

The Health Insurance Portability & Accountability Act and the Practice of Dentistry in the United States: Electronic Transactions

Joseph E. Chasteen, DDS, MA; Gretchen Murphy, MA;
Arden Forrey, PhD; David Heid, DDS



Abstract

This article reviews the kinds of electronic transactions required under the Health Insurance Portability & Accountability Act (HIPAA) and relates them to relevant data contained in an electronic oral health record (EOHR). It also outlines the structure of HIPAA transactions using the claim transaction as an example. The relationship of the HIPAA resource management function to those of patient care are discussed. The discussion points out potential future uses of other existing resource management transactions to realize the maximum potential of linking the primary patient care functions to those functions related to managing resources in support of that care. This is needed in all aspects of oral health using the informatics standards activities in which the American Dental Association (ADA) actively participates. The article concludes by providing the dentist a perspective on how to relate these capabilities to his/her individual practice setting.

Keywords: HIPAA, electronic transactions, electronic oral health record, electronic claims, dental practice management

Citation: Chasteen JE, Murphy G, Forrey A, et. al. The Health Insurance Portability & Accountability Act and the Practice of Dentistry in the United States: Electronic Transactions. J Contemp Dent Pract 2003 November;(4)4: 108-120.

© Seer Publishing

Introduction

Two previous articles have developed the aspects of patient care data management via the electronic oral health record (EOHR) and the privacy/confidentiality issues attending both patient care and the Health Insurance Portability & Accountability Act (HIPAA).^{1,2} This article will focus on the administrative transactions that attend patient care and support the dental practice in the provision of quality oral health care. As was noted by Heid et al.¹, data captured to document patient care can also be used to conduct the administrative and resource management transactions that attend management of the dental practice. HIPAA administrative transactions consist of those communications outside the practice that either generate income or other reportable data needed for healthcare administration. This article will focus on those data needed for the dentist to comply with the HIPAA transactions requirement, but which will need to be consistent with the broader role the dentist now plays, or will play in the future, in the full healthcare system.

HIPAA Transactions in Dentistry

A primary goal of HIPAA is to maintain confidentiality of an individual's identifiable health information if it is transmitted by electronic means for administrative purposes. The phrase, "identifiable health information," means the information itself can be directly or indirectly linked to a person. Another goal of HIPAA is the establishment of commonality of the format used for administrative "transactions." In order to accomplish this goal, the following terminology has emerged to facilitate communication between interested parties.

- "Electronic health transactions" refers to HIPAA mandated standards for key areas: identifiers, code sets, and those data constellations to be exchanged termed "transactions."
- "Vocabularies" are those actual terms associated with "codes" of code sets.
- "Codes" are compact unique identifiers for the concepts that both the human readable "terms" and the compact machine-readable "codes" represent.

The essential vocabularies used in the EOHR will be familiar to the dentist, but they must be complete and unambiguous before any coding

schemes applied to them can serve the underlying purpose of conveying concepts from the care record for administrative purposes in a compact manner. The continuing communication of the practicing dentist with the American Dental Association (ADA) Standards Committee on Dental Informatics (SCDI) will help ensure these vocabularies perform as the practitioner needs them to perform.

HIPAA Transactions in Dentistry

There are nine essential transactions included in the HIPAA regulations to support the administrative functions in healthcare. These along with their code numbers are shown in Table 1.

Table 1. HIPAA transactions and their code numbers.

<ul style="list-style-type: none">• Enrollments (834)• Claims/Encounters (837)• Claims Payments (835)• Claims Status (276, 277)• Referrals (278)	<ul style="list-style-type: none">• Eligibility Verification (270, 271)• Premium Billing (820)• First Report of Injury for Workman's Compensation (148)• Claims Attachments (275)
--	--

The claims, claims payments, and claims status of HIPAA transactions are those key to dentistry, but other Data Interchange Standards Association (DISA) message formats will be useful in the other resource management functions shown in Figure 1 as time passes. (See: <http://www.wpc-edi.com/hipaa>)

The Claims Attachments transaction lists EOHR information that may be needed for administrative functions from the resource management perspective. This may be either structured or free text data about a patient care event for which payment is being requested. Inserted into a single transaction container for transmission from the practice to a payer, it is the last transaction to be officially approved in the HIPAA transaction regulation. A detailed look at the 837 Dental Claim Transaction, as specified by the ADA, serves as a prime example of how all of these transactions are constructed.

Transactions are logically structured sequences of data organized primarily in a hierarchical form so Upper (or Outer) envelopes apply to all Lower (Inner) data sets. For example, the 837 Dental Claim Transaction set is overall organized logically as shown in Tables 2 and Table 3.

Table 2. Overall Organization of the HIPAA 837 Dental Claim Transaction.

Subdomains of the Health Information Domain

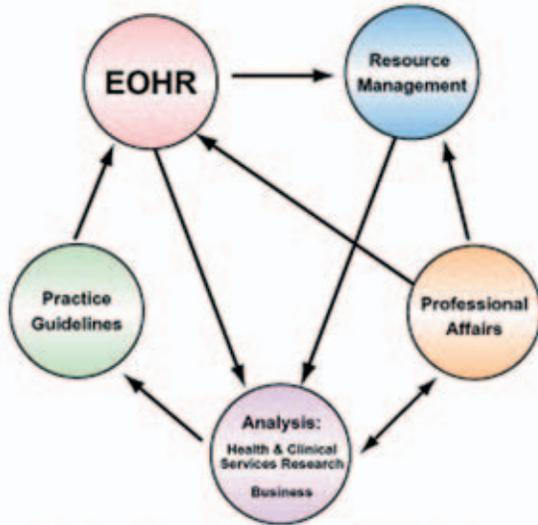


Figure 1. Resource Management Function Taxonomy

Header	
Sender	
Receiver	
Pay-to Loop	
Billing Provider	
Subscriber Loop	
Subscriber	
Subscriber/Payer	
Subscriber/Employer	
Patient Loop	
Patient	
Claim	
Rendering Provider	
Service Line	
(Service Line)	
Trailer	

Table 3. Detail of the 837 Transaction Major Data Items.

Transaction Data Item	EHR Location
Billing Provider:	
Billing Provider Name	Provider/Practitioner Segment
Billing Provider ID	Provider/Practitioner Segment
Billing Provider Address	Provider/Practitioner Segment
Subscriber:	
Subscriber Name	
Subscriber Address, City	
Subscriber Phone	
Subscriber Date-of-Birth	
Subscriber Sex	
Subscriber Insurance Co ID	
Subscriber/Payer:	
Payer's Name	
Payer's ID	
Payers Address, City	

Subscriber/Employer:	Demographic Segment
Employer's Name	Demographic Segment
Employers Address, City	
Patient:	
Patient Name	Demographic Segment
Patient Address	Demographic Segment
Patient Telephone Number	Demographic Segment
Patient Sex	Demographic Segment
Patient Social Security Number	Demographic Segment
Patient Insurance Company ID	
Rendering Provider:	
Practitioner Name	Provider/Practitioner Segment
Practitioner ID for the Subscriber/Payer	Provider/Practitioner Segment
Patient Practice Account Number	
Claim:	
Service Location	Encounter Receipt Segment
Service Date-time	Encounter Receipt Segment
Service Line:	
Service Name	Encounter Segment
Service ID (CDT Code)	Encounter Segment
Service Charge	Encounter Segment
Tooth Number/Surfaces	Examination Segment

The general hierarchical structure noted above is used not only in the other administrative transactions identified above but also in the other DISA transactions for commerce. This structure uses a number of the same standardized loops to organize the various data in these healthcare administrative transactions that is either derived from the EHOR or associated with it. The key point for the dentist to know is software tools exist for extracting these data both from the EHOR and from other data storage structures and assembles the data according to the rules defined as part of HIPAA standards into these "transaction" messages.

The dentist should keep in mind transaction messages of this type, as noted in Heid et al.¹, can be produced to support the practice supply chain and

other commercial transactions that might be relevant to the dental practice. Moreover, the technical formats of all of these commercial transaction messages are currently being re-stated in newer syntax to contain the same logical structures outlined above. This step is being accomplished by the American National Standards Institute (ANSI) an Accredited Standards Committee within the DISA commercial standards organization noted above. The software tools for these HIPAA administrative transactions will be produced for use in dental office practice systems by industrial software vendors who will then provide them to the suppliers of dental office systems as internal components. The current CDT-4 codes available from the American Dental Association, Chicago, IL are HIPAA compliant.

As noted in Table 4, the process for obtaining quality software, whether it is the EOHR or various resource management components for an evolving office information architecture, adheres to the same basic principles that have been well documented by the software engineering professionals.^{3,7} These principles are equally applicable here to both the present HIPAA transaction requirements and to those transactions needed by the evolving dental office practice to incorporate in an EOHR.

ANSI Standards

The first step in achieving the goal to use common administrative formats for data interchange is to standardize electronic formats used for the

transmission of health information from one place to another. Since health providers currently use a variety of electronic formats for this purpose, standardization becomes essential. HIPAA requires the use of the ANSI DISA X12N Insurance Subcommittee developed electronic format, for most administrative transactions with the exception of claims attachments. Regulations for the exceptions are pending.

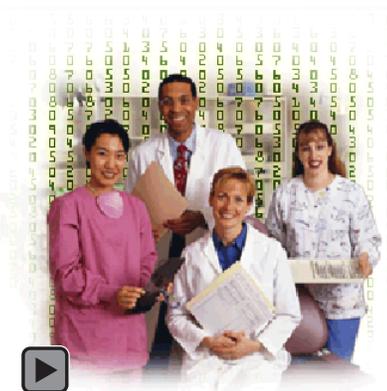


Table 4. Template Document Outline

PartA: Concept of Operations		
A1.	Scope	
A1.1		Identification
A1.2		Document Overview
A1.3		System Overview
A2.	Referenced Documents	
A3.	Current Situation	
A3.1		Background, Objectives, Scope
A3.2		Operational policies, constraints
A3.3		Description of Current System
A3.4		Modes of Operation of Current System
A3.5		User Class Descriptions
A3.5.1		Organizational Relationships And Health Plans Involving the Practice
A3.5.2		Profiles of User Classes
A3.5.3		Interactions of Users
A3.5.4		Other Users
A3.6		Present Support Environment
A4.	Justification for Change	
A4.1		Justification for Changes
A4.2		Nature of Changes
A4.3		Priority of Changes
A4.4		Considered Non-included Changes
A4.5		Assumptions And Constraints

A5.	Proposed System Concepts	
A5.1		Background
A5.2		Operational policies/constraints
A5.3		Description of proposed system
A5.4		Modes of Operation of Proposed System
A6.	Operational Scenarios	
A6.1		Specialization of the Practice
A6.2		Size and Population of the Practice
A6.3		Geographic Location and Layout of the Practice
A6.4		Personnel in the Practice
A6.5		Services Supporting the Practice
A7.	Summary of Impacts	
A7.1		Operational Impacts
A7.2		Organizational Impacts
A8.	Analysis of Proposed System	
A8.1		Summary of Improvements
A8.2		Disadvantages and Limitations
A8.3		Alternatives and Tradeoffs
From Heid, et al. <i>The Electronic Oral Health Record. J Contemp Dent Pract</i> 2002 Feb;(3)1: 043-054		

All health plans and care providers are required to adopt these standards, even if an electronic transaction is accomplished via telephone or FAX. Providers using non-electronic transactions are not required to adopt the standards. However, like users of systems that are non-compliant with HIPAA requirements, these providers will have to contract with a clearinghouse to provide electronic transaction services should it become necessary to conduct business using electronic means in the future.

Health organizations are also required to adopt standard "code sets" to be used in all health transactions. These include coding systems that describe diseases, injuries, and other health con-

ditions, as well as their etiology, symptoms, and the actions taken. For dentistry these published code sets are listed in Table 5. By requiring all parties to any transaction to use and accept the same coding will likely result in the reduction of errors as well as the duplication of effort and costs.

Another aspect of standardization is the need to establish a unique way to identify all parties involved in the administrative processes in healthcare. These parties include care providers, employers, health plans, and patients. Currently multiple ID numbers (such as the social security number, patient registration numbers, employer ID numbers, etc.) are used in the healthcare

Table 5. HIPAA Code Set References (<http://aspe.hhs.gov/admsimp/fagcode.htm>).

International Classification of Diseases 9 th Ed, Clinical Modification, vols1-3 (Government Printing Office)
Code on Dental Procedures and Nomenclature (American Dental Association, Chicago IL)
Current Procedural Terminology 4 th Ed (American Medical Association, Chicago IL)
Healthcare Common Procedure Coding System (Department of Health & Human Services, Centers for Medicare & Medicaid Services (CMS))

Table 6. Required Identifiers.

- National Provider Identifier:
- National Employer Identifier: (IRS Tax Employer Identifier Number)
- National Health Plan Identifier:

industry which can be confusing, conducive to error, and costly. HIPAA standardization of identifiers is likely to reduce these problems. Table 6 lists the required identifier schemes that must be employed in HIPAA transactions but which will also be concomitantly built into the EOHR as part of the capture of observations about patient care. The capture of these data into the EOHR should make their abstraction for administration transparent during the composition of HIPAA transactions.

The compliance date for HIPAA's Electronic Transaction Standards was October 16, 2002 unless a covered entity like a dentist submitted a plan describing how compliance would be achieved by the extended October 16, 2003 deadline. This additional year applies only to the Electronic Transaction Standards and to no other aspect of compliance with the provisions of the HIPAA legislation.

If a dentist wished to submit a request for an extension, the required compliance plans must have been submitted to the Department of Health and Human Services (DHHS) no later than October 16, 2002. Plans must have provided the following information:

1. A description of the extent to which the dentist is in compliance and the reasons why the dentist is not in full compliance.
2. An implementation strategy for achieving full compliance that included a budget, schedule activities, and work plans.

3. An indication whether the dentist planned to hire a contractor or other vendor to assist with the achievement of compliance.
4. A timeframe of no later than April 16, 2003 for testing a computer system for compliance.

Dentists should recognize the April 16, 2003 testing date resulted in only a six month extension from the original compliance date.

The HIPAA legislation provides for penalties for non-compliance as indicated previously. Providers may also be excluded from participation in federally funded programs such as Medicare/Medicaid because these programs plan to discontinue acceptance of traditional paper claim forms.

Additional Transactions

As depicted in Figure 1, the number and types of "transactions" will increase as the information domain of the dental practice builds upon the core EOHR foundation stone. Depending upon the care setting and the nature of the "healthcare enterprise" that includes the dental practice, the management of resources will expand beyond the transactions defined in HIPAA. However, as the market matures, the existing kinds of transactions will be able to serve the additional functions that will need to be supported by electronic transactions. These functions will include transparent practice supply chain Management, in addition to the present financial management transactions of HIPAA. Other functions that will support patient care, as well as ensure consistent formulation

Table 7. Additional EDI Transaction Sets.

EDI Standard	Transaction ID	Transaction Name
ASC X12.36	TS 848	Material Safety Data Sheet
ASC X12.374	TS 253	Data Reporting Requirements
ASC X12.398	TS 274	Healthcare Provider Information
ASC X12.124	TS 148	Report of Injury or Illness
ASC X12.284	TS 186	Life and Annuity Laboratory Reporting
ASC X12.40	TS 812	Debit/Credit Adjustment
ASC X12.284	TS 186	Insurance Underwriting Requirements Reporting

of resource management transactions, include evidence-based practice guidelines, hazardous material control, and other referential data such as that for dental materials whose communication already employs these transaction standards and public health event reporting. The dentist must keep these perspectives in mind as the software components needed to address the current HIPAA transaction requirements are addressed. Even though these capabilities are given in terms of the HIPAA legislation in the United States, the basis is international and the US national standards developers for both commerce and health-care are active internationally.

The US healthcare informatics standards activities in which the ADA is active have substantial links to corresponding international standards, and dentists worldwide can be given the links to these various efforts. Table 7 gives several of the transactions that might become relevant in many dental practices as the staging of supply-chain transactions are completed during the normal patient care events.

Conclusions

This brief synopsis of the role the data interchange transactions play in the administrative aspects of oral health provides a glimpse of the means by which other aspects of resource management in the dental practice can be linked to the recording of patient care observations in the EOHR. It illustrates the structure of transaction messages and how such structural syntax can lead modularly to the construction of other resource management transactions that may be relevant to the dental practice and to the structure of the EOHR. Hence, the effort in complying with the US HIPAA legislation will help set the stage for resource management support of oral health patient care functions and public health dentistry implications as noted in the 1991 (1997 revised) Institute of Medicine (IOM) report on the Electronic Health (Computer-based Patient) Record.⁴ This original view has been reiterated in the more recent IOM 2001 report⁵ and in the report⁶ of the National Committee on Vital and Health Statistics (NCVHS) on building the information infrastructure to support the original 1991 IOM vision. Additionally, the enterprise information architecture⁷ for all types of oral health practice situations is currently being documented and will appear in the form of ADA standards usable by the general dentist in achieving an optimal practice enterprise information architecture.

References

1. Heid DW, Chasteen J, Forrey AW. The Electronic Oral Health Record. *J Contemp Dent Pract* 2002 Feb;(3)1: 043-054.
2. Chasteen JE, Murphy G, Forrey A, et. al. The Health Insurance Portability & Accountability Act: Practice of Dentistry in the United States : Privacy and Confidentiality . *J Contemp Dent Pract* 2003 February;(4)1:059-070.
3. SWEBOK: Guide to the Software Engineering Body of Knowledge IEEE-CS Los Alamitos CA 2001.
4. Dick RS, Steen EB, Detmer DB. "The Computer-based Patient Record – An Essential Technology for Healthcare" Revised Edition Washington DC National Academy Press 1997.
5. "Crossing the Quality Chasm: A New Health System for the 21 st Century" National Academy Press 2001.
6. NCVHS "Information for Health: A Strategy for Building the National health Information Infrastructure" NCHS Centers for Disease Control Nov 2001.
7. Cook MA "Building Enterprise Information Architectures: Re-Engineering Information Systems" 1996 Prentice Hall PTR.

About the Authors

Joseph E. Chasteen, DDS, MA



Dr. Chasteen is an Associate Professor in the Department of Oral Medicine at the University of Washington School of Dentistry and serves as the Director of Information Technology and Research.

Gretchen Murphy, MA



Gretchen F. Murphy Med, RHIA is Director and Senior Lecturer of the Health Information Administration Program, School of Public Health and Community Medicine at the University of Washington in Seattle, WA. She has represented the American Health Information Management Association in several health informatics standards activities and chaired the ASTM Technical Committee on Health Informatics' Subcommittee on the Structure and Content of the Electronic Health Record from 1992-2002. She has authored several books and book chapters on health information management subjects.

Arden Forrey, PhD



Dr. Forrey serves as a Research Associate in the Department of Restorative Dentistry, University of Washington School of Dentistry. He has served as the Veteran's Administration Decentralized Hospital Computer Project Site Manager at the Seattle VA Medical Center; a Research Fellow in Fleet Medical Informatics, US Navy Medical Research and Development Command, and in the Department of Pediatrics at Georgetown University.

David Heid, DDS



Dr. Heid is the former Chief of Dental Services at the Seattle Veterans Medical Center in Seattle, WA and now serves as a Clinical Professor in the Department of Restorative Dentistry at the University of Washington School of Dentistry. He has also held the position of an Associate Professor in the Department Restorative Dentistry at the Medical College of Georgia.

e-mail: dheid@cablespeed.com