number. From the patient perspective, they are providing the same, unchanging information with each encounter within the revenue cycle. This repetitive manner of gathering information also increases the likelihood of errors. Any incorrect information inevitably results in a mismatch down the road, which leads to rejected claims and delays resolution of the patient's account. This experience further frustrates patients and increases their distrust of the system.

Healthcare organizations operate in a dynamic environment. The healthcare "value chain" features a series of interconnected entities – hospitals, physician offices, payers, patients, and consumers – and each depends on the others for key information and services. As the healthcare environment becomes increasingly complex, so do the processes that affect the patient's satisfaction with the care experience.

The cause for patient dissatisfaction with healthcare billing stems from the entire span of the healthcare continuum. Issues become evident during the billing process, because it is the outcome of several larger revenue cycle problems – inefficient patient communication, disjointed and untimely data gathering, ineffective claims processing, and an absence of analysis tools to identify the core problems.

Patients expect the information they provide to be used for their benefit in the revenue cycle. They don't understand why healthcare information is not as coordinated as that of banks and supermarkets. Hospitals and physicians commonly bear the brunt of customer-service failures because of the frequency of contact and the face-to-face nature of the relationship. Healthcare providers have the most to gain by improving how they gather correct data.

The ***PATIENT FRIENDLY BILLING PROJECT***® is a national initiative designed to make patient financial communications clear, concise, and correct. The Patient Friendly Billing Task Force has listened to consumers and have studied barriers and solutions to improving their healthcare experience in the area of billing and other financial data. This paper describes the task force's findings and actions that the industry can take to improve the consumer's healthcare experience.

Patients want less hassle in giving information to healthcare providers and getting the providers and the insurance companies to resolve bills.

Patient Friendly Billing studied ways to more efficiently gather healthcare financial information. We focused on two objectives:

- Asking patients fewer redundant questions by gathering data more efficiently.
- Better coordinating information among hospitals, doctors, employers, and insurers so that medical claims are more likely to be resolved promptly and without surprises.

Efficiently Gathering Healthcare Financial Information

As we collect and verify patient information, we should first focus on which data are key to Patient Friendly Billing. If the provider and health plan key data are correct, bills are more likely to be accurate and paid correctly and promptly, and the patient's responsibility is more likely to be accurate when billed to the patient. If key data are correct, claims are more likely to be billed to the correct payer, in the correct order of priority, and to correctly identify the patient.

Meeting these objectives is complicated by the constant change in key data. Societal changes increase the difficulty of managing patient information. Consider the following:

- Increase in employee turnover
- Employer changes in group health plans
- Issues with dependents over 18 years of age
- COBRA and postretirement benefits
- Divorce and legal custody issues
- Patient emancipation legislation (Patient's Bill of Rights)

Most providers have developed a flow with their own internal rules and technology to validate the coverage and eligibility under the many insurance plans that patients present. This can be difficult. Scott and White, a large integrated delivery system, has found that the data for as many as 22 percent of its patients had to be corrected based on changes in patient data. Not errors, but changes in basic data.

Providers should explicitly focus on reducing redundant questions asked to patients. Providers should implement data-retrieval capabilities to reduce redundant questions. Data retrieval should be both within the provider organization and with other parties. Whether providers do this electronically or through improved processes, providers should actively search for more efficient ways to gather and update demographic and financial information among hospitals, physicians, insurers, employers, and patients. If providers already have patient demographic and financial information, they should verify the information. Verification takes some effort on the front end, but having up-to-date information reduces rework and delay later in the process. Also, verification should not require the patient to recopy all information. Patients can confirm data more quickly than they can provide it initially.

Coordinating Information among Stakeholders – The 80/20 Rule

Of all the data that healthcare organizations gather and maintain, 20 percent of the data likely cause 80 percent of the problems. The task force identified key data elements from the perspective of four groups – hospitals, physicians, employers, and health plans. The task force limited its review to administrative data and did not address clinical data or coding or other such processes. Understanding these four groups can help providers and payers improve coordination of data.

The key data elements are categorized in three clusters:

- *Data used to identify the patient,* such as name, address, date of birth, gender, and health plan identification number. This first cluster of key data is straightforward. All of the parties need to ensure that they are referring to the same person.
- *Data used to establish eligibility for the date or service in question*. These data include the date of service, type of service, and insurance coverage information. The date of service is a critical piece of data for the payer because the first question the payer asks is whether coverage was effective for that patient for that service on that date. This question should be answered prospectively whenever possible. When the patient, provider, and plan don't all understand who will pay the claim, major problems occur for everyone. Verifying coverage in advance for the specific service to be provided avoids unpleasant and contentious problems later.
- *Data used to determine which insurance pays first, and whether insurance pays the provider directly or reimburses the patient.* This information includes identifying the primary, secondary, and later insurance coverage and whether or not the patient has assigned benefits to be paid directly to the provider. Payment priority may not be clear-cut. For example, an established patient may present for treatment for a work-related injury. The insurance priority for this visit is different than for a visit that is not work-related.

Coordination of Benefits (COB) Issues and Resources

Another complex variable in determining insurance priority is the coordination of benefits (COB) laws and regulations. The National Association of Insurance Commissioners (NAIC) has drafted model COB language. This draft is available at the NAIC web site (http://www.naic.org/1papers/models/docs/cob.pdf). This is a national model, but it is not required and many states have legislated rules for COB. These state rules direct payers when to pay as the primary and when to pay as a secondary payer. They also define supplemental plans, which never pay as primary. This lack of COB standardization creates problems throughout the system. It's difficult for providers to know which insurer to bill and for insurers to know how payments should be processed. Individual state laws may include a requirement that insurance products include a COB provision. Some states, such as Texas, require specific rules for coordination of benefits in health insurance products. Unfortunately, not all states are as user-friendly in their on-line statutes as others. Cornell Law School has a table with links to on-line state statutes on health or reference to specific state laws. This table can be found on the Cornell web site (http://www.law.cornell.edu/topics/state_statutes3.html#insurance).

Proper identification and verification of insurance priorities contribute significantly to patient satisfaction with the billing process. Billing the wrong insurance or improper claim rejections frustrate patients. Providers and insurers should review their procedures to verify insurance priority at regular intervals. Providers and insurers should track improper bills or payments and identify underlying causes so they can be corrected.

Using the HIPAA Transaction Code Sets as the Core Data Structure

The goals of the HIPAA transaction sets are to simplify data exchange among the provider, payer, and other healthcare organizations. Many of the key data elements can be found within the transaction code sets required under HIPAA. Over time, standardizing patient data should result in better-satisfied patients. Patients will not have to repeat information, and it will be easier for healthcare organizations to quickly and efficiently communicate and coordinate data. This will result in quicker resolution of collection issues, reduced cost, and improved customer service. Of course, first all parties must implement the transaction code standards and build them into their business processes.

The Patient Friendly Billing Accessibility of Data paper addresses the first step in the normalization of the data structure to current industry standards. We have mapped the key data element clusters to the HIPAA 270 transaction code set (see Appendix A). Hospitals, physicians, and payers should work together to use the common data structure in the HIPAA 270 as the base patient data structure for gathering and coordinating patient data.

Technology to Improve Coordination and Patient Friendly Billing

The healthcare industry has been slow to adopt new information technology. As a result, the burden of system inefficiency rests squarely on the shoulders of the patient, resulting in dissatisfaction. We can address these problems and ultimately improve the patient's experience by using existing technology to capture, store, and securely transmit appropriate information.

For the most part, healthcare organizations today communicate data in a circular fashion. The employee gives information to the employer. The employer adds information and gives information to the health plan. The patient and the health plan both give information to the physician or hospital. The hospital or physician adds information and gives information to the health plan and patient. At any point in time, an error can be introduced into any of the multiple databases. This situation represents not only an administrative and financial problem for providers but potentially a downstream patient-safety issue. Also, new information must be communicated to at least four or five parties. It’s no wonder that healthcare information is disjointed, frequently outdated, and inconsistent between the users.

One solution to this problem is for patients to have a single record containing all relevant information. Different groups could be responsible for preparing and updating different segments of that record. Whenever data are updated, they would become available to all authorized parties. Mismatch errors would decline because all parties would be using the same data.

Several types of technology to support patient friendly financial communications are available today. They include smart cards, magnetic strip cards, Internet databases, biometrics technology, and common member identification numbers. These technologies are in limited use within the healthcare industry but in widespread use in other industries.

Although technology is available, the standards and business processes to use this technology in health care are generally undeveloped. If we want to truly improve communications and make the entire healthcare system work better for the patient, we must agree on the technology,

standards for use of the technology and applications development, and business rules for security, access, and updating information.

Smart Card Technology
Smart card technology can be employed to capture, store, and securely transmit appropriate information, facilitating patient friendly communications.

The use of smart card technology. Although originally conceived in the 1970s, smart cards, as with many technologies, suffer from the use of terminology that is often imprecise and confusing. A smart card is a standard credit-card-sized plastic token within which a microchip has been embedded. This chip is the engine room of the smart card, and indeed is what makes it "smart." Smart-card chips come in two broad varieties: (1) memory-only chips, with storage space for data and with a reasonable level of built-in security, and (2) microprocessor chips, which, in addition to memory, embody a processor controlled by a card operating system, with the ability to process data onboard and carry small programs capable of local execution. The main storage area in such cards usually is Electrically Erasable Programmable Read-Only Memory (EEPROM), which, subject to defined security constraints, can have its content updated and which retains current contents when external power is removed. Newer smart-card chips may also have coprocessors integrated into the microprocessor chip, able to perform quite complex encryption routines relatively quickly.

A smart card therefore is characterized uniquely by its chip, with its ability to store much more data (currently up to about 32,000 bytes) than is held on a magnetic stripe, all within an extremely secure environment. These security features built into smart-card chips are among the most sophisticated of their type available in the commercial world. Data residing in the chip can be protected against external inspection or alteration, so effectively that the vital secret keys of the cryptographic systems used to protect the integrity and privacy of card-related communications can be held safely against all but the most sophisticated forms of attack.

Because of these security and data storage features, smart cards are rapidly being embraced as the consumer token of choice in many areas of the public sector and commercial worlds. The Internet, in particular, is focusing the need for on-line identification and authentication between parties who cannot otherwise know or trust each other, and smart cards, coupled with effective cardholder verification techniques, are believed to be the most efficient and portable way of enabling the new world of e-trade. The key requirement to facilitate universal consumer acceptability: the ability of a card function developed by one organization to be used without difficulty in schemes owned and operated by many organizations. So it is that the current world population of smart cards of some 1.7 billion is set to increase to 4 billion or more cards within the next three to four years.[a]

Exceeding the capabilities of the traditional magnetic-stripe card, today's smart cards give users new options and conveniences, including[b]:

- Secure access to web-based information and the ability to download multiple applications on a single card
- As much as 100 times more storage capacity
- Increased security and protection from fraud

- Higher reliability through better design and quality control in production

Smart card functions. Smart cards are being deployed in most sectors of the public and private marketplaces. Single-function cards are being used for pay-phone telephony, digital mobile telephony (these "cards" do not in one aspect conform to the basic definition of a smart card, i.e., credit-card-sized), the credit and debit functions of financial institutions, retail loyalty programs, corporate staff systems, subscription TV operations, mass-transit ticketing, healthcare data storage, and many more uses. With the advent of multi-application cards capable of carrying data relating to several functions, more complex schemes are being developed, particularly by cities for their citizens and by central governments for their residents.

Most smart card applications use one or more generic functions, this being one of several advantages offered by smart technology. Another advantage of smart cards is that these functions are frequently associated with offline operations, i.e. functions performed without immediate access to the central system. The generic functions of cards include general transaction-based storage, storage of kernel personal data and account reference information, and - increasingly - the storage of monetary value (electronic purse) able to be loaded and spent repeatedly during the life of the card.[c]

The move to smart cards. Magnetic-stripe cards can store information at a much lower cost than smart cards. Magnetic-stripe cards, however, have a very limited storage capacity in comparison with smart cards and do not have a processor or programs. Smart cards have much greater capabilities. Smart-card development has been slow in the United States, owing to a lack of standards and a clear business model to inspire entrepreneurs. Until recently, smart-card applications generally were based on a variety of largely incompatible proprietary operating systems. Developers faced enormous challenges in redeveloping applications as they changed card providers, and there was little interoperability between card-based applications developed by various service providers, such as telecommunications operators and retail vendors and financial institutions. As a result, consumers have been left to carry multiple, vendor-specific cards with limited functionality.[d]

Portable healthcare information. Smart cards are a great way to provide convenience and confidentiality to health care and to reduce paperwork and administrative costs. One approach uses dual smart cards. Patients carry their medical history on one card, while physicians access patient information with their own smart card. The cards provide a good way to protect patient privacy while increasing the efficiency of the whole healthcare process.

Smart cards can help physicians more easily maintain current records on patients, avoid prescription drug errors, eliminate healthcare fraud, and provide better treatment to referrals or emergency cases, Warthen says. Rather than having to call a patient's physician to track down the patient's records, for example, specialists can find much of the patient information they need on a smart card. Patients who use smart cards have more control over their own medical records, he says, by carrying a copy in their pockets rather than storing them at their physicians' offices.[e]

Members of a Pittsburgh-area health plan use smart cards at more than a dozen hospitals and the offices of hundreds of physicians. A public health project sponsored the use of smart cards in

Cheyenne, Wyo., Bismarck, N.Dak., and Reno, Nev. [f] Smart cards can store medical record, patient demographic, and insurance coverage information.

Outside of health care, smart cards or chip technology is used in mobile telephones, credit cards such as the Blue Card from American Express, parking and mass-transit systems, television digital set-top boxes, personal digital assistants (PDAs), and wristwatches. Appendix B has additional information on uses of smart cards in other industries.

So what are the drawbacks? C. Peter Waegemann, executive director of the Medical Records Institute in Newton, Mass., believes the smartest smart cards are too expensive, potentially unreliable if damaged, and slow to download information onto a computer. Moreover, he says, the consequences could be fatal if a patient has an emergency but doesn't have the card, or if the information on the card hasn't been updated because the patient forgot to bring it to the physician on a previous visit. In fact, Waegemann points out, 60 percent of a patient's healthcare information is recorded after the patient leaves the clinic. With such dangers, Waegemann warns, you don't want to stake your life on a smart card.[g] To be useful, the healthcare industry will have to develop processes to rapidly update the cards promptly.

Applying Information Technology

The Patient Friendly Billing Task Force believes that the healthcare industry needs to embrace one or more of these alternative technologies to better communicate clear, concise, and correct financial information to all parties. Doing so would make the billing and collection process more efficient for the patient.

The task force recommends that a group be formed to specifically address the following:

- Develop standards for the use of smart cards or other technology, using the existing HIPAA standards, supplemented if necessary.
- Develop recommendations on how smart-card programs should be developed and maintained.
- Make recommendations on security features and access requirements.
- Develop recommendations on who owns the data and who is responsible for data updates. For example, cards could be issued by employers or insurers with employment and coverage data. The patient could be responsible for carrying the card and submitting it for updates. Providers could update the cards for medical visits. All authorized parties could access the card to obtain information and to update the data sections for which they are responsible.
- Facilitate acceptance of new technology by introducing a low-technology standardized pre-registration form for hospitals and physicians available at the Patient Friendly Billing web site (www.patientfriendlybilling.org). Patients could download and print or e-mail the form to their provider before an appointment.
- Upon greater market acceptance of technology and when electronic identification is more widely used, pursue a sponsor such as VISA, MasterCard, or American Express to enable the use of flexible spending account funds on those cards.
- Address other issues, such as how multiple insurance coverage would be handled, whether the cards should have expiration dates, or require updates at set intervals.

- Explore ways to facilitate medical uses outside of financial communications, such as including key medical information or medical records on the smart cards.

The group should be composed of key industry leaders and associations such as the American Hospital Association (AHA), Healthcare Financial Management Association (HFMA), Medical Group Management Association (MGMA), Healthcare Information and Management Systems Society (HIMSS), Centers for Medicare and Medicaid Services (CMS), Council for Affordable Quality Healthcare (CAQH), Leapfrog Group, Business Group on Health, and/or Workgroup for Electronic Data Interchange (WEDI).

Next Steps

Healthcare consumers have told the task force they want less redundancy when data are gathered. They want all healthcare parties to better coordinate information. By doing this, medical claims are more likely to be resolved quickly, accurately, and without surprises; everyone wins.

To respond to patients, the healthcare industry needs to take the following steps:

- Focus on reducing redundant questions. Implement data-retrieval capabilities both internally and with other healthcare organizations.
- Verify existing information rather than requesting it as if they don't have it.
- Prioritize by first focusing on processes to gather and coordinate key data elements. Then improve any remaining data-capture and coordination issues.
- Review procedures to verify insurance priorities (COB) to ensure insurance plans are being billed and are paying according to the proper priority. Track improper bills or payments to identify and correct underlying causes.
- Use the common data structure in the HIPAA transaction code sets as the base data structure for gathering and coordinating patient data in operational and business processes.
- Work through the issues that must be resolved for adoption of consistent, industry wide data gathering and coordination. Use existing technology, develop standards for use of the technology and applications development, and develop business rules for security, access, and updating information among healthcare organizations.

The healthcare industry can make a difference by taking these steps. Both consumers and the healthcare industry have much to gain by making financial communications clear, concise, and correct.

References

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Appendix A

Mapping of Key Billing Data Elements (Nonclinical) to HIPAA 270 Transaction Code Set

Hospitals, physicians, and payers should work together to use the common data structure in the HIPAA 270 as the base patient data structure for gathering and coordinating patient data. The table below maps key, nonclinical billing data elements to the HIPAA 270 transaction code set. This is not a complete mapping of the requirements to successfully implement the 270 v4010 transaction set.

The column explanations are as follows:

270 Attributes**:** This is the attribute name. Each attribute is referenced to a Loop. For example, Subscriber Demographic Information is found in Loop – 2100C. A loop contains multiple variants of common data and further identifies conditions, acceptable codified values, etc. The Loop identifiers have been omitted from this mapping for simplicity.

270 Data Element Name**:** This is the name of the data element within the Loop. For example, the 270 Attribute Subscriber Name is segmented into four 270 Data Element Names: (1) Name Last or Organizational Name, (2) Name First, (3) Name Middle, and (4) Name Suffix. Each 270 Data Element Name has a unique data identifier and related description.

270 Usage: Each data element is defined under HIPAA as either *required* or *situational.* A data element is situational when the information obtained is dependent on the role of the individual (i.e., patient, dependent) and type of provider organization (e.g., acute, non-acute). All users will need to become familiar with their payer implementation guides to determine the usage of situational data elements.

Comments: This is the description of the data element.

Key Data Element**:** This is a description of data that the ***PATIENT FRIENDLY BILLING***® project has identified as key for billing or patient communications. These data help hospitals, physicians, employers, and health plans to accurately identify the consumer and communicate billing and related information with each other.

270 ATTRIBUTES	270 DATA ELEMENT NAME	270 USAGE	COMMENTS	KEY DATA ELEMENT	NOTES
Subscriber Name	Entity Identifier Code	REQUIRED	Code identifying an organizational entity, a physical location, property, or an individual.	Care Delivery Organization	
Subscriber Name	Name Last or Organizational Name	SITUATIONAL	Individual last name or organizational name. (Subscriber	Patient Last Name	This assumes the SUBSCRIBER is the PATIENT. If yes, then

270 ATTRIBUTES	270 DATA ELEMENT NAME	270 USAGE	COMMENTS	KEY DATA ELEMENT	NOTES
			Last Name)		DEPENDENT Information is not required.
Subscriber Name	Name First	SITUATIONAL	Individual first name. (Subscriber First Name)	Patient First Name	
Subscriber Name	Name Middle	SITUATIONAL	Individual middle name or initial. (Subscriber middle name)	Patient Middle Name	
Subscriber Name	Name Suffix	SITUATIONAL	Suffix to individual name. (Subscriber Name Suffix)	Patient Suffix	
Subscriber Address	Address Information	REQUIRED	Address information. (Subscriber Address line1)	Patient Address Line1	
Subscriber Address	Address Information	SITUATIONAL	Address information. (Subscriber Address line2)	Patient Address Line 2	
Subscriber City/State/Zip Code	City Name	SITUATIONAL	Free-form text for city name. (Subscriber City Name)	Patient City	
Subscriber City/State/Zip Code	State or Province Code	SITUATIONAL	Code (Standard State Province) as defined by appropriate government agency. (Subscriber State Code)	Patient State	
Subscriber City/State/Zip Code	Postal Code	SITUATIONAL	Code defining international postal zone code excluding punctuation and blanks (zip code for United States). (Subscriber Postal Zone or Zip Code)	Patient Zip Code	
Subscriber City/State/Zip Code	Country Code	SITUATIONAL	Code identifying the country.	Patient Country Code	
Subscriber Demographic Information	Date Time Period	SITUATIONAL	Expression of a date, a time, or range of dates, times, or dates and times. (Subscriber Birth Date)	Patient's DOB	

270 ATTRIBUTES	270 DATA ELEMENT NAME	270 USAGE	COMMENTS	KEY DATA ELEMENT	NOTES
Subscriber Demographic Information	Gender Code	SITUATIONAL	Code indicating the sex of the Individual. (Subscriber Gender Code)	Patient Sex	
Subscriber Relationship	Yes/No Condition or Response Code	REQUIRED	Code indicating a Yes or No condition or response. (Insured Indicator)	Patient Insured	
Subscriber Relationship	Individual Relationship Code	REQUIRED	Code indicating the relationship between two individuals or entities.	Patient Relationship	
Subscriber Relationship	Number	REQUIRED	A generic number. (Birth Sequence Number)	Patient Age	
Subscriber Eligibility or Benefit Inquiry Information	Composite Medical Procedure Identifier	SITUATIONAL	To identify a medical procedure by its standardized code and applicable modifier.	Insurance Eligibility - Service Diagnostic Code	HCPCS/CPT code
Subscriber Eligibility or Benefit Inquiry Information	Product/Service ID Qualifier	REQUIRED	Code identifying the type/source of the descriptive number used in Product/Service ID (234)	Insurance Eligibility - Charge Code	
Subscriber Eligibility or Benefit Inquiry Information	Product/Service ID	REQUIRED	Identifying number for a product or service. (Procedure Code)	Insurance Eligibility - Charge Code	
Subscriber Eligibility or Benefit Inquiry Information	Coverage Level Code	SITUATIONAL	Code indicating the level of coverage being provided for this insured. (Benefit Coverage Level Code)	Insurance Eligibility - Service Coverage	
Subscriber Eligibility or Benefit Inquiry Information	Insurance Type Code	SITUATIONAL	Code identifying the type of insurance policy within a specific insurance program.	Patient Insurance Plan	
Subscriber Spend-Down Amount	Amount Qualifier Code	REQUIRED	Code to qualify amount. (Spend Down)	Insurance Eligibility - Service Coverage Amount	

270 ATTRIBUTES	270 DATA ELEMENT NAME	270 USAGE	COMMENTS	KEY DATA ELEMENT	NOTES
Subscriber Spend-Down Amount	Monetary Amount	REQUIRED	Monetary Amount. (Spend-Down Amount)		This is a monetary amount field related to Patient Means Test. (Note: This would not appear on any PFB correspondence but may be germane to eligibility determination.
Subscriber Eligibility or Benefit Additional Inquiry Information	Code List Qualifier Code	REQUIRED	Code identifying a specific industry code list	Insurance Eligibility - HIT Benefit Code	
Subscriber Eligibility or Benefit Inquiry Information	Industry Code	REQUIRED	Code indicating a code from a specific industry list	Insurance Eligibility Industry Benefit Code	
Subscriber Additional Information	Reference Identification Qualifier	REQUIRED	Code qualifying the Reference Identification.	Patient Identifier	Depending on Payer, this can be Social Security Number, Medical Record Number, Member Number, etc.
Subscriber Additional Information	Reference Identification	REQUIRED	Reference information as defined for a particular Transaction Set or as specified by the Reference Identification Qualifier. (Prior Authorization or Referral Number)	Insurance Eligibility - Authorization / Referral Number	
Subscriber Eligibility/Benefit Date	Date Time Period Format Qualifier	REQUIRED	Code indicating the date format, time format, or date and time format	Insurance Eligibility - Date	
Dependent Name	Entity Identifier Code	REQUIRED	Code identifying an organizational entity, a physical location, property	Healthcare Organization	

270 ATTRIBUTES	270 DATA ELEMENT NAME	270 USAGE	COMMENTS	KEY DATA ELEMENT	NOTES
			or an individual.		
Dependent Name	Name Last or Organizational Name	SITUATIONAL	Individual last name or organizational name. (Dependent Last Name)	Patient Last Name	If SUBSCRIBER is NOT PATIENT, then DEPENDENT is PATIENT.
Dependent Name	Name First	SITUATIONAL	Individual first name. (Dependent First Name)	Patient First Name	
Dependent Name	Name Middle	SITUATIONAL	Individual middle name or initial. (Dependent Middle Name)	Patient Middle Name	
Dependent Name	Name Suffix	SITUATIONAL	Suffix to individual name. (Dependent Name Suffix)	Patient Suffix	
Dependent Additional Identification	Reference Identification Qualifier	REQUIRED	Code qualifying the Reference Identification Qualifier	Patient Control Number	This could be the patient's social security number, etc.
Dependent Address	Address Information	REQUIRED	Address Information. (Dependent Address Line1)	Patient Address Line 1	
Dependent Address	Address Information	SITUATIONAL	Address Information. (Dependent Address Line2)	Patient Address Line 2	
Dependent City/State/Zip Code	City Name	SITUATIONAL	City Name. (Dependent City Name)	Patient City	
Dependent City/State/Zip Code	State or Province Code	SITUATIONAL	Code (Standard State/Province) as defined by appropriate government agency. (Dependent State Code)	Patient State	
Dependent City/State/Zip Code	Postal Code	SITUATIONAL	Code defining international postal zone code excluding country identifier	Patient Zip Code	
Dependent City/State/Zip Code	Country Code	SITUATIONAL	Code identifying the country	Patient County	

270 ATTRIBUTES	270 DATA ELEMENT NAME	270 USAGE	COMMENTS	KEY DATA ELEMENT	NOTES
Provider Information	Provider Code	REQUIRED	Code identifying the type of provider	Healthcare Organization - Facility Type	Codes distinguish between Hospital, Physician Practice, Long-Term Care, etc.
Provider Information	Reference Identification Qualifier	REQUIRED	Code qualifying the Reference Identification.		
Provider Information	Reference Identification	REQUIRED	Reference information as defined for a particular Transaction Set or as specified by the Reference Identification Qualifier. (Provider Identifier)	Healthcare Organization - Facility Type Identifier	
Dependent Demographic Information	Date Time Period	SITUATIONAL	Expression of a date, a time, or range of dates, times or dates and times. (Dependent Birth Date)	Patient DOB	
Dependent Demographic Information	Gender Code	SITUATIONAL	Code indicating the sex of the Individual. (Dependent Gender Code)	Patient Gender	
Dependent Relationship	Yes/No Condition or Response Code	REQUIRED	Code indicating a Yes or No condition or response. (Insured Indicator)	Patient Insured	
Dependent Relationship	Individual Relationship Code	REQUIRED	Code indicating the relationship between two individuals or entities.	Patient Relationship to Insured	
Dependent Relationship	Number	SITUATIONAL	A generic number. (Birth Sequence Number)	Patient Age	
Dependent Date	Date Time Period Format Qualifier	REQUIRED	Code indicating the date format, time format, or date and time format	Patient DOB	
Dependent Eligibility or Benefit Inquiry Information	Composite Medical Procedure Identifier	SITUATIONAL	To identify a medical procedure by its standardized code and	Insurance Eligibility - Service Diagnostic Code	

270 ATTRIBUTES	270 DATA ELEMENT NAME	270 USAGE	COMMENTS	KEY DATA ELEMENT	NOTES
			applicable modifier.		
Dependent Eligibility or Benefit Inquiry Information	Product/Service ID Qualifier	REQUIRED	Code identifying the type/source of the descriptive number used in Product/Service ID (234)	Insurance Eligibility - Charge Code	
Dependent Eligibility or Benefit Inquiry Information	Product/Service ID	REQUIRED	Identifying number for a product or service. (Procedure Code)	Insurance Eligibility - Charge Code	
Dependent Eligibility or Benefit Inquiry Information	Procedure Modifier	SITUATIONAL	This identifies special Circumstances related to the performance of the service, as defined by trading partners.	Insurance Eligibility - COB	
Dependent Eligibility or Benefit Inquiry Information	Insurance Type Code	SITUATIONAL	Code identifying the type of insurance policy within a specific insurance program.	Patient Insurance Plan	
Dependent Eligibility or Benefit Additional Inquiry Information	Code List Qualifier Code	REQUIRED	Code identifying a specific industry code list	Insurance Eligibility - Benefit Code	
Dependent Eligibility or Benefit Additional Inquiry Information	Industry Code	REQUIRED	Code indicating a code from a specific industry list	Insurance Eligibility - Benefit Code	
Dependent Additional Information	Reference Identification Qualifier	REQUIRED	Code qualifying the Reference Identification.	Patient Identifier	Depending on Payer, this can be Social Security Number, Medical Record Number, Member Number, etc.
Dependent Additional Information	Reference Identification	REQUIRED	Reference Information as defined for a particular Transaction Set or as specified by the	Insurance Eligibility - Authorization / Referral Number	

270 ATTRIBUTES	270 DATA ELEMENT NAME	270 USAGE	COMMENTS	KEY DATA ELEMENT	NOTES
			Reference Identification Qualifier. (Prior Authorization or Referral Number)		
Dependent Eligibility/ Benefit Date	Date/Time Qualifier	REQUIRED	Code specifying type of date or time or both date and time. (Date Time Qualifier)	Insurance Eligibility Date	

Appendix B

Uses of Smart Card Technology in Other Industries

Examples of smart-card use outside of health care include the following:

Telephony. The growing sophistication in mobile phones represents about 43 percent of the smart-card market. For example, smart cards currently offer hardware independence for GSM phones – the dominant international standard. Users can now move their personal smart card from one brand of phone to another while retaining the same phone number and preferences. Smart-card technology is expected to become a feature of most other cellular standards, such as TDMA and CDMA. In addition, dual-slot phones, where one slot holds the phone's smart card and the other slot accepts a variety of the user's personal and financial smart cards are in use in Europe and on the way to the United States.

Mobile finance. By 2005, much of the world banking industry, starting in Europe, will have to provide customers with smart cards because credit providers, such as Visa, are beginning to require it. Smart cards significantly reduce the threat of credit-card fraud, and credit companies are adopting smart-card technology as an effective defense. In the United States, consumers are driving the demand for smart cards because they want a more secure means of conducting transactions over web-enabled applications. The Blue Card from American Express is the most visible example today. This platform-based card was the first large-scale deployment of smart cards in the United States. The smart chip on "Blue" stores a unique digital certificate that acts much like a key, allowing users to access a secure on-line wallet that stores purchase information and enables safe transactions.

Transportation and mass transit. Contactless smart cards are bringing relief to parking and mass transit systems by allowing bus riders to pay by waving a card instead of digging for change. The same goes for drivers entering public parking garages and tollbooths. Urban residential parking can be offered to residents by issuing cards and updating them electronically.

T-Commerce. Digital set-top boxes have become sophisticated computers, and smart cards are turning them into remote-controlled e-commerce centers that will compete with the PC. As television content becomes more e-commerce-oriented, consumers will be able to make purchases and direct services from within their favorite shows, processed and billed through the set-top card.[a]

Alternatives to smart cards
Smart-card chips are the essential operational components of smart cards, and these also appear in cladding other than credit card-sized plastic tokens. SIMs (Subscriber Identity Modules, initially implemented with simple, single application smart-card chips) in a smaller physical format already are incorporated in all GSM handsets, and new developments incorporate smart chips within a variety of other devices such as PDAs and wristwatches.

In addition, some commercial developments are seeking to place e-purse and other similar facilities within software environments in PCs and servers, obviating the need for the deployment of smart cards. It remains to be seen which of these software initiatives will flourish, particularly as it is difficult to ensure their security.[b]

Reference

a. Poynder, Richard, *Smartex: Smartcards – A Guide*, March 2001 (http://www.smartex.com/smartcards_guide.html).

b. Poynder, Richard, *Smartex: Smartcards – A Guide*, March 2001 (http://www.smartex.com/smartcards_guide.html).