

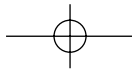
CHAPTER

1

INTRODUCTION TO HEALTH CARE INFORMATION

LEARNING OBJECTIVES

- To be able to compare and contrast the various definitions of health care information.
- To be able to describe the major types of health care information (internal and external) that are captured or used or both in health care organizations.
- To be able to cite specific examples of the major types of health care information.
- To be able to understand the content and uses of patient records.
- To be able to follow a patient's or client's health information throughout a typical encounter or process.



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Although it may seem self-evident, it is worth stating: *health care information is the reason we need health care information systems*. No study of information systems in health care would be complete without an examination of the data and information they are designed to support. The focus of this chapter will be on the data and information that are unique to health care, such as the clinical information created during patients' health care encounters, the administrative information related to those encounters, and the external information used to improve the clinical care and administrative functions associated with those encounters.

We begin the chapter with a brief discussion of some common definitions of health care information. Then we introduce the framework that will be used for exploring various types of health care information. The first major section of the chapter looks at data and information created internally by health care organizations, discussing this information at both the individual client level and the aggregate level. This section also examines some core processes involved in an inpatient and an ambulatory care clinical encounter to further explain how and when internal health care data and information originate and how they are used. The final section examines health care data and information created, at least in part, externally to the health care organization, and addresses both comparative and knowledge-based data and information.

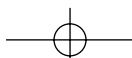
TYPES OF HEALTH CARE INFORMATION

Different texts and articles define *health care information*, or *health information*, differently. Often it is the use or setting of the health information that drives the definition. For example, the government or an insurance company may have a certain definition of health care information, and the hospital, nursing home, or physician's office may have other definitions. In this book we are primarily interested in the *information generated or used by health care organizations*, such as hospitals, nursing homes, physicians' offices, and other ambulatory care settings. Of course this same information may be used by governmental agencies or insurance companies as well.

Definitions of Health Care Information

Health Insurance Portability and Accountability Act Definition The Health Insurance Portability and Accountability Act (HIPAA), the federal legislation that includes provisions to protect patients' health information from unauthorized disclosure, defines *health information* as

any information, whether oral or recorded in any form or medium, that—
(A) is created or received by a health care provider, health plan, public health authority, employer, life insurer, school or university, or health care clearinghouse;
and



(B) relates to the past, present, or future physical or mental health or condition of an individual, the provision of health care to an individual, or the past, present, or future payment for the provision of health care to an individual.

HIPAA refers to this type of information as *protected health information*, or PHI. To meet the definition of PHI, information must first of all be *identifiable*, that is, it must have an individual patient perspective and the patient's identity must be known. HIPAA-defined PHI may exist outside a traditional health care institution and is therefore not an appropriate definition for an organizational view of information such as ours. HIPAA is certainly an important piece of legislation, and it has a direct impact on how health care organizations create and maintain health information (HIPAA is discussed further in Chapter Three). However, not all the information that must be managed in a health care organization is protected health information. Much of the information used by health care providers and executives is neither patient specific nor identifiable in the HIPAA sense.

National Alliance for Health Information Technology Definitions In an attempt to provide consensus definitions of key health care information terms, the National Alliance for Health Information Technology (“Alliance”) released a report “on defining key health information technology terms” in April 2008. Although the terms defined in this report are specific to health records, the definitions contain descriptions of the health information that is maintained by each type of record. The following are the Alliance definitions of *electronic medical record*, *electronic health record*, and *personal health record*. Each of these definitions refers to patient-specific, identifiable health care information that would meet the HIPAA definition of PHI.

Electronic medical record: An electronic record of health-related information on an individual that can be created, gathered, managed, and consulted by authorized clinicians and staff within one healthcare organization.

Electronic health record: An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one healthcare organization.

Personal health record: An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be drawn from multiple sources while being managed, shared, and controlled by the individual [Alliance, 2008].

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(The Alliance report also contains definitions of *health information exchange*, *health information organization*, and *regional health information organization*. These definitions will be discussed in subsequent chapters.)

The Joint Commission Definitions The Joint Commission, the major accrediting agency for health care organizations in the United States, offers a broader framework for examining health care information within health care organizations. It defines not only patient-specific, identifiable health care information but also information that is aggregate, knowledge-based, and comparative.

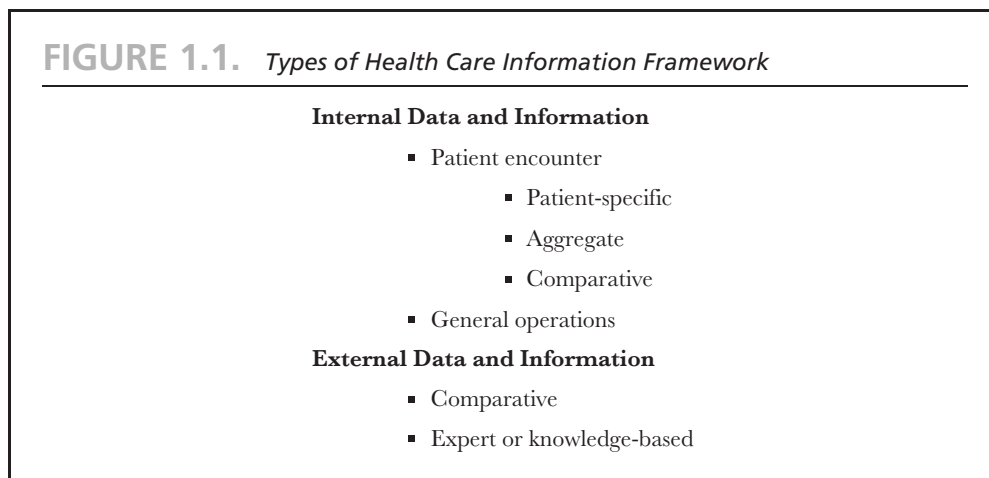
The Joint Commission accreditation standards have been developed over the years to, among other things, measure the quality of the different types of health care information found in and used with health care organizations. The Joint Commission (2004) urges health care leaders to take “responsibility for managing information, just as they do for . . . human, material, and financial resources.” The Joint Commission clearly acknowledges the vital role that information plays in ensuring the provision of quality health care.

The Joint Commission (2004) divides health care information into four categories:

- Patient-specific data and information
- Aggregate data and information
- Knowledge-based information
- Comparative data and information

Health Care Data Framework

Our framework for looking at data and information created, maintained, manipulated, stored, and used within health care organizations is shown in Figure 1.1. The first level of categorization divides data and information into two categories: *internal* and *external*.



Within the broad category of data and information created *internally* by the health care organization, we will focus on clinical and administrative information directly related to the activities surrounding the *patient encounter*, both the individual encounter and the collective encounter. We break information related to the patient encounter into the subcategories of *patient specific*, *aggregate*, and *comparative*. Our focus is on the clinical and administrative individual and aggregate health care information that is associated with a patient encounter. Table 1.1 lists the various types of data and information that fall into the patient encounter subcategories of patient-specific and aggregate. Information typically found in a patient medical record is shown in italics. (The comparative data and information subcategory is found in both the internal and external categories; we will discuss it when we discuss external data and information.)

The second major component of internal health care information in our framework is *general operations*. Data and information needed for the health care organization's general operations are not a focus of this text. Health care executives do, however, need to be concerned not only with information directly related to the patient encounter

TABLE 1.1. Examples of Types of Patient Encounter Data and Information

Type	Primary Purpose	
	Clinical	Administrative
Patient-specific (<i>items generally included in the patient medical record are in italics</i>)	<i>Identification sheet</i> <i>Problem list</i> <i>Medication record</i> <i>History</i> <i>Physical</i> <i>Progress notes</i> <i>Consultations</i> <i>Physicians' orders</i> <i>Imaging and X-ray results</i> <i>Lab results</i> <i>Immunization record</i> <i>Operative report</i> <i>Pathology report</i> <i>Discharge summary</i> Diagnoses codes Procedure codes	<i>Identification sheet</i> <i>Consents</i> <i>Authorizations</i> <i>Preauthorization</i> <i>Scheduling</i> <i>Admission or registration</i> <i>Insurance eligibility</i> <i>Billing</i> <i>Diagnoses codes</i> <i>Procedure codes</i>
Aggregate	Disease indexes Specialized registers Outcomes data Statistical reports Trend analysis Ad hoc reports	Cost reports Claims denial analysis Staffing analysis Referral analysis Statistical reports Trend analysis Ad hoc reports

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but also with information about the organization's general operations. Health care organizations are, after all, businesses that must have revenues exceeding costs to remain viable. The standard administrative activities of any viable organization also take place in health care settings. Health care executives interact with information and information systems in such areas as general accounting, financial planning, personnel administration, and facility planning on a regular if not daily basis. Our decision to focus on the information that is unique to health care and not a part of general business operations is not intended to diminish the importance of general operations but rather is an acknowledgment that a wealth of resources for general business information and information systems already exists.

In addition to using internally generated patient encounter and general operations data and information, health care organizations use information generated *externally* (Figure 1.1). *Comparative data*, as we will explain, combine internal and external data to aid organizations in evaluating their performance. The other major category of external information used in health care organizations is *expert or knowledge-based information*, which is generally collected or created by experts who are not part of the organization. Health care providers and executives use this type of information in decision making, both clinical and administrative. A classic example of knowledge-based clinical information is the information contained in a professional health care journal. Other examples are regional or national databases and informational Web sites related to health or management issues.

INTERNAL DATA AND INFORMATION: PATIENT SPECIFIC—CLINICAL

The majority of clinical, patient-specific information created and used in health care organizations can be found in or has originated in patients' medical records. This section will introduce some basic components of the patient medical record. It will also examine an inpatient and an ambulatory care patient encounter to show how the patient medical record is typically created. All types of health care organizations—inpatient, outpatient, long-term care, and so forth—have patient medical records. These records may be in electronic or paper format, but the purpose and basic content are similar regardless of record or organizational type.

Purpose of Patient Records

Health care organizations maintain medical records for several key purposes. As we move into the discussion of clinical information systems in subsequent chapters, it will be important to remember these purposes. These purposes remain constant whether the record is part of a state-of-the-art electronic system or part of a basic, paper-based manual system.

1. *Patient care.* Patient records provide the documented basis for planning patient care and treatment. This purpose is considered the number one reason for maintaining patient records. Health care executives need to keep this primary purpose

in mind when examining health care information systems. Too often other purposes, particularly billing and reimbursement, may seem to take precedence over patient care.

2. *Communication.* Patient records are an important means by which physicians, nurses, and others can communicate with one another about patient needs. The members of the health care team generally interact with patients at different times during the day, week, or even month. The patient record may be the only means of communication between various providers.
3. *Legal documentation.* Patient records, because they describe and document care and treatment, can also become legal records. In the event of a lawsuit or other legal action involving patient care, the record becomes the primary evidence for what actually took place during the episode of care. An old but absolutely true adage about the legal importance of patient records says, "If it was not documented, it was not done."
4. *Billing and reimbursement.* Patient records provide the documentation patients and payers use to verify billed services. Insurance companies and other third-party payers insist on clear documentation to support any claims submitted. The federal programs Medicare and Medicaid have oversight and review processes in place that use patient records to confirm the accuracy of claims filed. Filing a claim for a service that is not clearly documented in the patient record could be construed as fraud.
5. *Research and quality management.* Patient records are used in many facilities for research purposes and for monitoring the quality of care provided. Patient records can serve as source documents from which information about certain diseases or procedures can be taken, for example. Although research is most prevalent in large academic medical centers, studies are conducted in other types of health care organizations as well.

The importance of maintaining complete and accurate patient records cannot be underestimated. They serve not only as a basis for planning patient care but also as the legal record documenting the care that was provided to patients by the organization. Patient medical records provide much of the source data for health care information that is generated within and across health care organizations. The data captured in a patient medical record become a permanent record of that patient's diagnoses, treatments, and response to treatments.

Content of Patient Records

The American Health Information Management Association (AHIMA) maintains the Web site www.myPHR.com, which lists the following components as being common to most patient records, regardless of facility type or medical record system (electronic or paper based) (AHIMA, 2008). Medical record content is determined to a large extent by external requirements, standards, and regulations (discussed in Chapter Three). This is not an exhaustive list, but with our expanded definitions it provides a general overview

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of this content and of the person or persons responsible for the content. It reveals that the patient record is a repository for a variety of clinical data and information that is produced by many different individuals involved in the care of the patient.

- *Identification sheet.* Information found on the identification sheet (sometimes called a *face sheet* or *admission* or *discharge record*) originates at the time of registration or admission. The identification sheet is generally the first report or screen a user will encounter when accessing a patient record. It lists at least the patient name, address, telephone number, insurance carrier, and policy number, as well as the patient's diagnoses and disposition at discharge. These diagnoses are recorded by the physicians and coded by administrative personnel. (Diagnosis coding is discussed later in this chapter.) The identification sheet is used as both a clinical and an administrative document. It provides a quick view of the diagnoses that required care during the encounter. The codes and other demographic information are used for reimbursement and planning purposes.
- *Problem list.* Patient records frequently contain a comprehensive problem list, which lists significant illnesses and operations the patient has experienced. This list is generally maintained over time. It is not specific to a single episode of care and may be maintained by the attending or primary care physician or collectively by all the health care providers involved in the patient's care.
- *Medication record.* Sometimes called a *medication administration record* (MAR), this record lists medicines prescribed for and subsequently administered to the patient. It often also lists any medication allergies the patient may have. Nursing personnel are generally responsible for documenting and maintaining medication information. In an inpatient setting, nurses are responsible for administering medications according to physicians' written or verbal orders.
- *History and physical.* The history component of this report describes any major illnesses and surgeries the patient has had, any significant family history of disease, patient health habits, and current medications. The information for the history is provided by the patient (or someone acting on his or her behalf) and is documented by the attending physician at the beginning of or immediately prior to an encounter or treatment episode. The physical component of this report states what the physician found when he or she performed a hands-on examination of the patient. The history and physical together document the initial assessment of the patient and provide the basis for diagnosis and subsequent treatment. They also provide a framework within which physicians and other care providers can document significant findings. Although obtaining the initial history and physical is a one-time activity during an episode of care, continued reassessment and documentation of that reassessment during the patient's course of treatment is critical. Results of reassessments are generally recorded in progress notes.
- *Progress notes.* Progress notes are made by the physicians, nurses, therapists, social workers, and other clinical staff caring for the patient. Each provider is responsible for the content of his or her notes. Progress notes should reflect the patient's

response to treatment along with the provider's observations and plans for continued treatment. There are many formats for progress notes. In some organizations all care providers use the same note format; in others each provider type uses a customized format.

- *Consultation.* A consultation note or report records opinions about the patient's condition made by a health care provider other than the attending physician or primary care provider. Consultation reports may come from physicians and others inside or outside a particular health care organization, but copies are maintained as part of the patient record.
- *Physician's orders.* Physician's orders are a physician's directions, instructions, or prescriptions given to other members of the health care team regarding the patient's medications, tests, diets, treatments, and so forth. In the current U.S. health care system, procedures and treatments must be ordered by the appropriate licensed practitioner; in most cases this will be a physician.
- *Imaging and X-ray reports.* The radiologist is responsible for interpreting images produced through X-rays, mammograms, ultrasounds, scans, and the like and for documenting his or her interpretations or findings in the patient's medical record. These findings should be documented in a timely manner so they are available to the appropriate physician(s) to facilitate the appropriate treatment. The actual films or images are generally maintained in the radiology or imaging departments as hard copies or in a specialized computer system. These images are typically not considered part of the patient medical record, but like other reports, they are stored according to state laws and clinical practice guidelines and are important documentation of patient care.
- *Laboratory reports.* Laboratory reports contain the results of tests conducted on body fluids, cells, and tissues. For example, a medical lab might perform a throat culture, urinalysis, cholesterol level, or complete blood count. There are hundreds of specific lab tests that can be run by health care organizations or specialized labs. Lab personnel are responsible for documenting the lab results. Results of the lab work become part of the permanent patient record. However, lab results must also be available during treatment. Health care providers rely on accurate lab results in making clinical decisions, so there is a need for timely reporting of lab results and a system for ensuring that physicians and other appropriate care providers receive the results. Physicians are responsible for documenting any findings and treatment plans based on the lab results.
- *Consent and authorization forms.* Copies of consents to admission, treatment, surgery, and release of information are an important component of the medical record and related to its use as a legal document. The practitioner who actually provides the treatment must obtain informed consent for the treatment. Patients must sign informed consent documents before treatment takes place. Forms authorizing release of information must also be signed by patients before any patient-specific health care information is released to parties not directly involved in the care of the patient.

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- *Operative report.* Operative reports describe any surgery performed and list the names of surgeons and assistants. The surgeon is responsible for the operative report.
- *Pathology report.* Pathology reports describe tissue removed during any surgical procedure and the diagnosis based on examination of that tissue. The pathologist is responsible for the pathology report.
- *Discharge summary.* Each hospital medical record contains a discharge summary. The discharge summary summarizes the hospital stay, including the reason for admission, significant findings from tests, procedures performed, therapies provided, responses to treatments, condition at discharge, and instructions for medications, activity, diet, and follow-up care. The attending physician is responsible for documenting the discharge summary at the conclusion of the patient's stay in the hospital.

Figure 1.2 displays a screen from an electronic medical record. A patient record may contain some or all of the documentation just listed. Depending on the patient's illness or injury and the type of treatment facility, he or she may need specialized health care services. These services may require specific documentation. For example, long-term

FIGURE 1.2. Sample EMR Screen

The screenshot shows a web browser window titled "LMR OMA28 - Microsoft Internet Explorer provided by America Online". The address bar contains a URL from "http://ppd.partners.org/scripts/phsweb.mwl?PKG=0&ZXSOPT=PFWEB&SESS=US28045622278180458&SERVICE=Choose&ID=100". The patient information section displays "Claus, Santa" with ID "4047482 (MGH)" and birth date "01/01/1901 (103 yrs.) M". The system is identified as "PHS INFO SYSTEMS". A navigation menu includes "Select", "Desktop", "Pt Chart: Summary", "Oncology", "Custom", "Reports", "Admin", "Sign", "Results", "Resource", and "Popup". A "Reminders" section notes: "- Patient is 50 years old or older, recommend Influenza vaccination". The main content area is divided into several sections: "Problems" (Hypertension [N], Diabetes mellitus [N], F/h obesity - Major, Gout [N], Back pain), "Medications" (Amoxicillin 250MG 1 TID, Ativan 1MG 1 Q4h [N], Bactrim ds 1 800 [N], Cimetidine 110MG 1 QSH [N], Decadron 4MG 5 6 and 12 hours before chemo [N]), "Allergies" (None [N]), "Procedures" (Deviated nasal septum), "Vital Signs" (BP 120/90, RR N/A, HR N/A, P N/A, Temp N/A, WT N/A), "Health Maintenance", "Notes", "Fam/Soc History", "Visits", "Sticky Notes", "Advance Directives", and "Customize". The status bar at the bottom shows "Done" and "Local intranet".

Source: Partners HealthCare

care facilities and behavioral health facilities have special documentation requirements. Our list is intended to introduce the common components of patient records, not to provide a comprehensive list of all possible components. As stated before, the patient record components listed here will exist whether the health care organization uses electronic records, paper records, or a combination of both.

Overview of a Patient Encounter

Where do medical record data and information come from? How do they originate? In this section we will walk through an inpatient encounter and also take a brief look at a physician's office patient encounter. Along the way we will point out how medical record information is created and used. Figure 1.3 diagrams a reasonably typical non-surgical inpatient admission. The middle column represents the basic patient flow in an inpatient episode of care. It shows some of the core activities and processes the patient will undergo during a hospital stay. The left-hand column lists some of the points along the patient flow process where basic medical record information is added to the medical record database or file. The right-hand column lists the hospital personnel who are generally responsible for a patient flow activity or specific medical record documentation or both. Using Figure 1.3 as a guide we will follow a patient, Marcus Low, through his admission to the hospital for radiation treatments.

CASE STUDY

Marcus Low's Admission Mr. Low's admission to the

hospital is scheduled by his oncologist, Dr. Good, who serves as the admitting and attending physician during Mr. Low's two-day hospital stay. This process involves the administrative staff in Dr. Good's office calling the Admissions Department of the hospital and arranging a time for Mr. Low to be admitted. The preadmission process involves the hospital corresponding or talking with Mr. Low and with Dr. Good's office to gather the demographic and insurance information that will be needed to file a claim with Mr. Low's insurance company. Generally, hospital personnel contact the patient's insurance company to precertify his or her hospital admission, and in this case the hospital checks that the insurance company agrees that Mr. Low's planned admission is medically necessary and will be approved for payment. The patient medical record is started during the preadmission phase. The Admissions Department must check whether Mr. Low has had a previous stay at the hospital and whether he has an existing medical record number or unique identifier. The *identification sheet* is started at this stage. Mr. Low's hospital has an electronic medical record system, so the demographic information needed is put into the computer system.

On the scheduled day of admission, Mr. Low arrives at the hospital's Admissions Department. There he verifies his demographic and insurance information. He is issued an identification (ID) bracelet and escorted to his assigned room by the hospital staff. Bed assignment is an important activity for the Admissions Department. It involves a great deal of coordination among the Admissions Department, nursing staff, and housekeeping staff. Efficient patient

(Continued)



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CASE STUDY (*Continued*)

flow within a hospital relies on this first step of bed assignment. Clean rooms with adequate staff need to be available not only for elective admissions like Mr. Low's but also for emergency admissions. Because this hospital has an electronic medical record, there is no paper chart to go to the nursing floor with Mr. Low, but the admissions staff verify that all pertinent information is recorded in the system. The admissions staff also have Mr. Low sign a general *consent to treatment* and the *authorization* that allows the hospital to share his health information with the insurance company.

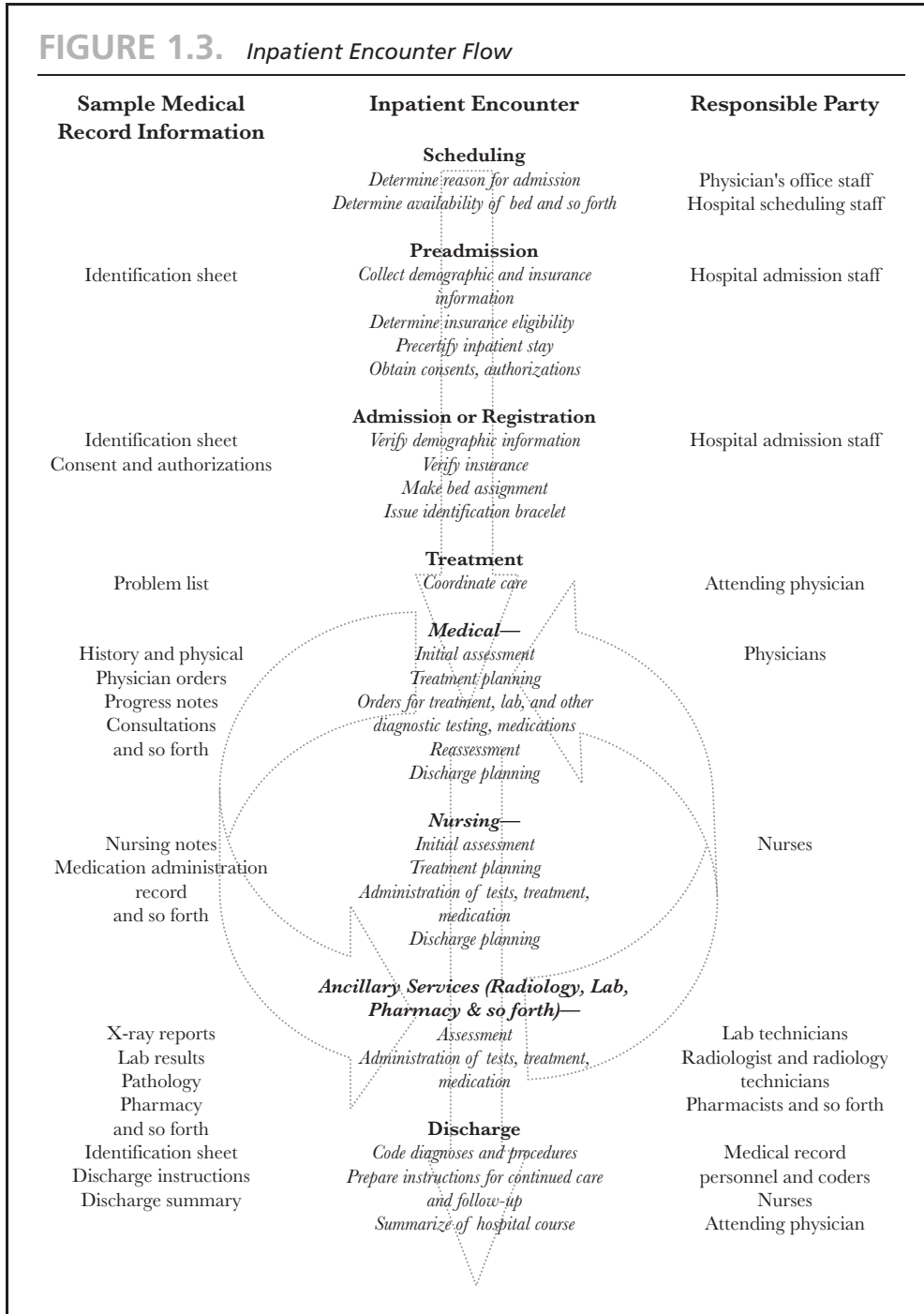
Once on the nursing floor, Mr. Low receives a nursing assessment and a visit from the attending physician. The nursing assessment results in a nursing care plan for Mr. Low while he is in the hospital. Because Mr. Low saw Dr. Good in his office during the previous week, the *history and physical* is already stored in the electronic medical record system. Dr. Good records his *orders* in the physician order entry component of the electronic medical record. The nursing staff respond to these orders by giving Mr. Low a mild sedative. The Radiology Department responds to these orders by preparing for Mr. Low's visit to that department later in the day. During his two-day stay Mr. Low receives several medications and three radiation treatments. He receives blood work to monitor his progress. All these treatments are made in response to orders given by Dr. Good and are recorded in the medical record, along with the *progress notes* from each provider. The medical record serves as a primary form of communication among all the providers of care. They check the electronic medical record system regularly to look for new orders and to review the updated results of treatments and tests.

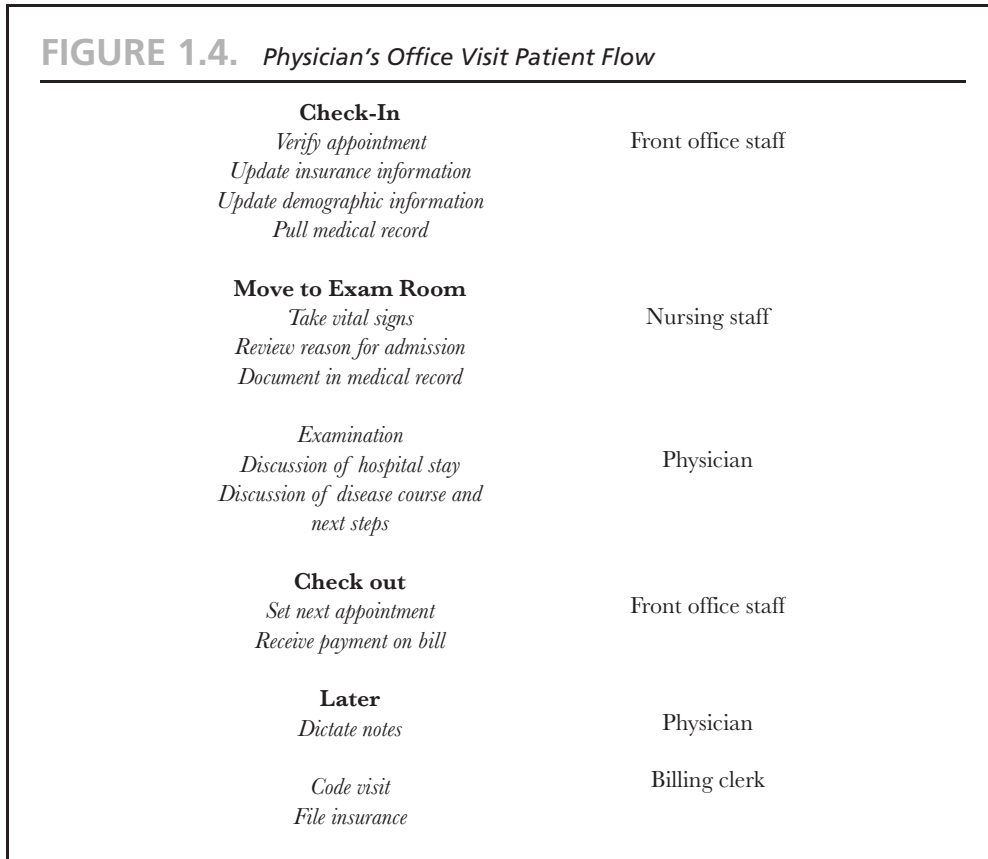
When Mr. Low is ready to be discharged, he is once again assessed by the nursing staff. A member of the nursing staff reviews his discharge orders from the physician and goes over instructions that Mr. Low should follow at home. Shortly after discharge, Dr. Good must dictate or record a *discharge summary* that outlines the course of treatment Mr. Low received. Once the record is flagged to indicate that Mr. Low has been discharged, the personnel in the Health Information Management Department assign codes to the diagnoses and procedures. These codes will be used by the Billing Department to file insurance claims.

When the Billing Department receives the final codes for the records, it will submit the appropriate claims to the insurance companies. It is the Billing Department, or Patient Accounting Department, that manages the patient revenue cycle that begins with scheduling and ends when payments are posted. This department works closely with third-party payers and patients in collecting reimbursement for services provided.

Even in this extremely brief outline of a two-day hospital stay, you can see that patient care and the reimbursement for that care involve many individuals who need access to timely and accurate patient information. The coordination of care is essential to quality, and this coordination relies on the availability of information. Other hospital stays are longer; some are emergency admissions; some involve surgery. These stays will need information additional to that discussed in this section. However, the basic components will be essentially the same as those just described.

FIGURE 1.3. *Inpatient Encounter Flow*





An ambulatory care encounter is somewhat different from a hospital stay. Let's follow Mr. Low again. This time we will describe his follow-up office visit with Dr. Good two weeks after his discharge from the hospital. Figure 1.4 is an outline of the process that Mr. Low followed during his office visit and the individuals who were responsible for each step in the process.



CASE STUDY

Mr. Low's Physician's Office Visit

Dr. Good also maintains a medical record for Mr. Low, but his records are still mainly paper based. There is no direct link between Dr. Good's and the hospital's medical record systems. Fortunately, Dr. Good can access the hospital's electronic medical record system from his office. He can view all the lab results, radiology reports, and discharge summaries for his hospitalized patients. He chooses to print out these reports and file them in the patients' paper medical records. Each medical record in Dr. Good's office contains the general patient demographic and insurance

information, an ongoing problem list, a summary of visits, and individual visit notes. These notes include entries by both the nursing staff and Dr. Good. The nursing staff record all their notes by hand. Dr. Good dictates his notes, which are subsequently transcribed by a professional medical transcriber. All phone calls and prescription information are also recorded in the record.

One significant difference between an ambulatory care visit, such as a physician's office visit, and a hospital stay is the scope of the episode of care. During an inpatient stay patients usually receive a course of treatment, with a definite admission point and discharge point. In an ambulatory care setting, particularly primary care physician visits, patients may have multiple problems and treatments that are ongoing. There may not be a definite beginning or end to any one course of treatment. There are likely to be fewer care providers interacting with the patient at any given ambulatory care visit. There may, however, be more consultations over time and a need to coordinate care across organizations. All these characteristics make the clinical information needs of the inpatient setting and the ambulatory care setting somewhat different, but in each setting, this information is equally important to the provision of high-quality care.

Health care information systems and health care processes are closely entwined with one another. Health care processes require the use of data and information and they also produce or create information. Care providers must communicate with one another and often need to share patient information across organizations. The information produced by any one health care process may in turn be used by others. A true web of information sharing is needed.

INTERNAL DATA AND INFORMATION: PATIENT SPECIFIC—ADMINISTRATIVE

As we have seen in the previous section, patient-specific clinical information is captured and stored as a part of the patient medical record. However, there is more to the story—health care organizations need to get paid for the care they provide and to plan for the efficient provision of services to ensure that their operations remain viable. In this section we will examine individual patient data and information used specifically for administrative purposes. Health care organizations need data to effectively perform the tasks associated with the patient revenue cycle, tasks such as scheduling, precertification and insurance eligibility determination, billing, and payment verification. To determine what data are needed, we can look, first, at two standard billing documents, the UB-04 (CMS-1450) and the CMS-1500. In addition, we will discuss the concept of a uniform data set and introduce the Uniform Hospital Discharge Data Set, the Uniform Ambulatory Care Data Set, and the Minimum Data Set for long-term care.

Data Needed to Process Reimbursement Claims

Generally, the health care organization's accounting or billing department is responsible for processing claims, an activity that includes verifying insurance coverage, billing third-party payers (private insurance companies, Medicare, or Medicaid), and processing the payments as they are received. Depending on the type of service provided to the patient, one of two standard billing forms will be submitted to the third-party payer. The UB-04, or CMS-1450, is submitted for inpatient, hospital-based outpatient, home health care, and long-term care services. The CMS-1500 is submitted for health care provider services, such as those provided by a physician's office.

UB-04 In 1975, the American Hospital Association (AHA) formed the National Uniform Billing Committee (NUBC, 1999), bringing the major national provider and payer organizations together for the purpose of developing a single billing form and standard data set that could be used for processing health care claims by institutions nationwide. The first *uniform bill* was the UB-82. It has since been modified and improved upon, resulting, first, in the UB-92 data set and now in the currently used UB-04 (see Exhibit 1.1). UB-04 is the de facto hospital and other institution claim standard. It is required by the federal government and state governments in their role as third-party payers and has been adopted across the United States by private third-party payers as well. One important change implemented with the transition from the UB-92 to the UB-04 is the requirement that each claim include a valid National Provider Identifier (NPI) (Centers for Medicare and Medicaid [CMS], 2006). The NPI is a unique identification number for each HIPAA-covered health care provider. Covered health care providers and all health plans and health care clearinghouses use NPIs in the administrative and financial transactions adopted under HIPAA. The NPI is a ten-position, "intelligence-free" numeric identifier, meaning that this ten-digit number does not carry any additional information about the health care provider to which it is assigned, such as the state in which the provider works or the provider's medical specialty (CMS, 2008).

CMS-1500 The National Uniform Claim Committee (NUCC, 2008) was created by the American Medical Association (AMA) to develop a standardized data set for the noninstitutional health care community to use in the submission of claims (much as the NUBC has done for institutional providers). Members of this committee represent key provider and payer organizations, with the AMA appointing the committee chair. The standardized claim form developed and overseen by NUCC is the CMS-1500. This claim form has been adopted by the federal government, and like the UB-04 for institutional care, has become the de facto standard for all types of noninstitutional provider claims, such as those for physician services (see Exhibit 1.2).

It is important to recognize that both the UB-04 and the CMS-1500 claim forms incorporate standardized data sets. Regardless of a health care organization's location or a patient's insurance coverage, the same data elements are collected. In many states UB-04 data and CMS-1500 data must be reported to a central state agency responsible for aggregating and analyzing the state's health data. At the federal level the Centers for

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EXHIBIT 1.1. (Continued)

UB-04 NOTICE: THE SUBMITTER OF THIS FORM UNDERSTANDS THAT MISREPRESENTATION OR FALSIFICATION OF ESSENTIAL INFORMATION AS REQUESTED BY THIS FORM, MAY SERVE AS THE BASIS FOR CIVIL MONETARY PENALTIES AND ASSESSMENTS AND MAY UPON CONVICTION INCLUDE FINES AND/OR IMPRISONMENT UNDER FEDERAL AND/OR STATE LAW(S).

Submission of this claim constitutes certification that the billing information as shown on the face hereof is true, accurate and complete. That the submitter did not knowingly or recklessly disregard or misrepresent or conceal material facts. The following certifications or verifications apply where pertinent to this Bill:

1. If third party benefits are indicated, the appropriate assignments by the insured/beneficiary and signature of the patient or parent or a legal guardian covering authorization to release information are on file. Determinations as to the release of medical and financial information should be guided by the patient or the patient's legal representative.
2. If patient occupied a private room or required private nursing for medical necessity, any required certifications are on file.
3. Physician's certifications and re-certifications, if required by contract or Federal regulations, are on file.
4. For Religious Non-Medical facilities, verifications and if necessary re-certifications of the patient's need for services are on file.
5. Signature of patient or his representative on certifications, authorization to release information, and payment request, as required by Federal Law and Regulations (42 USC 1935f, 42 CFR 424.56, 10 USC 1071 through 1088, 32 CFR 199) and any other applicable contract regulations, is on file.
6. The provider of care submitter acknowledges that the bill is in conformance with the Civil Rights Act of 1964 as amended. Records adequately describing services will be maintained and necessary information will be furnished to such governmental agencies as required by applicable law.
7. For Medicare Purposes: If the patient has indicated that other health insurance or a state medical assistance agency will pay part of his/her medical expenses and he/she wants information about his/her claim released to them upon request, necessary authorization is on file. The patient's signature on the provider's request to bill Medicare medical and non-medical information, including employment status, and whether the person has employer group health insurance which is responsible to pay for the services for which this Medicare claim is made.
8. For Medicaid purposes: The submitter understands that because payment and satisfaction of this claim will be from Federal and State funds, any false statements, documents, or concealment of a material fact are subject to prosecution under applicable Federal or State Laws.
9. For TRICARE Purposes:
 - (a) The information on the face of this claim is true, accurate and complete to the best of the submitter's knowledge and belief, and services were medically necessary and appropriate for the health of the patient;
 - (b) The patient has represented that by a reported residential address outside a military medical treatment facility catchment area he or she does not live within the catchment area of a U.S. military medical treatment facility, or if the patient resides within a catchment area of such a facility, a copy of Non-Availability Statement (DD Form 1251) is on file, or the physician has certified to a medical emergency in any instance where a copy of a Non-Availability Statement is not on file;
 - (c) The patient or the patient's parent or guardian has responded directly to the provider's request to identify all health insurance coverage, and that all such coverage is identified on the face of the claim except that coverage which is exclusively supplemental payments to TRICARE-determined benefits;
 - (d) The amount billed to TRICARE has been billed after all such coverage have been billed and paid excluding Medicaid, and the amount billed to TRICARE is that remaining claimed against TRICARE benefits;
 - (e) The beneficiary's cost share has not been waived by consent or failure to exercise generally accepted billing and collection efforts; and
 - (f) Any hospital-based physician under contract, the cost of whose services are allocated in the charges included in this bill, is not an employee or member of the Uniformed Services. For purposes of this certification, an employee of the Uniformed Services is an employee, appointed in civil service (refer to 5 USC 2105), including part-time or intermittent employees, but excluding contract surgeons or other personal service contracts. Similarly, member of the Uniformed Services does not apply to reserve members of the Uniformed Services not on active duty.
 - (g) Based on 42 United States Code 1395cc(a)(1)(j) all providers participating in Medicare must also participate in TRICARE for inpatient hospital services provided pursuant to admissions to hospitals occurring on or after January 1, 1987; and
 - (h) If TRICARE benefits are to be paid in a participating status, the submitter of this claim agrees to submit this claim to the appropriate TRICARE claims processor. The provider of care submitter also agrees to accept the TRICARE determined reasonable charge as the total charge for the medical services or supplies listed on the claim form. The provider of care will accept the TRICARE-determined reasonable charge even if it is less than the billed amount, and also agrees to accept the amount paid by TRICARE combined with the cost-share amount and deductible amount, if any, paid by or on behalf of the patient as full payment for the listed medical services or supplies. The provider of care submitter will not attempt to collect from the patient (or his or her parent or guardian) amounts over the TRICARE determined reasonable charge. TRICARE will make any benefits payable directly to the provider of care, if the provider of care is a participating provider.

SEE <http://www.nubc.org/> FOR MORE INFORMATION ON UB-04 DATA ELEMENT AND PRINTING SPECIFICATIONS

Medicare and Medicaid Services (CMS) aggregates the data from these claims forms for analyzing national health care reimbursement, clinical, and population trends. Having uniform data sets means that data can be compared not only within organizations but within states and across the country.

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EXHIBIT 1.2. (Continued)

BECAUSE THIS FORM IS USED BY VARIOUS GOVERNMENT AND PRIVATE HEALTH PROGRAMS, SEE SEPARATE INSTRUCTIONS ISSUED BY APPLICABLE PROGRAMS.

NOTICE: Any person who knowingly files a statement of claim containing any misrepresentation or any false, incomplete or misleading information may be guilty of a criminal act punishable under law and may be subject to civil penalties.

REFERS TO GOVERNMENT PROGRAMS ONLY

MEDICARE AND CHAMPUS PAYMENTS: A patient's signature requests that payment be made and authorizes release of any information necessary to process the claim and certifies that the information provided in blocks 1 through 12 is true, accurate and complete. In the case of a Medicare claim, the patient's signature authorizes any entity to release to Medicare medical and non-medical information, including employment status, and whether the person has employer group health insurance, liability, no-fault, worker's compensation or other insurance which is responsible to pay for the services for which the Medicare claim is made. See 42 CFR 411.24(a). If item 9 is completed, the patient's signature authorizes release of the information to the health plan or agency shown. In Medicare assigned or CHAMPUS participation cases, the physician agrees to accept the charge determination of the Medicare carrier or CHAMPUS fiscal intermediary as the full charge, and the patient is responsible only for the deductible, coinsurance and noncovered services. Coinsurance and the deductible are based upon the charge determination of the Medicare carrier or CHAMPUS fiscal intermediary if this is less than the charge submitted. CHAMPUS is not a health insurance program but makes payment for health benefits provided through certain affiliations with the Uniformed Services. Information on the patient's sponsor should be provided in those cases captioned in "Remarks," i.e., items 10, 4, 8, 7, 9, and 11.

BLACK LUNG AND FECA CLAIMS

The provider agrees to accept the amount paid by the Government as payment in full. See Black Lung and FECA instructions regarding required procedure and diagnosis coding systems.

SIGNATURE OF PHYSICIAN OR SUPPLIER (MEDICARE, CHAMPUS, FECA AND BLACK LUNG)

I certify that the services shown on this form were medically indicated and necessary to the health of the patient and were personally furnished by me or were furnished incident to my professional service by my employee under my immediate personal supervision, except as otherwise expressly permitted by Medicare or CHAMPUS regulations.

For services to be considered as "incident" to a physician's professional service, (1) they must be rendered under the physician's immediate personal supervision by his/her employee; (2) they must be an integral, although incidental part of a covered physician's service; (3) they must be of kinds commonly furnished in physician's offices; and (4) the services of nonphysicians must be included on the physician's bill.

For CHAMPUS claims, I further certify that (or any employee) who rendered services are not an active duty member of the Uniformed Services of a civilian employee of the United States Government or a contract employee of the United States Government, either civilian or military (refer to 5 USC 5536). For Black Lung claims, I further certify that the services performed were for a Black Lung-related disorder.

No Part B Medicare benefits may be paid unless this form is received as required by existing law and regulations (42 CFR 424.32).

NOTICE: Any one who misrepresents or falsifies essential information to receive payment from Federal funds requested by this form may upon conviction be subject to fine and imprisonment under applicable Federal laws.

NOTICE TO PATIENT ABOUT THE COLLECTION AND USE OF MEDICARE, CHAMPUS, FECA, AND BLACK LUNG INFORMATION (PRIVACY ACT STATEMENT)

We are authorized by CMS, CHAMPUS and OWCP to ask you for information needed by the administration of the Medicare, CHAMPUS, FECA, and Black Lung programs. Authority to collect information is in section 705(a), 1062, 1077, and 1874 of the Social Security Act as amended, 42 CFR 411.24(a) and 424.5(a) (8), and 41 USC 3101-11 CFR 101 et seq and 16 USC 1079 and 1088; 5 USC 6101 et seq; and 30 USC 901 et seq; 38 USC 613; E.O. 9397.

The information we obtain to complete claims under these programs is used to deal with you and to determine your eligibility. It is also used to decide if the services and supplies you received are covered by these programs and to insure that proper payment is made.

The information may also be given to other providers of services, carriers, intermediaries, medical review boards, health plans, and other organizations or Federal agencies, for the effective administration of Federal provisions that require other third party payers to pay primary to Federal program, and as otherwise necessary to administer these programs. For example, it may be necessary to disclose information about the benefits you have used to a hospital or doctor. Additional disclosures are made through routine uses for information contained in systems of records.

FOR MEDICARE CLAIMS: See the notice modifying system No. 09-70-020, titled "Carrier Medicare Claims Record," published in the Federal Register, Vol. 34, No. 177, page 37549, Wed. Sept. 12, 1990, or as updated and republished.

FOR OWCP CLAIMS: Department of Labor Privacy Act of 1974. The publication of Notice of Systems of Records, "Federal Register Vol. 55 No. 40, Wed Feb. 28, 1990, See ESA-5, ESA-6, ESA-12, ESA-13, ESA-30, or as updated and republished.

FOR CHAMPUS CLAIMS: (PRINCIPLE MULTICENTERS): To establish eligibility for medical care provided by civilian sources and to issue payment upon establishment of eligibility and determination that the services are charges rendered and authorized by law.

OUTLINE USES: Information from claims and related documents may be given to the Dept. of Veterans Affairs, the Dept. of Health and Human Services and the Dept. of Transportation consistent with their statutory administrative responsibilities under CHAMPUS/CHAMPVA; to the Dept. of Justice for representation of the Secretary of Defense in civil actions; to the Internal Revenue Service, private collection agencies, and consumer reporting agencies in connection with recoupment claims; and to Congressional Offices in response to inquiries made at the request of the person to whom a record pertains. Appropriate disclosures may be made to other Federal, state, local, foreign government agencies, private business entities, and individual providers of care, on matters relating to entitlement, claims adjudication, fraud, program access, litigation review, quality assurance, cost review, program integrity, third party liability, coordination of benefits, and civil and criminal litigation related to the operation of CHAMPUS.

DISCLOSURES: Voluntary, however, failure to provide information will result in delay in payment or may result in denial of claim. With the one exception discussed below, there are no penalties under these programs for failing to supply information. However, failure to furnish information regarding the medical services rendered or the amount charged would prevent payment of claims under these programs. Failure to furnish any other information, such as name of claim number, would delay payment of the claim. Failure to provide medical information under FECA could be deemed an obstruction.

It is mandatory that you tell us if you know that another party is responsible for paying for your treatment. Section 1128B of the Social Security Act and 31 USC 3801-3812 provide penalties for withholding this information.

You should be aware that (1) L 103-503, the Computer Matching and Privacy Protection Act of 1988, permits the government to verify information by way of computer matches.

MEDICAID PAYMENTS (PROVIDER CERTIFICATION)

I hereby agree to keep such records as are necessary to disclose fully the extent of services provided to individuals under the State's Title XIX plan and to furnish information regarding any payments claimed for providing such services as the State Agency or Dept. of Health and Human Services may request.

I further agree to accept as payment in full the amount paid by the Medicaid program for those claims submitted for payment under that program, with the exception of authorized deductible, coinsurance, co-payment or similar cost-sharing charge.

SIGNATURE OF PHYSICIAN (OR SUPPLIER): I certify that the services listed above were medically indicated and necessary to the health of this patient and were personally furnished by me or my employee under my personal direction.

NOTICE: This is to certify that the foregoing information is true, accurate and complete. I understand that payment and satisfaction of this claim will be from Federal and State funds, and that any false claims, statements or documents, or concealment of a material fact, may be prosecuted under applicable Federal or State laws.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0548-0099. The time required to complete this information collection is estimated to average 10 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate or suggestions for improving this form, please write to CMS, Attn: ITA Reports, Clearance Officer, 7500 Security Boulevard, Baltimore, Maryland 21244-1959. This address for comments and suggestions only. DO NOT MAIL COMPLETED CLAIM FORMS TO THIS ADDRESS.

Other Uniform Data Sets

Other uniform data sets have been developed for use in the United States. Three examples are the Uniform Hospital Discharge Data Set (UHDDS), the Uniform Ambulatory Care Data Set (ACDS), and the Minimum Data Set (MDS) used for long-term care. These data sets share two purposes:

1. To identify the data elements that should be collected for each patient, and
2. To provide uniform definitions for common terms and data elements [LaTour, 2002, p. 123].

The UHDDS is the oldest uniform data set used in the United States. The earliest version was developed in 1969 by the National Center for Health Statistics. In 1974, the federal government adopted the UHDDS definitions as the standard for the Medicare and Medicaid programs. The UHDDS has been revised several times. The current version includes the data elements listed in Exhibit 1.3.

The ACDS was approved by the National Committee on Vital and Health Statistics in 1989. The goal of the ACDS is to improve the data collected in ambulatory and outpatient settings. The ACDS has not, however, been incorporated into federal rules or regulations. It remains a recommended rather than a required data set.

The MDS for long-term care is a federally mandated standard assessment tool that is used to collect demographic and clinical information about long-term care facility residents. It is an extensive data set with detailed data elements in twenty major categories. The MDS provides a structured way to organize resident information so that an effective care plan can be developed (LaTour, 2002).

INTERNAL DATA AND INFORMATION: PATIENT SPECIFIC—COMBINING CLINICAL AND ADMINISTRATIVE

As we have discussed in earlier sections of this chapter, diagnostic and procedural information is captured during the patient encounter to track clinical progress and to document care for reimbursement and other administrative purposes. This diagnostic and procedural information is initially captured in narrative form through physicians' and other health care providers' documentation in the patient record. This documentation is subsequently translated into numerical codes. Coding facilitates the classification of

EXHIBIT 1.3. UHDDS Elements and Definitions

UHDDS elements as adopted in 1986 are:

1. **Personal identification:** the unique number assigned to each patient within a hospital that distinguishes the patient and his or her hospital record from all others in that institution.
2. **Sex:** male or female.
3. **Race:** White, Black, Asian or Pacific Islander, American Indian/Eskimo/Aleut, or other.
4. **Ethnicity:** Spanish origin/Hispanic, Non-Spanish origin/Non-Hispanic
5. **Residence:** zip code, code for foreign residence.
6. **Hospital identification:** a unique institutional number within a data collection system.
- 7–8. **Admission and discharge dates:** month, day, and year of both admission and discharge. An inpatient admission begins with the formal acceptance by a hospital of a patient who is to receive physician, dentist, or allied services while receiving room, board, and continuous nursing services. An inpatient discharge occurs with the termination of the room, board, and continuous nursing services, and the formal release of an inpatient by the hospital.
- 9–10. **Attending physician and operating physician:** each physician must have a unique identification number within the hospital. The attending physician and the operating physician (if applicable) are to be identified.

Attending physician: the clinician who is primarily and largely responsible for the care of the patient from the beginning of the hospital episode.

Operating physician: the clinician who performed the principal procedure (see item 12 for definition of a principal procedure).
11. **Diagnoses:** all diagnoses that affect the current hospital stay.

Principal diagnosis is designated and defined as the condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care.

Other diagnoses are designated and defined as all conditions that coexist at the time of admission, that develop subsequently, or that affect the treatment received or length of stay. Diagnoses that relate to an earlier episode that have no bearing on the current hospital stay are to be excluded.
12. **Procedure and date:** all significant procedures are to be reported. A significant procedure is one that is surgical in nature, or carries a procedural risk, or carries an anesthetic risk, or requires specialized training. For significant procedures, the identity (by unique number within the hospital) of the person performing the procedure and the date must be reported. When more than one procedure is reported, the principal procedure is to be designated. In determining which of several procedures is principal, the following criteria apply:

The principal procedure is one that was performed for **definitive treatment** rather than one performed for diagnostic or exploratory purposes, or was necessary to take care of a complication. If there appear to be two procedures that are principal, then the one most related to the principal diagnosis should be selected as the principal procedure. For reporting purposes, the following definition should be used: surgery includes incision, excision, amputation, introduction, endoscopy, repair, destruction, suture, and manipulation.

13. **Disposition of patient:** discharged to home (routine discharge); left against medical advice; discharged to another short-term hospital; discharged to a long-term institution; died, or other.
14. **Expected payer** for most of this bill (anticipated financial guarantor for services): this refers to the single major source that the patient expects will pay for his or her bill, such as Blue Cross, other insurance companies, Medicare, Medicaid, Workers' Compensation, other government payers, self-pay, no-charge (free, charity, special research, or teaching), or other.

Source: Dougherty, 2001, p. 72.

diagnoses and procedures not only for reimbursement purposes but also for clinical research and comparative studies.

Two major coding systems are employed by health care providers today:

- ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification—modified for use in the United States), published by the National Center for Health Statistics
- CPT (Current Procedural Terminology), published by the American Medical Association

Use of these systems is required by the federal government for reimbursement, and they are recognized by health care agencies both nationally and internationally.

ICD-9-CM

The ICD-9-CM classification system is derived from the International Classification of Diseases, Ninth Revision, which was developed by the World Health Organization to capture disease data. ICD-9-CM is used in the United States to code not only disease information but also procedure information. An update to the ICD-9-CM is published each year. This publication is considered a federal government document whose contents may be used freely by others. However, multiple companies republish this government document in easier-to-use, annotated, formally copyrighted versions. The precursors to the current ICD system were developed to allow morbidity (illness) and mortality (death) statistics to be compared across nations. ICD-9-CM coding, however, has come to play a major role in reimbursement to hospitals. Since 1983, it has been used for determining

EXHIBIT 1.4. *Excerpt from the ICD-9-CM Disease Index***ARTHROPATHIES AND RELATED DISORDERS (710-719)****Excludes: disorders of spine (720.0-724.9)**

710 Diffuse diseases of connective tissue

Includes: all collagen diseases whose effects are not mainly confined to a single system

Excludes: those affecting mainly the cardiovascular system, i.e., polyarteritis nodosa and allied conditions (446.0-446.7)

- 710.0 Systemic lupus erythematosus
 - Disseminated lupus erythematosus
 - Libman-Sacks disease

Use additional code to identify manifestation, as:

- endocarditis (424.91)
- nephritis (583.81)
- chronic (582.81)
- nephrotic syndrome (581.81)

Excludes: lupus erythematosus (discoid) NOS (695.4)

- 710.1 Systemic sclerosis
 - Acrosclerosis
 - CRST syndrome
 - Progressive systemic sclerosis
 - Scleroderma

Use additional code to identify manifestation, as:

- lung involvement (517.2)
- myopathy (359.6)

Excludes: circumscribed scleroderma (701.0)

- 710.2 Sicca syndrome
 - Keratoconjunctivitis sicca
 - Sjögren's disease
- 710.3 Dermatomyositis
 - Poikilodermatomyositis
 - Polymyositis with skin involvement
- 710.4 Polymyositis
- 710.5 Eosinophilia myalgia syndrome
 - Toxic oil syndrome

Use additional E to identify drug, if drug induced

- 710.8 Other specified diffuse diseases of connective tissue
 - Multifocal fibrosclerosis (idiopathic) NEC
 - Systemic fibrosclerosing syndrome

- 710.9 Unspecified diffuse connective tissue disease
 - Collagen disease NOS

Source: National Center for Health Statistics, 2004.

the *diagnosis related group (DRG)* into which a patient is assigned. DRGs are the basis for determining appropriate inpatient reimbursements for Medicare, Medicaid, and many other health care insurance beneficiaries. Accurate ICD-9-CM coding has as a consequence become vital to accurate institutional reimbursement. Exhibit 1.4 is an excerpt from the ICD-9-CM classification system. It shows the system in its text form, but large health care organizations generally use encoders, computer applications

that facilitate accurate coding. Whether a book or text file or encoder is used, the classification system is the same.

It should be noted that a tenth revision of the ICD has been published by the World Health Organization and is widely used in countries other than the United States. The U.S. government has published draft modifications of ICD-10, but these have not yet been finalized and adopted for use in this country. The original adoption date for ICD-10-CM was to be late 2001, but as of this writing it has not been released. The conversion from ICD-9-CM to ICD-10-CM will be a tremendous undertaking for health care organizations. ICD-10 includes substantial increases in content and many structural changes. When the U.S. modification is released, all health care providers will need to adjust their systems to handle the conversion from ICD-9-CM to ICD-10-CM.

CPT

The American Medical Association (AMA) publishes an updated Current Procedural Terminology each year. Unlike ICD-9-CM, CPT is copyrighted, with all rights to publication and distribution held by the AMA. CPT was first developed and published in 1966. The stated purpose for developing CPT was to provide a uniform language for describing medical and surgical services. In 1983, however, the government adopted CPT, in its entirety, as the major component (known as Level 1) of the Healthcare Common Procedure Coding System (HCPCS). Since then CPT has become the standard for physician's office, outpatient, and ambulatory care coding for reimbursement purposes. Exhibit 1.5 is a patient encounter form with examples of HCPCS/CPT codes.

Coding Standards

As coding has become intimately linked to reimbursement, directly determining the amount of money a health care organization can receive for a claim from insurers, the government has increased its scrutiny of coding practices. There are official guidelines for accurate coding, and health care facilities that do not adhere to these guidelines are liable to charges of fraudulent coding practices. In addition the Office of Inspector General of the Department of Health and Human Services (HHS OIG) publishes compliance guidelines to facilitate health care organizations' adherence to ethical and legal coding practices. The OIG is responsible for (among other duties) investigating fraud involving government health insurance programs. More specific information about compliance guidelines can be found on the OIG Web site (www.oig.hhs.gov) (HHS OIG, 2004).

INTERNAL DATA AND INFORMATION: AGGREGATE—CLINICAL

In the previous section we examined different sets of clinical and administrative data that are collected during or in the time closely surrounding the patient encounter. Patient records, uniform billing information, and discharge data sets are the main sources of the data that go into the literally hundreds of aggregate reports or queries that are developed and used by providers and executives in health care organizations. Think of these source data as one or more data repositories, with each data element available to health care providers and executives. What can these data tell you about the organization and the

EXHIBIT 1.5. *Patient Encounter Form*

Pediatric Associates P.A. 123 Children's Avenue Anytown, USA

Office Visits

99211 Estab Pt—minimal	Preventive Medicine—New
99212 Estab Pt—focused	99381 Prev Med 0–1 years
99213 Estab Pt—expanded	99382 Prev Med 1–4 years
99214 Estab Pt—detailed	99383 Prev Med 5–11 years
99215 Estab Pt—high complexity	99384 Prev Med 12–17 years
	99385 Prev Med 18–39 years

99201 New Pt—problem focused	Preventive Medicine—Established
99202 New Pt—expanded	99391 Prev Med 0–1 years
99203 New Pt—detailed	99392 Prev Med 1–4 years
99204 New Pt—moderate complexity	99393 Prev Med 5–11 years
99205 New Pt—high complexity	99394 Prev Med 12–17 years
	99395 Prev Med 18–39 years

99050 After Hours	99070 10 Arm Sling
99052 After Hours—after 10 pm	99070 11 Sterile Dressing
99054 After Hours—Sundays and Holidays	99070 45 Cervical Cap
Outpatient Consult	
99241 99242 99243 99244 99245	

Immunizations, Injections, and Office Laboratory Services

90471 Adm of Vaccine 1	81000 Urinalysis w/ micro
90472 Adm of Vaccine >1	81002 Urinalysis w/o micro
90648 HIB	82270 Hemocult Stool
90658 Influenza	82948 Dextrostix
90669 Pevnar	83655 Lead Level
90701 DTP	84030 PKU
90702 DT	85018 Hemoglobin
90707 MMR	87086 Urine Culture
90713 Polio Injection	87081 Throat Culture
90720 DTP/HIB	87205 Gram Stain
90700 DTaP	87208 Ova Smear (pin worm)
90730 Hepatitis A	87210 Wet Prep
90733 Meningococcal	87880 Rapid Strep
90744 Hepatitis B 0–11	
90746 Hepatitis B 18+ years	

Diagnosis

Patient Name _____
 No. _____
 Date _____
 Time _____
 Address _____
 DOB _____
 Name of Insured _____ ID _____
 Insurance Company _____
 Return Appointment _____

care provided to patients? How can you process these data into meaningful information? The number of aggregate reports that could be developed from patient records or patient accounting information is practically limitless, but there are some common categories of clinical, administrative, and combined reports that the health care executive will likely encounter. We will discuss a few of these in this and the following sections.

On the clinical side, disease indexes and specialized registers are often used.

Disease and Procedure Indexes

Health care organization management often wants to know summary information about a particular disease or treatment. Examples of questions that might be asked are: What is the most common diagnosis in the facility? What percentage of diabetes patients are African American? What is the most common procedure performed on patients admitted with gastritis (or heart attack or any other diagnosis)? Traditionally, such questions have been answered by looking in disease and procedure indexes. Prior to the widespread use of databases and computers, disease and procedure indexes were large card catalogues or books that kept track of the numbers of diseases treated and procedures occurring in a facility by disease and procedure ICD codes. Now that databases and computers are common, the disease and procedure index function is generally handled as a component of the patient medical record system or the registration and discharge system. The retrieval of information related to diseases and procedures is still based on ICD-9-CM and CPT codes, but the queries are limitless. Users can search the disease and procedure

FIGURE 1.5. *Sample Diabetes Query Screen*

The screenshot shows a web-based interface for a "Diabetes Summary" query. At the top, there are buttons for "System Message" and "Program...". Below that, the title "Diabetes Summary" is followed by "Print...", "Filter", "Remove...", and "Lookup Patient". A note says "Click on a column header to sort by that column". A summary bar indicates "Total records for this filter criteria: 6" and "View records from 1 to 6". The main data is presented in a table with the following columns: "All on/All off", "NAME", "MRN", "DOB", "PCP", "PAYOR", "PLAN EFF DATE", "PROGRAM STATUS", and "PAYOR STATUS".

All on/All off	NAME	MRN	DOB	PCP	PAYOR	PLAN EFF DATE	PROGRAM STATUS	PAYOR STATUS
<input type="checkbox"/>	Andrew, Jennifer	54321	02/01/1972	Minkoff, Neil	HPHC	10/15/2000	Non-Compliant	Eligible
<input type="checkbox"/>	Balentine, Lisa	12345	10/08/1969	Bero, Cindy	TAHP	11/15/2001	Non-Compliant	Eligible
<input type="checkbox"/>	Bunny, Easter	34567	04/01/1942	Bero, Cindy	HPHC	10/08/1998	Non-Compliant	Eligible
<input type="checkbox"/>	Claus, Santa	23456	12/23/1900	Gitner, Lisa	HPHC	06/02/2003	Non-Compliant	Not Yet Elig
<input type="checkbox"/>	Fairy, Tooth	45678	03/18/1960	Bero, Cindy	HPHC	10/15/2000	Non-Compliant	Eligible
<input type="checkbox"/>	Kramer, Cosmo	56789	05/06/1989	Bero, Cindy	HPHC	02/14/2002	Non-Compliant	Eligible

At the bottom of the screen, it displays "Test / Current User: Cynthia Bero / RSO: DRSO / Group: DGROUP / Program: DIAB" and "PCHI Help Desk: (781)433-3757". The status bar at the very bottom shows "Done" and "Local intranet".

Source: Partners HealthCare

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database for general frequency statistics for any number of combinations of data. Figure 1.5 is an example of a screen resulting from a query for a list of diabetes patients.

Specialized Registers

Another type of aggregate information that has benefited tremendously from the use of computerized databases is the specialized register. Registers are lists that generally contain the names, and sometimes other identifying information, of patients seen in a particular area of the health care facility. A health facility might want an accounting of patients seen in the emergency department or operating room, for example. In general a register allows data retrieval in a particular area of the organization. With the increased availability of large databases, many of these registers can be created on an ad hoc basis.

Trauma and tumor registries are specialized registries that often involve data collection beyond that done for the patient medical record and patient billing process. These registries may be found in facilities with high-level trauma or cancer centers. They are used to track information about patients over time and to collect detailed information for research purposes.

Many other types of aggregate clinical reports are used by health care providers and executives. The easy-to-use, ad hoc reporting that is available with databases today gives providers and executives access to any number of summary reports based on the data elements collected during the patient encounter.

INTERNAL DATA AND INFORMATION: AGGREGATE—ADMINISTRATIVE

Just as with clinical aggregate reports, a limitless number of reports can be created for administrative functions from today's databases and data repositories. Commonly used administrative aggregate reports include basic health care statistical reports, claims denial reports, and cost reports. (In keeping with our focus on information unique to health care we will not discuss traditional income statements, cash flow statements, or other general accounting reports.) Two basic types are described in this section: Medicare cost reports and basic health care statistical reports.

Medicare Cost Reports

Exhibit 1.6 is a portion of a Medicare cost report for a skilled nursing facility (CMS-2552-96). Medicare cost reports are filed annually by all hospitals, home health agencies, skilled nursing facilities, and hospices that accept Medicare or Medicaid. These reports must be filed within a specified time after the end of the fiscal year and are subject to scrutiny via compliance audits. The cost report contains such provider information as facility characteristics, utilization data, costs and charges by cost center (in total and for Medicare), Medicare settlement data, and financial statement data. Preparation instructions and the actual forms can be found on the CMS Web site (www.cms.gov). Medicare cost reports are used by CMS not only to determine portions of an individual facility's reimbursement but also to determine Medicare rate adjustments, cost limits, and various wage indexes.

EXHIBIT 1.6. Section of a Medicare Cost Report for a Skilled Nursing Facility

3690 (Cont.)		CMS FORM-2552-96			06-03	
COMPUTATION OF INPATIENT OPERATING COST		PROVIDER NO.:	COMPONENT NO.:	PERIOD: FROM _____ TO _____	WORKSHEET D-1, PARTS III & IV	
Check applicable boxes	<input type="checkbox"/> Title V - IIP <input type="checkbox"/> Title XVIII, Part A <input type="checkbox"/> Title XIX <input type="checkbox"/> LP	<input type="checkbox"/> Hospital <input type="checkbox"/> Subprovider	<input type="checkbox"/> NF <input type="checkbox"/> JCF/MR <input type="checkbox"/> SNF	<input type="checkbox"/> PPS <input type="checkbox"/> TRFRA <input type="checkbox"/> Other		
PART III - SKILLED NURSING FACILITY, OTHER NURSING FACILITY, AND ICF/MR ONLY						
66	Skilled nursing facility/other nursing facility/ICF/MR routine service cost (line 37)				66	
67	Adjusted general inpatient routine service cost per diem (line 66 ÷ line 2)				67	
68	Program routine service cost (line 9 x line 67)				68	
69	Medically necessary private room cost applicable to Program (line 14 x line 35)				69	
70	Total Program general inpatient routine service costs (line 68 + line 69)				70	
71	Capital-related cost allocated to inpatient routine service costs (from Worksheet B, sum of Parts II and III, column 27)				71	
72	Per diem capital-related costs (line 71 ÷ line 2)				72	
73	Program capital-related costs (line 9 x line 72)				73	
74	Inpatient routine service cost (line 70 minus line 73)				74	
75	Aggregate charges to beneficiaries for excess costs (from provider records)				75	
76	Total Program routine service costs for occupancy to the cost limitation (line 74 minus line 75)				76	
77	Inpatient routine service cost per diem limitation				77	
78	Inpatient routine service cost limitation (line 9 x line 77)				78	
79	Reasonable inpatient routine service costs (see instructions)				79	
80	Program inpatient ancillary services (see instructions)				80	
81	Utilization review - physician compensation				81	
82	Total Program inpatient operating costs (sum of lines 79 through 81)				82	
PART IV - COMPUTATION OF OBSERVATION BED PASS THROUGH COST						
83	Total observation bed days (see instructions)				83	
84	Adjusted general inpatient routine cost per diem (line 27 ÷ line 2)				84	
85	Observation bed cost (line 83 x line 84) (see instructions)				85	
COMPUTATION OF OBSERVATION BED PASS THROUGH COST						
		Cost	Routine Cost (from line 27)	col. 1 + col. 2	Total Observation Bed Cost (from line 85)	Observation Bed Pass Through Cost (col. 3 x col. 4) (see instructions)
		1	2	3	4	5
86	Old capital-related cost					86
87	New capital-related cost					87
88	Non Physician Anesthesia					88
89	Medical Education					89

FORM CMS-2552-96 (11/96) (INSTRUCTIONS FOR THIS WORKSHEET ARE PUBLISHED IN CMS PUB. 15-11, SECTIONS 3622.3-3622.4)

Health Care Statistics

The categories of statistics that are routinely gathered for health care executives or others include

- *Census statistics.* These data reveal the number of patients present at any one time in a facility. Several commonly computed rates are based on this census data, including the average daily census and bed occupancy rates.
- *Discharge statistics.* This group of statistics is calculated from data accumulated when patients are discharged. Some commonly computed rates based on discharge

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statistics are average length of stay, death rates, autopsy rates, infection rates, and consultation rates.

General health care statistics are frequently used to describe the characteristics of the patients within an organization. They may also provide a basis for planning and monitoring patient services.

INTERNAL DATA AND INFORMATION: AGGREGATE—COMBINING CLINICAL AND ADMINISTRATIVE

Health care executives are often interested in aggregate reports that combine clinical and administrative data. Ad hoc statistical reports and trend analyses may draw from both clinical and administrative data sources, for example. These reports may be used for the purpose of improving customer service, quality of patient care, or overall operational efficiency. Examples of aggregate data that relate to customer service are the average time it takes to get an appointment at a clinic and the average referral volume by physician. Quality of care aggregate data take many forms, revealing such things as infection rates and unplanned returns to the operating room. Cost per case, average reimbursement by DRG, and staffing levels by patient acuity are examples of aggregate data that could be used to improve efficiency. These examples represent only a few uses for combined aggregate data. Again, with today's computerized clinical and administrative databases, any number of ad hoc queries, statistical reports, and trend analyses should be readily available to health care executives. Health care executives need to know what source data are collected and must be able to trust in data accuracy. Executives should be creative in designing aggregate reports to meet their decision-making needs.

EXTERNAL DATA AND INFORMATION: COMPARATIVE

Comparative data and information, gathered internally and externally, are used for both clinical and administrative purposes by health care organizations.

Outcome Measures and Balanced Scorecards

Comparative data and information are often aligned with organizations' quality improvement efforts. For example, an organization might collect data on specific outcome measures and then use this information in a benchmarking process. *Outcome measures* are the measurable results of a process. This could be a clinical process, such as a particular treatment, or an administrative process, such as a claim filing. Outcome measures can be applied to individuals or groups. An example of a simple clinical outcome measure is the percentage of similar lab results that occur within a month for a particular medical group. An example of an administrative outcome measure is the percentage of claims denied by Medicare during one month. Implicit in the idea of measuring outcomes is that they can be usefully compared over time or against a set standard. The process of comparing one or more outcome measures against a standard is called *benchmarking*. Outcome measures and benchmarking may be limited to internally set standards; however, frequently they are involved in comparisons with externally generated benchmarks or standards.

Balanced scorecards are another method for measuring performance in health care organizations. The concept of the balanced scorecard meets executives' need to design measurement systems aligned with their organization's strategy goals (Kelly, 2007). Balanced scorecard systems examine multiple measures, rather than the single set of measures common in traditional benchmarking. Suppose a health care organization uses "lowest-cost service in the region" as an outcome measure for benchmarking its performance against that of like facilities in the region. The organization does very well over time on this measure. However, you can see that it may be ignoring some other important performance indicators. What about patient satisfaction? Employee morale? Patient health outcomes? Balanced scorecards employ multiple measures along several dimensions to ensure that the organization is performing well across the board. The *clinical value compass* is a similar method for measuring clinical process across multiple dimensions (Kelly, 2007).

Comparative Health Care Data Sets

Organizations may select from many publicly and privately available health care data sets for benchmarking. A few of the more commonly accessed data sets are listed in Exhibit 1.7 (along with Web site addresses). These data sets are divided into five categories: patient satisfaction, practice patterns, health plans, clinical indicators, and population measures. Many of the listed Web sites provide examples of the data sets, along with detailed information about their origins and potential uses.

Patient Satisfaction Patient satisfaction data generally come from survey data. The three organizations listed in Exhibit 1.7, NRC+Picker, Press Ganey, and the health care division of Gallup, provide extensive consulting services to health care organizations across the country. One of these services is to conduct patient satisfaction surveys. There are other organizations that provide similar services, and some health care organizations undertake patient satisfaction surveys on their own. The advantage of using a national organization is the comparative database it offers, which organizations can use for benchmarking purposes.

Practice Patterns The Commonwealth Fund Quality Chartbook series and the Dartmouth Atlas of Health Care allow health care organizations to view practice patterns across the United States. The Dartmouth Atlas provides an online interactive tool that allows organizations to customize comparative reports based primarily on Medicare data (Figure 1.6).

Health Plans The mission of the National Committee for Quality Assurance (NCQA) is "to improve the quality of health care." NCQA's efforts are organized around two major activities, accreditation and performance measurement. (We will discuss the accreditation activity in Chapter Three.) To facilitate these activities NCQA developed the Health Plan Employer Data and Information Set (HEDIS) in the late 1980s. HEDIS currently consists of seventy-one measures across eight domains of

EXHIBIT 1.7. Sources of Comparative Data for Health Care Managers

Patient Satisfaction

NRC+Picker (National Research Corporation and the Picker Institute): nrcpicker.com
Press Ganey Associates: www.pressganey.com
The Gallup Organization: healthcare.gallup.com

Practice Patterns

Leatherman, S., and D. McCarthy. 2002. *Quality of Healthcare in the United States: A Chartbook*. New York: The Commonwealth Fund.
http://www.commonwealthfund.org/publications/publications_show.htm?doc_id=221238
The Center for the Evaluative Clinical Sciences, Dartmouth Medical School. 2008. *The Dartmouth Atlas of Healthcare*. Chicago: The American Hospital Publishing Company.
www.dartmouthatlas.org.

Health Plans

National Committee for Quality: www.ncqa.org

Clinical Indicators

Joint Commission on Accreditation of Healthcare Organizations

- Quality Check: www.qualitycheck.org

Centers for Medicare and Medicaid Services Medicare Clinical Indicators

- Hospital Compare: www.hospitalcompare.hhs.gov
- Nursing Home Compare: <http://www.medicare.gov/NHCompare/>
- Home Health Compare: <http://www.medicare.gov/HHCompare/>
- Physician Focused Quality Initiative: <http://www.cms.hhs.gov/pqri/>

Population Measures

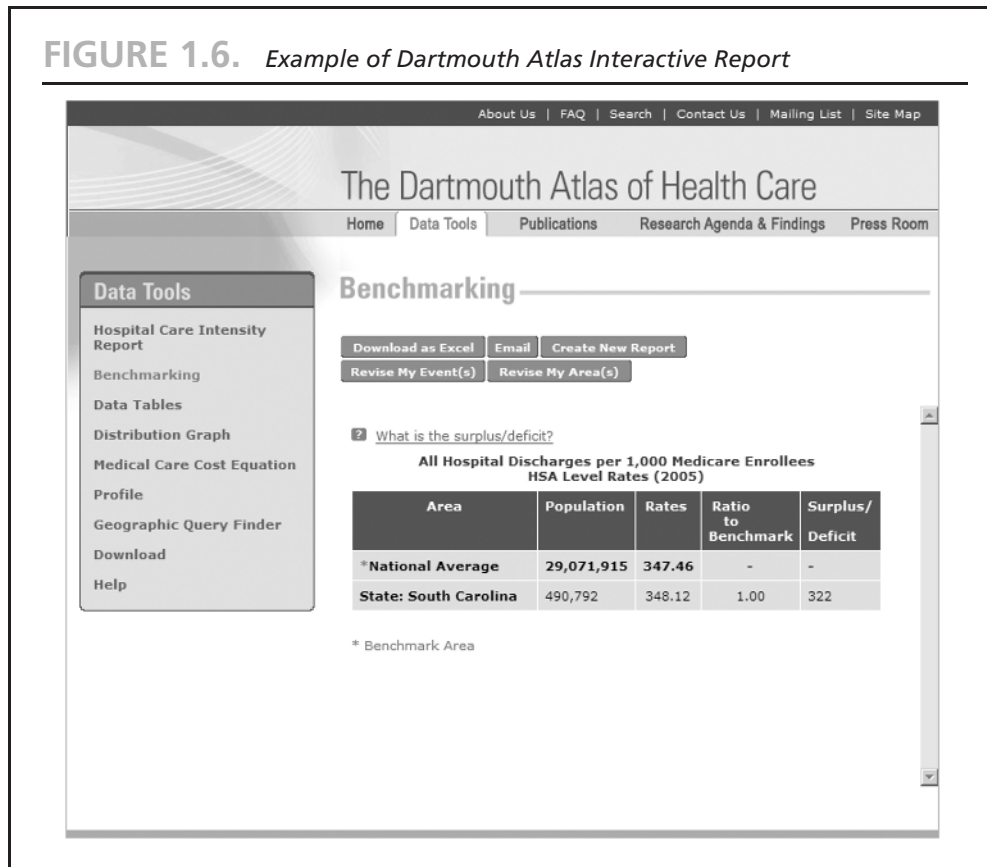
State and Local Health Departments
Centers for Disease Control and Prevention, National Center of Health Statistics:
www.cdc.gov/nchs
AHRQ—Health Care Innovations Exchange (including Quality and Disparities Reports):
<http://www.innovations.ahrq.gov>

Source: Used with permission from *Applying Quality Management in Healthcare*, 2nd Edition, by Diane Kelly (Chicago: Health Administration Press, 2007), p. 185.

care and is used by more than 90 percent of America's health plans. A few of the health issues measured by HEDIS are (NCQA, 2008d)

- Asthma medication use
- Persistence of beta-blocker treatment after a heart attack
- Controlling high blood pressure
- Comprehensive diabetes care

FIGURE 1.6. Example of Dartmouth Atlas Interactive Report



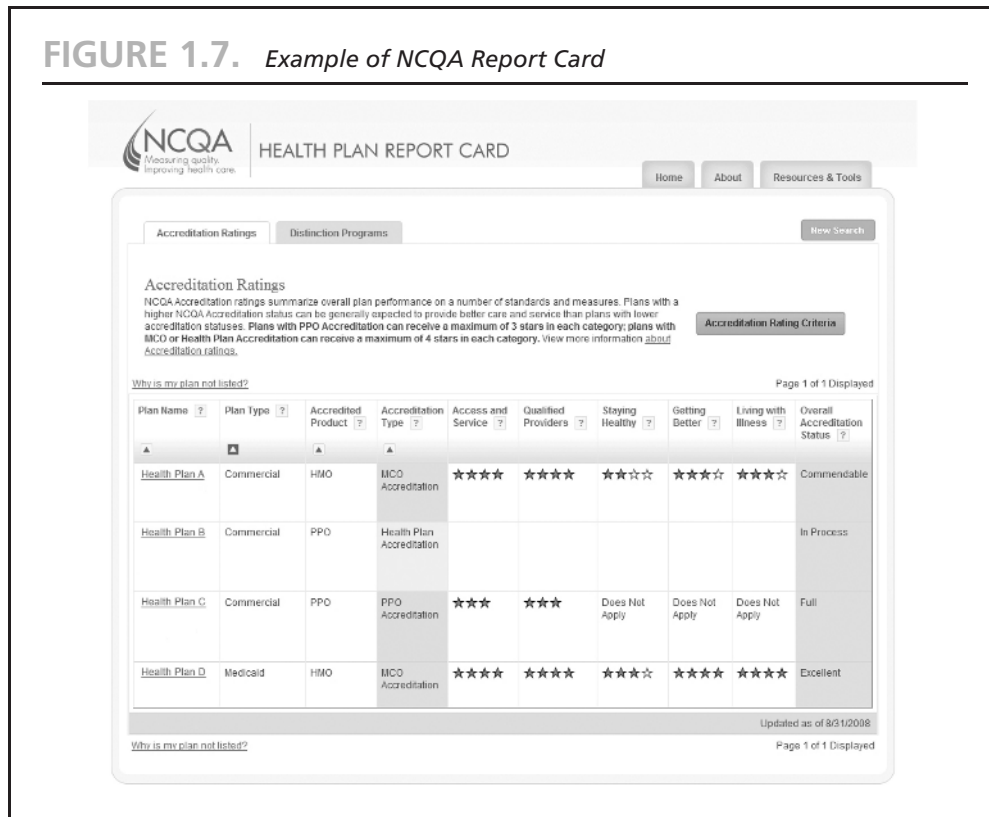
Source: Dartmouth Institute for Health Policy & Clinical Practice, 2008.

- Breast cancer screening
- Antidepressant medication management
- Childhood and adolescent immunization status
- Advising smokers to quit

The NCQA Web site offers an interactive tool for obtaining *report cards* on specific health plans that have undergone NCQA accreditation. Multiple health plans can be compared to each other and against national averages. The comparison of two South Carolina health plans in Figure 1.7 is an example of an NCQA report card.

Clinical Indicators Both The Joint Commission and CMS are committed to the improvement of clinical outcomes. The Joint Commission's Quality Check has evolved since its introduction in 1994 to become a comprehensive guide to health care organizations in the United States. Visitors to www.qualitycheck.org can search for health care organizations by a variety of parameters, identify accreditation status, and download hospital performance measures. In addition the Joint Commission-accredited organizations

FIGURE 1.7. Example of NCQA Report Card



Source: NCQA, 2008c.

can get a summary of their performance measured in terms of the Joint Commission’s National Patient Safety Goals and Quality Improvement Goals (The Joint Commission, 2008a).

The CMS quality programs are aimed at hospitals, nursing homes, home care, and physicians’ practices. The Hospital Compare Web site (www.hospitalcompare.hhs.gov) and interactive comparison tool was developed in collaboration with other public and private organizational members of the Hospital Quality Alliance. Comparison reports for hospitals can be created based on location and on specific medical conditions or surgical procedures. The resulting reports provide information on process of care measures, outcome of care measures, surveys of patient experiences, and medical payment information (HHS, 2008c).

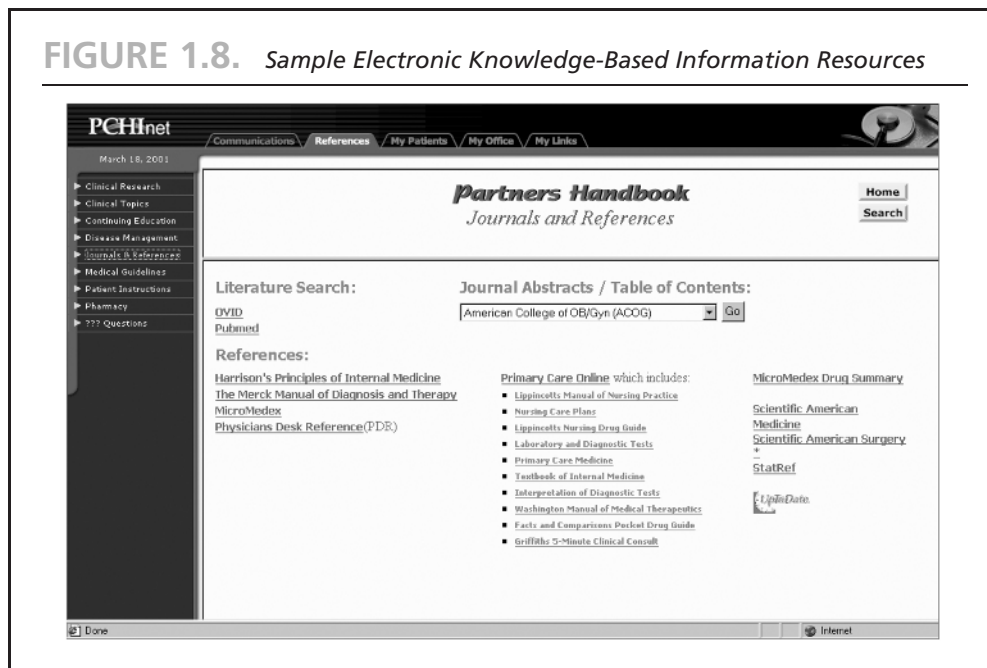
Population Measures Other comparative data sources that could be useful for the health care manager are those that provide population measures. Most state health departments collect statewide morbidity and mortality data. These data generally come from a variety of sources, including hospital and provider bills. At the national level both the Centers for Disease Control and Prevention (CDC) and the Agency for Healthcare Research and Quality (AHRQ) provide a wealth of population-based health care data.

EXTERNAL DATA AND INFORMATION: EXPERT OR KNOWLEDGE BASED

The Joint Commission (2004) defines knowledge-based information as, “A collection of stored facts, models, and information that can be used for designing and redesigning processes and for problem solving. In the context of the [The Joint Commission accreditation] manual, knowledge-based information is found in the clinical, scientific, and management literature.” Health care executives and health care providers rely on knowledge-based information to maintain their professional competence and to discover the latest techniques and procedures. The content of any professional journal falls into the category of knowledge-based information. Other providers of knowledge-based information are the many online health care and health care management references and resources. With the development of rule-based computer systems, the Internet, and push technologies, health care executives and providers are finding that they often have access to vast quantities of expert or knowledge-based information at the time they need it, even at the patient bedside. Most clinical and administrative professional organizations not only publish print journals but also maintain up-to-date Web sites where members or other subscribers can get knowledge-based information. Several organizations also provide daily, weekly, or other periodic e-mail notifications of important events that are pushed onto subscribers’ personal computers.

Knowledge-based information can also be incorporated into electronic medical records or health care organization Web sites. Figure 1.8 is a sample of the knowledge-based information resources available through an electronic medical record interface.

FIGURE 1.8. *Sample Electronic Knowledge-Based Information Resources*



Source: Partners HealthCare

SUMMARY

Without health care data and information there would be no need for health care information systems. Health care information is a valuable asset in health care organizations, and it must be managed like other assets. To manage information effectively, health care executives should have an understanding of the sources and uses of health care data and information. In this chapter we introduced a framework for discussing types of health care information, looked at a wide range of internal data and information whose creation and use must be managed in health care organizations, and also discussed a

few associated processes that are typically part of patient encounters. We examined not only patient-specific (individual) internal information but also aggregate information. We addressed both clinical and administrative data and information in our discussions. In addition we examined several types of external data and information that are available for use by health care organizations, including comparative and knowledge-based data and information. Throughout, our view of data and information was organizational and the focus was on that information that is unique to health care.

KEY TERMS

Aggregate data and information
American Health Information
Management Association (AHIMA)
American Hospital Association
American Medical Association (AMA)
Balanced scorecards
Benchmarking
Centers for Disease Control and
Prevention (CDC)
Centers for Medicare and Medicaid
CMS-1500
Comparative data and information
Current Procedural Terminology (CPT)
Electronic health record
Electronic medical record
External data and information
Health care information
Health information
Health Insurance Portability and
Accountability Act (HIPAA)
Health Plan Employer Data and
Information Set (HEDIS)

Internal data and information
International Classification of Diseases,
Clinical Modification, 9th edition
(ICD-9-CM)
The Joint Commission
Knowledge-based data and information
Minimum Data Set (MDS)
National Provider Identifier (NPI)
Office of the Inspector General (OIG)
Outcomes measures
Patient records
Patient-specific data and information
Personal health record
Protected health information
Quality Check
UB-04
Uniform Ambulatory Care Data Set
(ACDS)
Uniform Bill
Uniform Hospital Discharge Data Set
(UHDDS)

LEARNING ACTIVITIES



1. Contact a health care facility (hospital, nursing home, physician's office, or other organization) to ask permission to view a sample of the health records they maintain. These records may be in paper or electronic form. Answer the following questions for each record:
 - a. What is the primary reason (or condition) for which the patient was admitted to the hospital?
 - b. How long has the patient had this condition?
 - c. Did the patient have surgery during this admission? If so, what procedure(s) was (were) done?
 - d. Did the patient experience any complications during this admission? If so, what were they?
 - e. How does the physician's initial assessment of the patient compare with the nurse's initial assessment? Where in the record would you find this information?
 - f. To where was the patient discharged?
 - g. What were the patient's discharge orders or instructions? Where in the record should you find this information?
2. Make an appointment to meet with the business manager at a physician's office or health care clinic. Discuss the importance of ICD-9-CM coding or CPT coding (or both) for that office. Ask to view the books or encoders that the office uses to assign diagnostic and procedure codes. After the visit, write a brief summary of your findings and impressions.
3. Visit www.oig.hhs.gov. What are the major responsibilities of the Office of Inspector General as they relate to coded health care data? What other responsibilities related to health care fraud and abuse does this office have?
4. List and briefly describe several types of aggregate health care reports that you believe would be commonly used by health care executives in a hospital or other health care setting.
5. Using the Internet sites identified in this chapter or found during your own searches, find a report card for one or more local hospitals. If you were trying to make a decision about which hospital to use for health care for yourself or for a family member, would you find this information useful? Why or why not?

