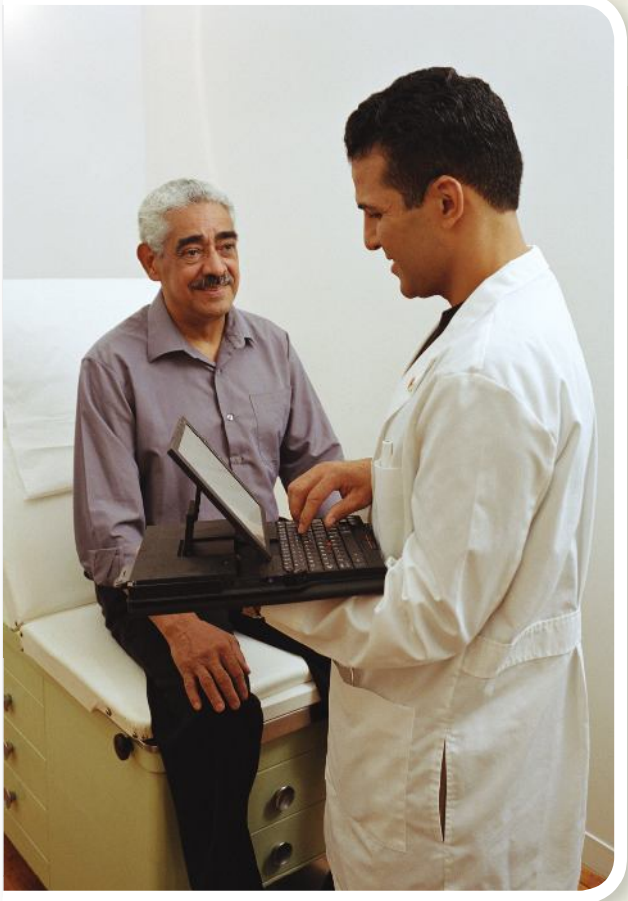
1

An Introduction to Electronic Health Records



Learning Outcomes

After completing Chapter 1, you will be able to:

- **LO 1.1** Explain a brief history of Electronic Health Records (EHRs)
- **LO 1.2** Identify the methods of entering information in an EHR program
- **LO 1.3** List the acronyms for EHRs
- **LO 1.4** Explain the barriers to EHR use
- **LO 1.5** Describe the benefits of EHR
- **LO 1.6** Discuss the current EHR incentives

What You Need to Know

To understand Chapter 1 you will need to know:

- The concept of a patient's chart in a medical office

Key Terms

Terms and abbreviations you will encounter in Chapter 1:

Ambulatory
American Recovery and Reinvestment Act (ARRA)
Application Server Provider (ASP)
Continuity of Care Record (CCR)
Centers for Medicare and Medicaid Services (CMS)
Electronic Health Record (EHR)
Evaluation and Management (E&M) Code
Electronic Medical Record (EMR)
Encrypted
Interoperability
Intranet Technologies
Local Area Network (LAN)
Personal Health Record (PHR)
Point of Care
Return on Investment (ROI)
Tablet PC

LO 1.1 THE ELECTRONIC HEALTH RECORD HISTORY

Focal Point

Improvement to the quality of patient medical care and safety has always been the catalyst for the development of the electronic health record concept.

The concept of a patient's medical information stored electronically instead of on paper is not a new one. In the 1960s, as medical care became more complex, doctors realized that in certain situations the patient's complete health history would not be accessible to them. The availability of comprehensive medical information when needed brought the innovation of storing the patient's information electronically. Improvement of patient medical care was and is the catalyst for the **electronic health record (EHR)**.

Electronic Health Record (EHR)
Electronic health records is the most commonly accepted term for software with a full range of functionalities to store, access, and use patient medical information.

The Mayo Clinic in Rochester, Minnesota, and the Medical Center Hospital of Vermont were some of the first clinics to utilize an electronic medical record system. Their systems were developed in the early 1960s. Over the next two decades, more information and functionalities were added to the electronic medical record system in order to improve patient care. Drug dosages, side effects, allergies, and drug interactions became available electronically to doctors, enabling that information to be incorporated into electronic health-care systems. Electronic diagnostic and treatment plans, which gave doctors information for patient care, proliferated and were integrated into electronic medical record systems. More academic and research institutes developed their own computerized medical record systems as tools to track patient treatment. Overall, the utilization and growth of these computer models was to increase the quality of patient care.

LO 1.2 METHODS OF DATA ENTRY

As computer technology continues to rapidly develop, the versatility of the EHR becomes greater. Access through the EHR to patient information, medical alerts, warnings, drug information, and disease management is now at the **point of care** for the health-care provider in a more user-friendly form. Modes of data entry into the EHR have progressed. Traditionally, a keyboard was the only source for data entry. However, the need for convenience, efficiency, and speed has mandated other methods. Voice recognition systems adapt to a person's voice and speech patterns so that the computer inputs data as the operator speaks. Electronic handwriting recognition is also now available. These two methods of data input are not commonly used because they require that the user repeat the same activity each time the data is needed. More commonly, large bodies of preset text known as "templates" can be easily selected to input into the patient's record. Instead of significant amounts of typing, health-care providers can enter data and access data through a few taps of a stylus pen on a touch screen or the click of a mouse. Touch screens are utilized on such devices as a Notebook Tablet or a **Tablet PC**, making the EHR portable and accessible for easy data entry. The ease of use and speed of the "Tap&Go"™ feature with the Tablet PC has made EHRs more desirable. Traditionally, a stationary computer workstation in each exam room has been cost-prohibitive for the independent physician, or a desktop computer may not be available at the point of care, resulting in delayed data entry, thus patient information is not readily available to other physicians and medical support staff. However, in recent years the increased use of laptops, Tablet PCs, and wireless connectivity has brought greater mobility and lower costs to the health-care provider.

Point of Care
Point of care is the time and place of care being given to the patient from the health-care provider.

Tablet PC
A portable, handheld computer with the ability to document directly on the screen with a stylus pen.

Networks have advanced in security and reliability to enable both flexibility and mobility of the EHR. A **Local Area Network (LAN)** enables computers to communicate together and utilize a main server for the database. The LAN system is very customizable, according to the office needs. This network system may consist of wired connections and/or utilize a wireless network as

Local Area Network (LAN)
A wired and/or wireless connection of computers on a single campus or facility.

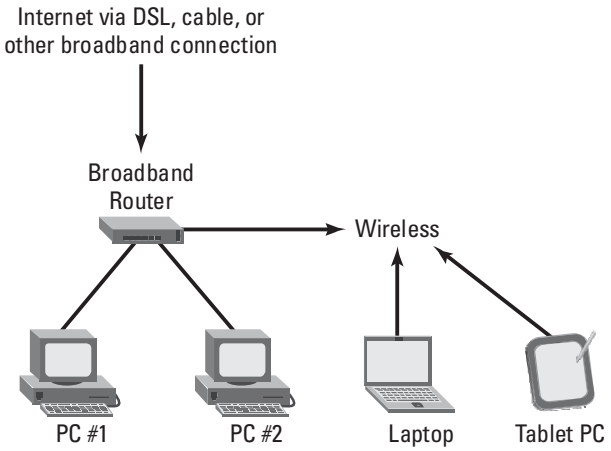


Figure 1.1 Hardwired and wireless LAN system.

illustrated in Figure 1.1. The wireless LAN networks enable health-care providers full or open access to their EHRs from anywhere within their office.

Internet and **intranet technologies** have increased the availability of medical databases that can be shared and accessed across large distances. This remote access gives health-care providers entrance to their EHR from such remote locations as nursing homes, a home office, or hospitals through an Internet connection. These networks are secure and access is limited. Data flowing on the network is also **encrypted** for security.

Another network option for a medical practice is the web-based EHR or **Application Server Provider (ASP)**. The EHR is accessed by the health-care provider via the Internet. In this model, the medical practice does not house the software on a computer server at the medical office. Maintenance, updates, and backups are conducted remotely by the EHR web-hosting company. High-speed

Concept Checkup 1.1 (LO 1.1, LO 1.2)

A. _____ was the initial reason, and continues to be the reason, for the development of electronic health records (EHRs).

B. Several modes of data entry into the EHR programs exist. Some of these methods of data entry are:

1. _____
2. _____
3. _____
4. _____

C. What two types of technologies have increased the availability of medical databases and access to the EHR?

1. _____
2. _____

Focal Point

The affordability of both hardware and software, and the reliability of intranet technology and wireless connectivity have enabled many independent physicians to take advantage of the EHR in recent years.

Intranet Technologies
Intranet technology is a privately maintained computer network that provides secure accessibility to authorized persons, especially members or employees of an organization, enabling the sharing of software, database, and files.

Encrypted
When computer data is changed from its original form to be transmitted securely so as to be unintelligible to unauthorized parties and then decrypted back into its original form for use.

Application Server Provider (ASP)
This enables a doctor's office to access an EHR via the Internet, whereas the EHR software and database are housed and maintained by a separate company in a remote location.

Internet connectivity is required in this situation. However, concerns can be the security of the EHR, the speed of downloading and uploading images or large files, and ensuring that the Internet connectivity is always available.[1]

LO 1.3 ACRONYM ALPHABET SOUP

An alphabet soup of acronyms surrounds electronic health records (EHRs). Some of these definitions have been flexible and reveal an evolution of terms and meanings to government agencies and independent associations influencing the field of electronic health records. The differences are not just semantics; the terms have evolved with more and more distinct definitions. They disclose some of the history in the progression of the electronic health record. However, although the following terms and meanings are supplied to help with clarity, the various acronyms can all still be used to describe the concept of an electronic health record.

EHR - Electronic Health Record: Currently, this term is the most commonly accepted and used term for storing and accessing patient medical information electronically. EHR encompasses a full range of functionalities and information including patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, radiology reports, scheduling, transcription, e-prescribing, evaluation and management (office visit level) coding, care alerts, chief complaints, evidence-based decision support, and health maintenance. In the future, an EHR will include a continuity of care record (CCR) and the personal health record (PHR); standards for these functionalities are still being developed.

Electronic Medical Record (EMR)
The term for software that lacks a full range of higher-end functionalities to store, access, and use patient medical information.

EMR - Electronic Medical Record: This term was widely used as the terms migrated away from the computer-based patient record. As definition of terms became clearer, **EMR** came in second to the fully functional EHR. An EMR does not offer certain high-end functionalities such as health maintenance and disease management, care alerts, the CCR (continuity of care record), personal health record functions, or interconnectivity with providers outside the practice.

CPR - Computer-Based Patient Record: This term was one of the first used to conceptualize the idea of an EHR. A computerized patient record is a lifetime patient record that includes all information from all specialties (even dentistry and psychiatry) and is available to all providers (potentially internationally). Because the CPR requires full **interoperability** between EHRs, the CPR is not realistic in the foreseeable future. In the early 1990s there was an initiative to use the CPR; however, the concept evolved into the EMR and EHR.

Interoperability
Interoperability is the ability of a software program to accept, send, or communicate data from its database to other software programs from multiple vendors.

EPR - Electronic Patient Record: EPR is similar to the CPR but does not necessarily contain a patient's lifetime record and does not include dental, behavioral, or alternative care. It focuses on the patient's relevant medical information.

Continuity of Care Record (CCR)
A core set of provider-oriented health data reflecting the most relevant and timely facts about a patient's health care. It is vendor and technology neutral, enabling the access of patient information between health-care providers.

CCR - Continuity of Care Record: The **CCR** is health-provider-oriented and defines a core set of data reflecting the most relevant and timely facts about a patient's health care. The CCR would be a subset of the EHR. Typically it includes patient information, diagnoses, recent procedures, allergies, medications, and future treatment plans. It should be accessible to all care providers whenever needed. The electronic CCR is designed to be vendor and technology neutral, that is, accessible and readable by other electronic systems. The CCR should be updated by the practitioner at the close of a

patient encounter or upon the transfer of data from one caregiver to another, whether inpatient-, outpatient-, or community-based.

PHR - Personal Health Record: The **PHR** allows the patient to become an interactive source of health information and health management through an Internet-based connection to the practice website. Through a secure connection, patients may schedule appointments, request medication refills, access lab or radiology results, and ask questions about their health. Some PHRs enable patients to complete or update family or social histories or even read their medical records and notify providers of incorrect or missing information.

Personal Health Record (PHR)
PHRs allow the patient access via the Internet to store and update personal medical information and make inquires to the patient's health-care provider about prescriptions, appointments, or concerns.

Concept Checkup 1.2 (LO 1.3)

A. What is most commonly accepted term for storing and accessing patient medical information electronically? _____

B. What term was one of the first used to conceptualize the idea of an electronic health record (EHR)?

_____

LO 1.4 BARRIERS TO THE EHR

Although Electronic Health Records (EHRs) bring tremendous benefits to patient care and to the health-care provider, use of the **ambulatory** EHR instead of the paper chart did not become widespread among the independent physicians during the 1990s. Even though the motivation of improved patient care and availability of medical data was present, health-care providers were hesitant to begin using this medical tool. Specific reasons have been hypothesized for the lack of EHR implementation, and they are outlined below.

Ambulatory
The capability of walking or the ability to move from one place to another. In a medical sense it is used to distinguish walking patients from patients who are bedridden, as in an inpatient hospital or skilled nursing facility.

A Lack of Standards for EHR Systems

The content within the systems did not have uniformity for compatibility or interoperability. Various programs offered different features and the exchange of data was not possible. Also, standards for the security of confidential information through encryption or data integrity had not been set. The quality of EHR programs and computer networks was not sufficiently reliable to prevent downtime, thus resulting at times in the lack of access to patient information or medical information. Data for clinical protocols, management of patient care, and decision support through algorithms were not yet standard for EHRs.

Unknown Cost and Return on Investment

Health-care providers found it difficult to accurately calculate costs and **Return on Investment** (**ROI**) with the use of an EHR. The full cost of an EHR includes the software purchase price, additional computer hardware, implementation including the training of staff, customization of the system, ongoing technical support, system maintenance, and future program upgrades. Measuring ROI

Return on Investment (ROI)
The measure, expressed as a percentage, of the amount that is earned on a company's total purchase or investment calculated by dividing the total capital into earnings or financial benefits.

includes intangible, immeasurable, and nonfinancial information, such as improved patient care, patient safety, and more efficient processes. Measurable financial ROI includes increase in income from more accurate coding, greater time efficiency as a result of rapid chart documentation, expanded patient load because of this efficiency, and reduced office supply costs such as paper, charts, and printing supplies. It was difficult to accurately calculate costs and ROI with the use of an EHR.

Difficult to Operate

Doctors perceived that it took more time for data entry than handwriting. A physician order form may have been simpler to handwrite than to process through a computer system. Learning where the information should be entered or accessed was complicated and computers were not always accessible at the point of care. System warnings and medical alerts containing vital information had not been developed. The long-term benefits were difficult for some health-care providers to value over the perceived difficulties of operation.

Focal Point

A lack of feature uniformity and affordability, and change to clinical processes were some of the barriers to the adoption of ambulatory EHRs in the 1990s.

Significant Changes in Clinic Processes

Although an EHR can be customized for specific medical practices, there is always some process change required by the provider and medical staff. An EHR may bring a more rigid structure for entering information than flipping through a paper chart. Adapting to new standards of operation for entering and locating information can be difficult initially. Some EHRs have specifications or specific routines for practicing medicine that the provider may not adapt to easily. The health-care provider may not be able to address and analyze problems in the same ways that may have been done in the past, even though the information in an EHR is more thorough and instantly available. New tools for improved patient care require retraining, new processes, and changes in the medical practice culture.

Lack of Trust and Safety

A concern for the security of the medical record stored electronically instead of on paper is common. Health-care providers may be concerned that the electronic medical record could be altered without their consent or knowledge. Providers must have the assurance that the medical records are safely stored for future accessibility. Power outages, computer "crashes," viruses, concerns about adequate backup, and so on are issues providers must overcome to be confident in using an EHR.

Use of EHR programs, particularly in the small- to medium-sized practices, is expanding rapidly. Nearly 78 percent of physicians in private practice are within this market group of eight or fewer doctors. With the explosive growth of EHR implementation in this segment of the medical community, a great need has been generated for both clerical and clinical support staff that have professional training and exposure to the EHR. Concerns about the transition from traditional paper charts to EHRs are now being overcome. Many of the concerns expressed about EHRs have been addressed more fully in recent years. Although the motivations vary from a practice wanting to simply "become paperless" to another practice wanting to improve patient care, medical clinics are quickly recognizing the incredible tool the EHR is bringing to the medical practice.

Concept Checkup 1.3 (LO 1.4)

A. List the five perceived barriers to the adoption of an EHR.

1. _____
2. _____
3. _____
4. _____
5. _____

B. What is the most rapidly expanding segment of the medical community in terms of EHR implementation?

_____

LO 1.5 BENEFITS OF THE EHR

The promotion of the EHR concept by many organizations is because of the benefits EHRs bring to health care. The Institute of Medicine (IOM) recognized these benefits and in 1991 called for EHRs to be implemented with the elimination of paper-based patient records by 2001. In his 2004 State of the Union address, President George W. Bush stated, "By computerizing health records, we can avoid dangerous medical mistakes, reduce costs, and improve care."[2] President Bush created a sub-Cabinet-level position for a national health information coordinator at the Department of Health and Human Services. In April of 2004, he outlined a plan "to ensure that most Americans have electronic health records within the next 10 years."[3] From that plan, government agencies have been able to promote the use of and overcome barriers for the EHR. Subsequent to the president's plans, Hillary Clinton, then a U.S. Senator, announced a proposal to introduce legislation to encourage development of a national health information infrastructure, including the adoption of EHRs. Although the Bush administration empowered the HHS Department to promote EHRs, the advocacy toward electronic medicine occurred mainly in the private sector.

In 2008, the concerns over reducing costs and improving patient care were echoed by presidential candidate Barack Obama. Mr. Obama promised to sponsor the adoption of EHRs through a sizable government financial commitment as part of a broader economic stimulus package. In its economic recovery plan of 2009, President Obama's administration outlined strategies to spend $19 billion to accelerate the use of computerized medical records in doctors' offices over the coming years.

> *"Our recovery plan will invest in electronic health records and new technology that will reduce errors, bring down costs, ensure privacy, and save lives,"* President Obama stated in his speech to Congress in February 2009.[4]

Industry analysts have identified some major benefits that are motivating physicians toward clinical automation.

Better Clinic Information and Accessibility

Focal Point

Barriers to the adoption of ambulatory EHRs have been addressed in recent years, causing the implementation of EHRs to rapidly increase in the small- to medium-sized medical practice groups.

EHRs bring better clinical information to the health-care provider. Access to the patient's medical information is not limited to the location of the paper chart, but is available at the patient point of care. The health-care provider can easily be informed of past medical history, family medical history, immunization records, and so on. Up-to-date information such as test results, routine and current medications, and allergy information are crucial for informed medical decision making. With the EHR, this information is easily accessible when decisions need to be made. For example, if a patient calls with an issue concerning a current medication, the health-care provider can instantly access the patient's chart on the EHR (even if the provider is not in the medical office), make an informed decision, create a prescription, and document the consultation rapidly with a few mouse clicks or with the Tap&Go™ feature on a Tablet PC. In addition, accessible within the EHR is information regarding drug interactions with current and routine medications, dosage information for the prescription being created, and instant alerts with allergy warnings. With a paper chart environment some information is not retrievable or the provider may not have access to the chart and the process is more complicated and time-consuming.

Patient Safety

Focal Point

Because of the known benefits that EHRs bring to patient health care, many government agencies and private organizations are promoting the use of electronic medical records.

The challenge of reading handwritten notes, orders, and prescriptions has been eliminated with the EHR. Patients' chart information is clear and legible. Reports and letters to other specialists and patients are comprehensive, professional, and easy to create. Chart information is always accessible and found in the same place. Paper charts, on the other hand, can become cluttered with a lot of necessary but misplaced information.

EHRs provide routine information and reminders for the health-care provider. Health maintenance screenings can be tracked automatically by patient age, gender, past diagnoses, past medical procedures, or even family medical history, which enables the provider to be proactive in patient care. The EHR can evaluate the patient information and alert the practitioner regarding tests, procedures, or screenings that are due. With automated medical analysis the health-care provider can offer more consistent patient care. For example, an influenza vaccination alert may be offered to all patients, whereas a mammogram may be advised because of the patient's gender and age. A routine colonoscopy may be recommended by the EHR because the patient is younger than 50 years old and has a family history of colon cancer. Support for medical decision making is accessible to the health-care provider through an EHR. Decision-making support gives information about medications, tests, and care plans. The practice of medicine has become more and more complex because medical procedures, drugs, and treatment plans have continued to evolve. There are over 2,000 "best practice guidelines" that have been developed by reputable medical organizations.[5] The Illinois State Medical Society, for example, states that:

> "Practice guidelines, based on 'evidence-based medicine,' often are very complex, with what is best for a patient with a particular condition depending on a variety of factors, including the patient's history, the patient's family history, other conditions of the patient and patient medications, and the availability of different modes of treatment in a community. No physician is able to keep up with all the latest practices and apply them to the particular conditions of each of his or her patients."[6]

The national debate and exposure to patient safety is driving the medical industry toward drastically reducing errors through e-prescription writing and e-medical orders. EHR programs now offer physicians detailed summaries of past medical records, family medical history, and allergy information to reinform medical staff about treatment choices, clinical decisions, and diagnoses.

Better Patient Care

Another benefit driving the use of EHRs is better patient care. Improved patient care is a direct result of the availability of more thorough clinical information. Because the EHR provides the health-care practitioner with alerts or notices to better practice guidelines, patients receive the most current standard of care consistently. Patient records in most EHRs have treatment protocols available and recommendations of tests that better inform the health-care provider.

Kaiser Permanente of Ohio saw the following practice guidelines compliance improvements after implementing a medical automated record system and adding reminders at the point of care:

- Aspirin use in patients with coronary artery disease increased from 56 percent to 82 percent in 27 months, while lipid-lowering agents increased from 10 percent to 20 percent in 7 months.
- ACE inhibitor use in patients with congestive heart failure increased from 54 percent to 66 percent.
- Stratification (staging) for patients with diabetes mellitus and asthma increased to 76 percent in 26 months and 65 percent in 29 months, respectively. In addition, referrals to podiatry for medium- and high-risk diabetics increased from 14 percent to 66 percent in 12 months.
- Percentage of hypertensive patients taking nonrecommended medications decreased from 16 percent to 12 percent in 12 months.
- Percentage of patients older than 64 years of age who were offered an influenza vaccination during a primary care visit increased from 56 percent to 69 percent in 36 months.[7]

Patients can also receive patient instruction sheets specifically concerning their diagnosis or the planned treatments. These instructions are easily accessed in the EHR by the provider and either printed out or emailed to the patient. The EHR reports and records the processing of treatment plans, the instructions for procedural preparation, or post-treatment care for the patient to safeguard the health-care provider against liabilities.

The EHR will access pertinent patient information and the most current practice guidelines, thus providing the health-care practitioner with the best tools for improved medical decision making.

Drug recalls are much more proficiently handled. Reports generated through an EHR can document which patients are currently taking specific medications. Form letters can be quickly generated, alerting patients to the recall and requesting an office visit appointment to discuss future plans. The alternative process in a paper chart environment is time-consuming and open to errors. A staff member would have to review all paper charts looking for the specific prescriptions or a letter would need to be generated to all patients informing them of the drug recall. These options are costly processes to a medical practice trying to provide good patient care.

EHRs reduce the repetition of labs and tests because all medical test information is clearly displayed and readily accessed. Lost or delayed test and/or lab results are not as common with EHR programs, resulting in a quicker diagnosis and treatment plan for the patient.

Focal Point

Immediate access to all patient medical information promotes informed medical decisions. Automated medical alerts and the reduction in handwriting promote patient safety.

Efficiency and Savings

A major motivation for widespread use of an EHR is both efficiency and financial savings. One obvious savings is the elimination of the paper-based chart, storage costs, and retrieval costs. One study cites "that a chart pull costs $20 at Scott and White Memorial Hospital, Clinic, and Health Systems in Temple, Texas. Their electronic chart solution reduced electronic chart pulls to less than $1 apiece."[8]

Electronic messaging systems built into an EHR enable speedier communication among staff members. Communication to the health-care provider concerning diagnoses, drug refills, pre-authorizations for treatments, and general patient concerns is expedited and simplified. Electronic communication among the office staff regarding referral setup, patient phone call documentation, and letters to patients and other professionals are accelerated and the items are automatically saved into the patient's chart.

Time savings for clinicians is significant, as their job processes are streamlined and become more efficient. Studies by Dassenko and Slowinski reported a reduction in nurse intake time from 35 minutes to 20 minutes for initial office visits and from 35 minutes to 15 minutes for return visits at the University of Wisconsin Hospital and Clinics. The elimination of repeatedly collecting and entering information and the addition of the enhanced display of the patient's history, vital signs, weight, and medical problems were attributed to the greater efficiency and time savings through the adoption of the EHR.[9]

Evaluation and Management (E&M) Code

This code is a five-digit number used by a physician to report evaluation and management services with a patient. The E&M encounter may include documenting a patient's medical history, a physical examination, and medical decision making. An E&M encounter may be with an inpatient, an outpatient, or a consultation and may occur in any number of medical settings.

Reporting to public health organizations is expedited and eased with the reporting capabilities of EHRs. The simplification of this process for medical offices is another example of time savings that translates into cost savings. Charts are easily accessed and patient data sorted by diagnoses, treatments, or care plans and then sent to the appropriate agencies.

When health-care providers complete their documentation on an EHR, the need for a transcriptionist is often eliminated. This efficiency has generated an estimated savings of $300 to $1,000 or more per month per physician. In one six-provider practice, transcription took 150 hours per week. After implementing an EHR, that time was decreased by one-third. The turnaround time of the transcription went from 7 days to 1 day. The time and money savings enabled the practice to add two additional providers.[10]

EHRs' coding programs give health-care providers confidence and support for coding **Evaluation and Management** (**E&M**) encounters with patients. Often, undercoding occurs by medical providers. However, with an EHR, more accurate level-of-care coding is based on documentation from the review of systems and examination within the office visit assessment. EHRs help recover lost revenue for the practice.

Focal Point

The availability of care plans and practice guidelines increase the accuracy of patient care. Rapid documentation and accurate coding has reduced costs and increased reimbursement as a result of the implementation of EHRs.

Malpractice insurance carriers are considering or currently giving discounts to their insured when an EHR is utilized. The more thorough documentation and improved patient care have warranted a reduction in rates.

The Illinois State Medical Society reported the ROI of a Chicago-area hospital that implemented a $40 million-plus EHR.

> "The hospital estimates that it will save $10 million annually. The new system is substantially enhancing patient care. The turnaround time for obtaining test results has fallen significantly, with mammograms now taking a day compared to up to three weeks, and cardiographics reports dropping from as long as 10 days to one day. Entire categories of medication errors and potential errors have been eliminated,

including transcription errors, errors due to misunderstood abbreviations and mix-ups due to look-alike drug names. In addition, delayed administration of patient medications has decreased 70 percent while omitted administration of medications has dropped 20 percent across the organization due to the electronic medication administration records and system tools that alert nurses of new patient orders and of overdue medications."[11]

Concept Checkup 1.4 (LO 1.5)

A. In April of 2004, President George W. Bush outlined a plan "to ensure that most Americans have electronic health records" by what year? _____

B. List the four perceived benefits of implementing an EHR program.

1. _____
2. _____
3. _____
4. _____

LO 1.6 EHR INCENTIVES

On February 17, 2009, President Obama signed the **American Recovery and Reinvestment Act (ARRA)** into law. The ARRA provided $787 billion to accelerate the nation's economic recovery. It was designed to stimulate the economy through investments in infrastructure, unemployment benefits, transportation, education, and health care. The Health Information Technology for Economic and Clinical Health (HITECH) Act, as part of this stimulus package, included over $19 billion to aid in the development of a health-care infrastructure and to assist providers and other entities in adopting and using health information technology, including EHRs. Money has been made available as incentives through the Medicare and Medicaid reimbursement systems to assist providers in adopting EHRs.

For financial remuneration from the ARRA program, physicians will need to use a "certified" EHR. Based on meeting certain requirements, doctors would receive a bonus or incentive payment from the **Centers for Medicare and Medicaid Services (CMS)** at the beginning of the year following participation. The first year of possible involvement is 2010.

A provider who fully complies with the requirements in 2010 will be eligible for payment at the beginning of 2011. Payments can be substantial starting at $18,000 in 2011, with an accumulation of $44,000 over the life of the program for Medicare assigned providers. On the other hand, physicians can opt for reimbursement as a Medicaid participating provider for up to $65,000 starting in 2011 based on state-defined guidelines.

Table 1.1 details total potential payments to physicians under the Medicare program.[12]

The government incentives are designed to encourage the adoption and "meaningful use" of EHRs to promote medical information accessibility, better patient care and safety, greater efficiency, and financial savings.

American Recovery and Reinvestment Act (ARRA)
Commonly known as the stimulus package, the ARRA was passed by Congress in 2009 to stimulate the economy through investments in infrastructure, unemployment benefits, transportation, education, and health care.

Centers for Medicare and Medicaid Services (CMS)
Formerly known as the Health Care Financing Administration (HCFA), CMS is a federal agency responsible for administering Medicare, Medicaid, HIPAA, CLIA and several other health-related programs.

Table 1.1 Potential Payments to Physicians

Payment Year	Incentives
First Payment Year	• $18,000 if the first payment year is 2011 or 2012 • $15,000 if the first payment year is 2013 • $12,000 if the first payment year is 2014
Second Payment Year	$12,000
Third Payment Year	$8,000
Fourth Payment Year	$4,000
Fifth Payment Year	$2,000

*for providers in a health professional shortage area (HPSA), payment amounts will be increased by 10%

chapter 1 review

Name _____ Instructor _____ Class _____

USING TERMINOLOGY

Match the terms on the left with the definitions on the right.

_____ 1. EHR

_____ 2. CPR

_____ 3. CCR

_____ 4. PHR

_____ 5. ASP

_____ 6. Power outage

_____ 7. Better patient care

_____ 8. Health maintenance screenings

_____ 9. Tablet PC

_____ 10. Remote access

A. An Internet-based connection that allows the patient to become an interactive source of health information and health management.(LO – 1.2)

B. A concern a provider may have about EHRs.(LO – 1.4)

C. A portable means of entering information in an EHR utilizing the Tap&Go™ method.(LO – 1.2)

D. Enables the health-care provider to work on the EHR from a nursing home, home office, or hospital.(LO – 1.2)

E. A benefit of EHRs.(LO – 1.5)

F. The most commonly accepted and used term for storing and accessing patient medical information electronically.(LO – 1.3)

G. Tracked by patient age, gender, past diagnoses, past medical procedures, or family medical history.(LO – 1.5)

H. Health-provider-oriented and defines a core set of data reflecting the most relevant and timely facts about a patient's health care and is accessible and readable by other electronic systems.(LO – 1.3)

I. The EHR is stored, maintained, and updated off-site by an EHR web-hosting company for the doctor.(LO – 1.3)

J. Contains all patient information for the patient's lifetime and includes medical information from all specialties and is fully interoperable.(LO – 1.3)

CHECKING YOUR UNDERSTANDING

Write "T" or "F" in the blank to indicate whether you think the statement is true or false.

_____ **11.** Voice recognition systems cannot be used with electronic health records systems.(LO 1.2)

_____ **12.** LAN technology provides a wireless network for the Tablet PC.(LO 1.1)

_____ **13.** A high-speed Internet connection is necessary for an ASP.(LO 1.2)

_____ **14.** Decision-making support gives information about medications, tests, and care plans.(LO 1.5)

_____ **15.** The implementation of an EHR does not bring process changes to the medical office.(LO 1.4)

_____ **16.** The challenge and danger of handwritten prescriptions is non-existent with an EHR.(LO 1.5)

_____ **17.** Better patient care is a direct result of more thorough and detailed clinical information.(LO 1.5)

_____ **18.** An EHR does not enhance the provider's coding for billing.(LO 1.5)

Answer the question below in the space provided.

19. List three main benefits of EHRs and provide an example of each benefit.(LO 1.5)

a) _____

_____

b) _____

_____

c) _____

_____

20. List three cost savings of using an EHR rather than paper-based charts.(LO 1.5)

a) _____

b) _____

c) _____

Choose the best answer and circle the corresponding letter.

21. The time and place where the concept of an electronic health record was first developed and utilized was:(LO 1.1)

a) 1950 at University of California
b) 1980s at Mayo Clinic
c) 1960s at Medical Center Hospital of Vermont and the Mayo Clinic
d) This information can not be ascertained

22. For security, data on a wireless network is:(LO 1.1)

a) Encrypted
b) Scrambled
c) Coded
d) Blocked

23. Which acronym was one of the first terms used to conceptualize the idea of storing medical information electronically?(LO 1.3)

a) EHR
b) PHR
c) CPR
d) BYO

24. Measuring the ROI of an EHR includes:(LO 1.4)

a) Cost of training
b) Reduced cost of office supplies
c) Cost of future upgrades
d) All of the above

25. The IOM called for elimination of paper-based patient records by the year:(LO 1.1)
a) 1998
b) 2001
c) 2008
d) 2010

26. With an EHR, the health-care practitioner provides more consistent care for the patient because the information is:(LO 1.5)
a) More accessible and better utilized with care plans and alerts
b) Reviewed with the patient
c) More clearly written and stored in a consistent place for future reference
d) Backed up electronically on a regular basis

27. The stimulus package of 2009 is officially known as:(LO 1.6)
a) Centers for Medicare and Medicaid Services (CMS)
b) American Recovery and Reinvestment Act (ARRA)
c) Health Information Technology for Economic and Clinical Health (HITECH)
d) Troubled Asset Relief Program (TARP)

28. The elimination of a paper-based chart does not eliminate the cost for:(LO 1.5)
a) Receptionists
b) Chart storage space
c) Paper costs
d) Chart retrieval