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Introduction

Welcome to the Information Age! We live in a century when the flow of information increases with every leap in technology. This book introduces students to the fundamentals of the health-care delivery system, health information management, and health information systems based on the core competencies defined by AHIMA\(^1\) of what students need to know.

Health information is the backbone of healthcare delivery. The medical record is the essential component for maintaining continuity of care for the patient and the prevention of medical errors. The abstracted and aggregate data from health records is essential to the financing and operation of the facility.

Yet it may surprise you that the concept of creating and maintaining complete and accurate medical records as a necessity of healthcare is less than a century old. The year 1918 is considered the starting point of health information management. It was the first time hospitals were required by the American College of Surgeons to keep “accurate and complete medical records for all patients, filed in an accessible manner.”

There followed the creation of occupations, professions, and an organization concerned with the processing and handling of patient charts. Standardization made the information in those records more useful. The profession evolved from record filing to managing health information, but until recently a lot of the information was on paper.

Health information management in the 21st century differs from health information management just 10 years ago, and the reason for that is technology. The old world of managing paper health records is giving way to computerized records. Here are indicators of that change:

AHIMA, the leading organization for Health Information Technicians and Health Information Management professionals is focusing its membership toward the implementation of electronic health records.

President Barack Obama, in the first month of his presidency, signed into law an act to promote the widespread adoption of electronic health records and eventually penalize those providers who don’t make the change.\(^2\)

To prepare for 21st century health information occupations, students need to understand not only the principles and practices of health information management, but the technology of it as well.

While this text thoroughly covers traditional concepts of organizing and filing paper charts, it goes further than previous books on the subject in helping the student understand the connectivity and applications that make up the health information systems of today and of tomorrow.

\(^1\)American Health Information Management Association.
AHIMA Competencies

The AHIMA Education Strategy Committee has created a list of entry-level competencies for associate degree students. This book familiarizes students with the concepts and subject matter in each of the 5 domains and 15 subdomains recommended by AHIMA. Listed beneath each domain and subdomain is the material covered in this book:

I. Domain: Health Data Management

   A. Subdomain: Health Data Structure, Content and Standards  This book covers: data elements, data sets, and databases; record analysis; the use of clinical vocabularies and terminologies; the importance of timeliness, completeness, accuracy, and appropriateness of data and data sources; records management; billing; and reports, registries, and indexes.

   B. Subdomain: Healthcare Information Requirements and Standards  This book covers: documentation guidelines; policies and procedures to ensure organizational compliance with internal and external regulations and standards; and healthcare organization accreditation, licensing, and certification.

   C. Subdomain: Clinical Classification Systems  This book covers: electronic applications and work processes that support clinical classification and coding including diagnosis/procedure codes using ICD-9-CM, CPT/HCPCS, DRG, APC, ICD-10; medical nomenclatures such as SNOMED-CT and MEDCIN; and ethics, regulations, guidelines, and penalties related to code assignment and billing.

   D. Subdomain: Reimbursement Methodologies  This book covers: healthcare reimbursement; inpatient and outpatient prospective payment systems; coding, billing, claims management, and billing workflow processes; and reporting requirements such as the National Correct Coding Initiative.

II. Domain: Health Statistics, Biomedical Research, and Quality Management

   A. Subdomain: Healthcare Statistics and Research  This book covers: clinical indices; disease, implant, and transplant registries; research databases; quality management; utilization management; risk management; and clinical trial studies and healthcare statistics.


III. Domain: Health Services Organization and Delivery

   A. Subdomain: Healthcare Delivery Systems  This book covers: the structure and organization of various healthcare provider entities, and the laws, accreditation, licensure, and certification standards under which they operate; how the policies, procedures, and regulations of Medicare, Medicaid, managed care, and other insurers affect healthcare providers and facilities; the roles of various providers and disciplines throughout the continuum of healthcare and their information needs.

   B. Subdomain: Healthcare Privacy, Confidentiality, Legal, and Ethical Issues  This book covers: the legal and regulatory requirements that govern healthcare providers, facilities, and their employees including a thorough exploration of HIPAA privacy and security regulations that govern the handling and disclosure of personal health information. The book also includes and promotes ethical standards of health information management.

IV. Domain: Information Technology and Systems

   A. Subdomain: Information and Communication Technologies  This book covers: technology commonly used in the healthcare setting; differentiates hardware, software, and data; the
different forms of data storage, acquisition, analysis, and reporting; the various software applications used in the creation, tracking, coding, imaging, billing, and quality improvement of paper and electronic health records; computer networks; the intranet; and electronic health records, personal health records and public health records.

B. Subdomain: Data, Information, and File Structures  This book covers: database architecture including data dictionaries and data types.

C. Subdomain: Data Storage and Retrieval  This book covers: document and diagnostic imaging; image formats; and archival and retrieval systems for patient information stored as digital images.

D. Subdomain: Data Security  This book covers: HIPAA security measures; protection of electronic health information; data integrity and validity using software or hardware technology; security policies and procedures; and audit trails, data quality monitoring programs, risk management, contingency planning, and data recovery procedures.

E. Subdomain: Healthcare Information Systems  This book covers: how healthcare facilities implement, integrate, interface, test, and support health information systems; and ergonomics and workflow process design.

V. Domain: Organizational Resources

A. Subdomain: Human Resources  This book covers: the various functions of the human resources department and continuing education and training programs in healthcare organizations.

B. Subdomain: Financial and Physical Resources  This book covers: administrative systems and processes necessary to healthcare organizations including the coding and revenue cycle process, accounting, ordering and purchasing, accounts receivable, accounts payable, budgets, and provider contracts.
The Development and Organization of the Text

The text is drawn from the author’s extensive experience in the field of health systems design and implementation, from health information professionals from numerous hospitals across the country, and from the resources of the leading health information nonprofit organizations including AHIMA, HIMSS,\(^3\) and the Joint Commission. In areas where government regulations are explained, the text draws directly from the rules and guidance documents published by various agencies of the U.S. Department of Health and Human Services.

The book has been organized to provide a comprehensive understanding of the history, theory, and potential benefits of health information management systems. Each chapter is designed to build on the knowledge acquired in previous chapters. The 12 chapters are arranged in three units designed to guide the learner through increased levels of understanding. A Comprehensive Evaluation after each unit can be used to evaluate the students’ mastery of the material.

Healthcare Fundamentals

To understand healthcare information and how it is managed, it is first necessary to be familiar with the environments where it is gathered, by whom it is used, and the technology behind health information systems. The first four chapters provide a foundation for student learning, introducing concepts that are developed more extensively in subsequent chapters.

Chapter 1, Healthcare Delivery Fundamentals, defines the types of healthcare facilities; explains the differences between ambulatory, acute care, and subacute care facilities; and compares the workflows in an inpatient versus outpatient setting. Students learn about healthcare facility ownership models, how they are organized, and how to read an organizational chart. This chapter introduces direct care providers, clinical allied professions, and several organizations important to medical professionals.

Chapter 2, Health Information Professionals, acquaints the student with the history of health information management, the many occupations available in the health information field, the skills necessary to succeed, and the professional and standards setting organizations working to improve health information.

Chapter 3, Accreditation, Regulation, and HIPAA, introduces students to the Joint Commission, the fundamental concepts of accreditation, and how healthcare entities are regulated. The chapter provides an in-depth explanation of HIPAA’s Privacy and Security Rules. The HIPAA transactions, code sets, and uniform identifiers introduced in this chapter are more fully explained in subsequent chapters as the learner progresses.

Chapter 4, Fundamentals of Information Systems, is intended to familiarize even the computer novice with the basic terminology and ideas underpinning the computer technology used in healthcare. These include the fundamental concepts of computers, hardware, software, communications, and networks. Information technology is fully explained from the smallest bit to the largest relational database in a manner that every student will grasp. Concepts of data elements, data sets, and image data are amply illustrated. Health system interoperability and standards setting organizations are also discussed.

Healthcare Information Systems

With the fundamentals of the healthcare and computer systems complete, the next section fully explores the core subject matter: health information. With a focus on primary health records, the next four chapters cover in detail both paper and electronic health records.

Chapter 5, Healthcare Records, begins to develop the student’s understanding of health records, the different forms they take, the functions that healthcare records serve, and how health records assist with continuity of care for patients. The topics of data elements and data sets introduced in the previous chapter are further developed and the concepts of primary and secondary health records are introduced. Sharing of health information by regional health information organizations (RHIO), telemedicine, personal health records, and E-visits are also covered.

\(^3\)Healthcare Information Management Systems Society.
Chapter 6, Organization, Storage, and Management of Health Records, describes how paper charts are organized, filed, and tracked. Students learn the source-oriented, problem-oriented, and integrated method of organizing charts. Students also learn the differences among alphanumeric, sequential numeric, terminal digits, middle digits, and color-coded filing systems. Various chart numbering schemes are explained. Students learn to calculate storage requirements for paper records and the legal and ethical rules of record circulation, retention, destruction, and release of information. Technological changes to health information management are introduced with discussions of document imaging systems, electronic views, and automated chart tracking systems.

Chapter 7, Electronic Health Records, begins with the history and social forces driving the transition from paper to electronic health records (EHRs). The chapter defines the EHR and describes the functional benefits derived from its use. Students then learn about the various forms of EHR data, the concepts of codified records, and medical nomenclatures. With this foundation, the learner is then introduced to a broad range of EHR concepts including health maintenance, trend analysis, alerts, decision support, protocols, point-of-care documentation, patient-entered data, preventive health screening, flow sheets, and electronic signatures.

Chapter 8, Additional Health Information Systems, covers departmental systems that contribute documents and data to the primary health record. This chapter includes discussions of patient registration, radiology, pathology, laboratory information systems, pharmacy, digital pathology, digital radiology, speech recognition, and dictation and transcription systems. The chapter also discusses emergency departments, biomedical devices, surgical departments, implant registries, transplant registries, medical research and clinical trials.

Healthcare Billing and Management

Having covered the many aspects of primary health records and the functional benefits derived from the patient record, the final section explores the uses of secondary health records to operate healthcare facilities and improve patient care.

Chapter 9, Healthcare Coding and Reimbursement, shifts the focus to the creation and use of secondary health records for the business aspects of healthcare. Students learn patient account, registration, and insurance terminology and concepts. Different reimbursement methodologies by which providers are paid are compared and prospective payment systems are explained in detail. Standardized codes used for billing such as CPT-4, HCPCS, procedure modifier codes, ICD-9-CM, ICD-10, DRGs, and MS-DRGs are covered as well as examples of billing fraud and abuse.

Chapter 10, Healthcare Transactions and Billing, furthers the student’s understanding of the practical business aspects of health information management and technology. A billing workflow discussion provides an overview of the charge posting, insurance billing, payment posting, and patient billing processes. This is followed by a more detailed examination of the HIPAA transaction coding standards first introduced in Chapter 3. Examples of paper and electronic insurance forms are compared as students learn about electronic data interchange, electronic claims, electronic remittance, clearinghouses, claim scrubbers, claim status, claim attachments, insurance eligibility, referrals, and authorizations.

Chapter 11, Health Statistics, Research, and Quality Improvement, covers the processing and maintenance of secondary health records for internal and external uses such as cancer registries and clinical trials research. The chapter then explores how secondary health records are used and reported to outside entities for quality improvement performance measures such as ORYX, HEDIS, and the National Hospital Quality Measures. Data analysis and statistics are explained using easy-to-understand diagrams and the National Hospital Quality Measures in the examples.

Chapter 12, Management and Decision Support Systems, introduces students to the numerous information systems used to support healthcare operations. Some of the systems discussed in this chapter include administrative, financial accounting, human resources, quality management, case management, risk management, and comparative performance measures.
Learning About Health Information Technology and Management
This book makes learning about health information technology and management easy. It reinforces theoretical material, with first-hand experience of professionals working in the areas discussed in each chapter, and includes many other helpful features.

Learning Outcomes
Each chapter begins with a list of learning outcomes that highlights the key concepts contained in that chapter.

LEARNING OUTCOMES
After completing this chapter, you should be able to:
- Describe the history of health information management and organizations
- Differentiate the roles of health information professionals
- Describe the organizational hierarchy of HIM and IT departments
- Compare various nonclinical allied healthcare occupations
- Explain the role of a project manager
- Understand how skill sets from multiple disciplines can help you in your career

Acronyms
Students need to master the numerous acronyms that are used extensively in both medicine and computers. To facilitate learning, each chapter includes a list of the acronyms and their definitions to provide learners with a quick reference.

ACRONYMS USED IN CHAPTER 6
Acronyms are used extensively in both medicine and computers. The following are those which are used in this chapter.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>AHIMA</td>
<td>American Health Information Management Association</td>
</tr>
<tr>
<td>ALOS</td>
<td>Average Length of Stay</td>
</tr>
<tr>
<td>CD</td>
<td>Compact Disk</td>
</tr>
<tr>
<td>CMS</td>
<td>Centers for Medicare and Medicaid Services</td>
</tr>
<tr>
<td>COP</td>
<td>Conditions of Participation</td>
</tr>
<tr>
<td>DVD</td>
<td>Digital Video Disk</td>
</tr>
<tr>
<td>EHR</td>
<td>Electronic Health Record</td>
</tr>
<tr>
<td>EPPI</td>
<td>Electronic Protected Health Information</td>
</tr>
<tr>
<td>ER</td>
<td>Emergency Room</td>
</tr>
<tr>
<td>FTE</td>
<td>Full-Time Equivalent Employee</td>
</tr>
<tr>
<td>HIPAA</td>
<td>Health Insurance Portability and Accountability Act</td>
</tr>
<tr>
<td>OCR</td>
<td>Optical Character Recognition</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>PACS OR PAC SYSTEM</td>
<td>Picture Archiving and Communication System</td>
</tr>
<tr>
<td>PDF</td>
<td>Portable Document Format</td>
</tr>
<tr>
<td>PHI</td>
<td>Protected Health Information</td>
</tr>
<tr>
<td>SOAP</td>
<td>Subjective, Objective, Assessment, Plan</td>
</tr>
<tr>
<td>VPN</td>
<td>Virtual Private Network</td>
</tr>
</tbody>
</table>
Highlights
Boxes found within the chapters call additional attention to key concepts or terms to familiarize learners with common health information management terminology and prepare them to communicate effectively with others in a clinical setting.

COVERED ENTITY

HIPAA documents refer to healthcare providers, insurance plans, and clearinghouses as covered entities. A clearinghouse is a business that converts nonstandard HIPAA transactions into the correct format required by HIPAA.

As a future HIM employee, think of a covered entity as a healthcare organization and all of its employees.

Real-Life Stories
Each chapter features one or more Real-Life Stories told by health information professionals, healthcare providers, administrators, technicians, and project managers about their experiences with different aspects of health information management. These vignettes help learners connect chapter content to real life in a healthcare facility or medical office.

A REAL-LIFE STORY

Automating HIM Workflow
By Shannon Welchi and Shelly Wymer
Shannon Welchi, RHIA, is HIM department manager, and Shelly Wymer, RHIT, CCS, is electronic records coordinator at Allegiance Health Hospital in Jackson, Michigan.

Our Health Information Management department is pretty well computerized, though a portion of our records are still in paper; these are scanned into a document imaging system. About 70% of our inpatient record is now imported data; therefore, it does not have to be scanned.

We usually receive the patient’s chart the same day the patient is discharged, but sometimes a chart is not available until the next day. There will be a subset for the patient’s discharge summary which the physician’s office can access and review. The discharging physician will then sign the summary.

For example, when a physician signs in to complete his discharge summary, he receives a subset that will give him a list of documents pertinent to dictating his discharge summary. Generally these subsets are task or role based. For example, a billing coder would see what billing would typically need, but our system allows subsets to be customized by user, so a particular user can set up subsets specific to them.

Chapter Summary
Detailed summaries at the end of each chapter synthesize key points for students.
Figures and Tables

Ample color photographs, tables, and drawings throughout the text help learners visualize various aspects of health information, including workflow scenarios and technical concepts.

<table>
<thead>
<tr>
<th>Hospital Health Information</th>
<th>Recommended Retention Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Patients’ health records</td>
<td>10 years after the most recent encounter</td>
</tr>
<tr>
<td>Children’s health records</td>
<td>10 years after child reaches the age of majority (or longer if required by state law)</td>
</tr>
<tr>
<td>Fetal heart monitor records</td>
<td>10 years after child reaches the age of majority (or longer if required by state law)</td>
</tr>
<tr>
<td>Registers of births and deaths</td>
<td>Permanently</td>
</tr>
<tr>
<td>Register of surgical procedures</td>
<td>Permanently</td>
</tr>
<tr>
<td>Master patient/person index</td>
<td>Permanently</td>
</tr>
<tr>
<td>Disease index</td>
<td>10 years</td>
</tr>
<tr>
<td>Comprehensive outpatient rehabilitation facilities (CORF)</td>
<td>5 years after patient discharge</td>
</tr>
<tr>
<td>Laboratory Pathology tests</td>
<td>10 years after date of results report</td>
</tr>
<tr>
<td>Diagnostic images (such as x-ray film)</td>
<td>5 years</td>
</tr>
<tr>
<td>Mammography</td>
<td>5 years if subsequent mammograms are performed on the patient at the facility 10 years if no additional mammograms are performed</td>
</tr>
</tbody>
</table>
Critical Thinking Exercises
Each chapter includes questions that challenge students to apply critical thinking to solve a problem or explore a scenario, encouraging the student to learn by doing.

Critical Thinking Exercises
1. You have a job in the HIM department. A friend of yours works for a lawyer. She comes to your facility to pick up copies of records for one of her boss’s clients. She has forgotten to bring the client’s authorization form. She is in a hurry and doesn’t have time to go back to her office. You have known her for many years and are good friends. Do you give her the records?
2. If you decide to give your friend the records, why will you probably lose your job?
3. Is there a way to help your friend get the authorization form to her office?

Test Your Knowledge
The end of every chapter includes a variety of question types, including short answer, true/false, and multiple choice, to allow learners to test their knowledge and think critically.

Testing Your Knowledge of Chapter 2
1. What does the acronym HIM stand for?
2. What does the acronym HIT stand for?
3. Give an example of how the fields of HIM and IT are merging.
4. In what year did the American College of Surgeons establish standards for hospital records?
5. What is forms control?
6. How would understanding medical terminology help a billing clerk?

For each of the following allied health professions, indicate if the job is clinical or nonclinical by circling the correct answer:

- Clinical
- Nonclinical

7. Clinical applications coordinator
8. Lab technician
9. Coding specialist

For each of the following statements circle true if it is correct, or false if the statement is not true:

10. Cancer registrar
11. In the HIM profession what is abstracting?
12. What are two requirements to become a Registered Health Information Administrator?

13. Diagnosis-related groups are used for Medicare billing and reimbursement.
14. A Registered Health Information Technician is required to implement and train users on imaging systems.
15. A security officer is a position found exclusively at inpatient facilities or very large medical practices.

Comprehensive Evaluations
Learners will have an opportunity to test their mastery of the material through three comprehensive evaluations found at the conclusion of Chapters 4, 8, and 12.
Richard Gartee is the author of four college textbooks on health information technology, computerized medical systems, managed care, and electronic health records. Prior to becoming a full-time author and consultant, Richard spent 20 years in the design, development, and implementation of the preeminent practice management and electronic health records systems.

Richard also served as a liaison to other companies in the medical computer industry as well as Blue Cross/Blue Shield, a U.S. Department of Commerce International Trade Mission, and various universities.

Richard is a current or past member of many of the professional organizations and national standards groups recommended in this book:

- American Health Information Management Association (AHIMA)
- Healthcare Information Management Systems Society (HIMSS)
- American National Standards Institute (ANSI) X12n committee for development of electronic claims standards
- Health Level Seven (HL7) committee for development of claims attachment standards
- Workgroup for Electronic Data Interchange (WEDI) task force for development of electronic remittance guidelines
- A faculty member/speaker at the Medical Records Institute international Electronic Health Records Conference (TEPR) for 12 years.
Acknowledgments

This book was made possible by the contributions of many individuals and several of the most prominent commercial vendors whom I would like to personally thank and acknowledge here.

I would first like to thank the many individuals who provided me with helpful interviews and firsthand experiences. I would especially like to thank Rick Warren, Sharyl Beal, John Bachman, M.D., and Dave Schinderle who set up countless interviews with the staff at their respective facilities.

I am also grateful to the following people many of whom contributed the real-life stories for the book and for their assistance: Henry Palmer, M.D.; Sharron Carr, ARNP-BC; Thomas Rau; Marvin P. Mitchell; Ron Rea; Tanya Townsend; Shannon Welchi, RHIA; Shelly Wymer, RHIT, CCS; Judy Cullen, RHIA; Wesley McCann, BA, MA, RT-R; David Goldbaum; Craig Gillespie; Mary E. Bazan; Jayme Stewart; Jeanne Wymer; Allen Wenner, M.D.; and William Moody, M.D.

I am also indebted to the following businesses, which provided photographs and images of computer screens to allows students to see actual examples of real-world applications. I thank them for allowing their copyrighted work to be reprinted herein. Listed in alphabetical order:

- Allscripts, LLC
- Ames Color-File
- Aperio, Inc.
- Carestream Health, Inc
- Clinipace, Inc.
- Digital Identification Solutions, LLC
- GE Healthcare
- Good Health Network, Inc.
- Imaging Business Machines, LLC.
- Kaiser Permanente
- Massachusetts General Hospital
- McKesson Corporation
- MidasPlus, Inc.
- Midmark Diagnostics Group
- NextGen
- Nuance, Inc.
- Primetime Medical Software & Instant Medical History
- Sage Software
- Shands Healthcare and Teaching Hospital
- Sunquest Information Systems

Finally, I would like to acknowledge the help of all my editors who assisted me with this work, but especially Joan Gill, my executive editor. Thanks again, Joan!
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ACKNOWLEDGMENTS

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