Health Informatics Principles
- Excerpt -

Foundational Curriculum:
Cluster 4: Informatics
Module 7: The Informatics Process and Principles of Health Informatics
Unit 2: Health Informatics Principles
FC-C4M7U2

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Unit Objectives

- Describe the evolution of informatics
- Explain the benefits and challenges of informatics
- Differentiate between information technology and informatics
- Identify the three dimensions of health informatics
- State the main principles of health informatics in each dimension

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The Evolution of Health Informatics (1990s-2000s)

- The Data Protection Directive (officially **Directive 95/46/EC** on the protection of individuals with regard to the processing of personal data and on the free movement of such data), which regulates the processing of personal data within the European Union, was adopted in 1995
- In the US, HIPAA health data security legislation was passed in 1996
- In the 2000s Personal Health Records, that is electronic records of patient information controlled by the patients themselves, have begun to be developed
- One of the key foci in healthcare continuing into the 2000s was the concern with quality of care. This concern has continued to the present

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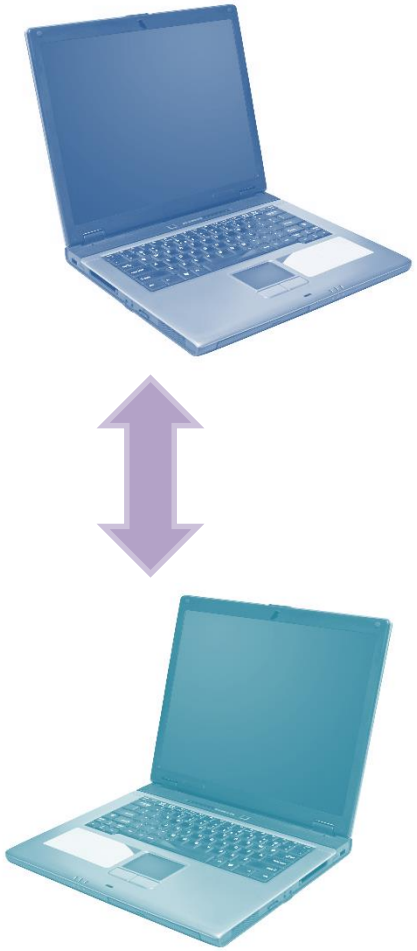
The Evolution of Health Informatics (2000s)

- The use of clinical guidelines and standardized protocols of care increased during this period. This is a major reason for an increased use of information technology
- The 2000s saw an increase in using technology for remote monitoring of patients in their homes, or what has been called telehealth
- Whereas telemedicine has tended to focus on treating acutely sick patients, telehealth can include monitoring patients with chronic conditions, or even working with patients through computer access, to keep them healthy



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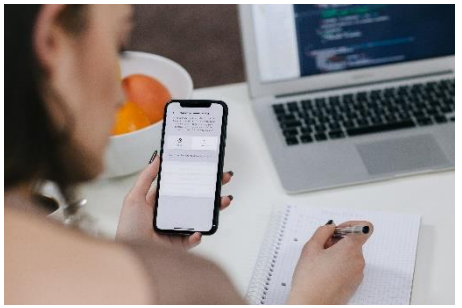
The Evolution of Health Informatics (2010s)

- The 2010s brought the implementation of meaningful use of Electronic Health Records for Hospitals and Physicians in the United States, within their Medicare and Medical reimbursement programs. This led to gradual implementation and use of EMR/EHRs by a majority of healthcare providers and organizations nationwide over the first half of the decade
- The 2010s also saw widespread use of social media, smart phones, handheld technologies and other consumer applications for healthcare and telehealth purposes
- The General Data Protection Regulation, adopted in April 2016, supersedes the Data Protection Directive of 1995 and is enforceable starting on 25 May 2018



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Technology Evolution in Health Informatics

Analogue era (1950's to 1980's):

- Telephone calls (or letters and physical visits) from patients
- Information was stored by typing or handwriting to a diary
- Chronological order of visits, patient information transcribed or mapped by a secretary stored in archives

Digital era (1990's to 2000's):

- Data and information was written on a computer instead of a typewriter
- Internet could be used for searching information
- New ways of collecting data: images, imaging, sensors
- Data could be faxed or scanned
- Data is stored electronically

Cyber era (2010's to present):

- Data is stored online for other doctors AND the patient to see
- Databases for symptoms, statistics and recommendations
- Active participation from other clinicians and the patient, other than just by calling to the doctor
- Social media, smart phones, internet applications and cloud storage are used for health information, education, communication and exchange

Figure: available (cited 18.10.2017): https://www.healthcare-informatics.com/blogs/rajiv-leventhal/ehr/ehrs-evolution-are-they-advancing-too-slowly

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The Benefits of Health Informatics

- Information is easily available in a digital format for healthcare professionals, the patient and possibly by family members as well (with proper authentication and credentials)
- Modern statistics and datasets, aligned with best practices and standards of care, are designed help clinicians quickly assess and make recommendations regarding symptoms, diagnoses and treatments. Flags and alerts are built in for better care protocols and minimize drug interactions, allergies, etc.
- Single-sign-on (SSO) and biometrics can eliminate the need for multiple passwords, logons, etc.
- Robust automatic and electronic systems decrease the time required for scheduling, storing data and sending information
- Younger, technology saavy healthcare staff are often very open to using digital skills in the workplace

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The Challenges of Health Informatics

- Information may need to be made available in different formats (paper, media, etc.) depending on patient preference and needs
- Clinical decision support engines and databases work best when then are standardized, making customization difficult and sometimes discouraged. Also, alerts may be over-sensitive. This may lead to decrease of use by some clinicians
- Cybersecurity is crucial when handling personal healthcare data, protection is dependent on the systems and devices, but also the professional's actions
- Requirements for hardware and software increase, when the systems get more complex
- More education is required for the workforce to handle all the technology used in the healthcare settings

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Information Technology versus Informatics

- It is important to understand the difference between information technology and informatics
  - The concept of health IT includes the use of technology in the healthcare field, but health informatics is not synonymous with health IT. Instead, informatics is "the science, the how and why, behind health IT," according to the US Centers for Disease Control and Prevention.
- *Information technology* concentrates on the development, design and implementation of systems and technology tools in working with information

  → Focus is on the *Development* of systems and technology
- *Informatics* is concerned with the development, design and usability of information systems and technology tools to enable adoption, application or transformation of a process, for example, healthcare or biotechnology

  → Focus is on the *Process* of integrating information and systems

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Unit Review Checklist

- ❑ Described the evolution of informatics (FFB02)
- ❑ Explained the benefits and challenges of informatics (FFB01)
- ❑ Differentiated between information technology and informatics (JB05)
- ❑ Identified the three dimensions of health informatics
- ❑ Stated the main principles of health informatics in each dimension

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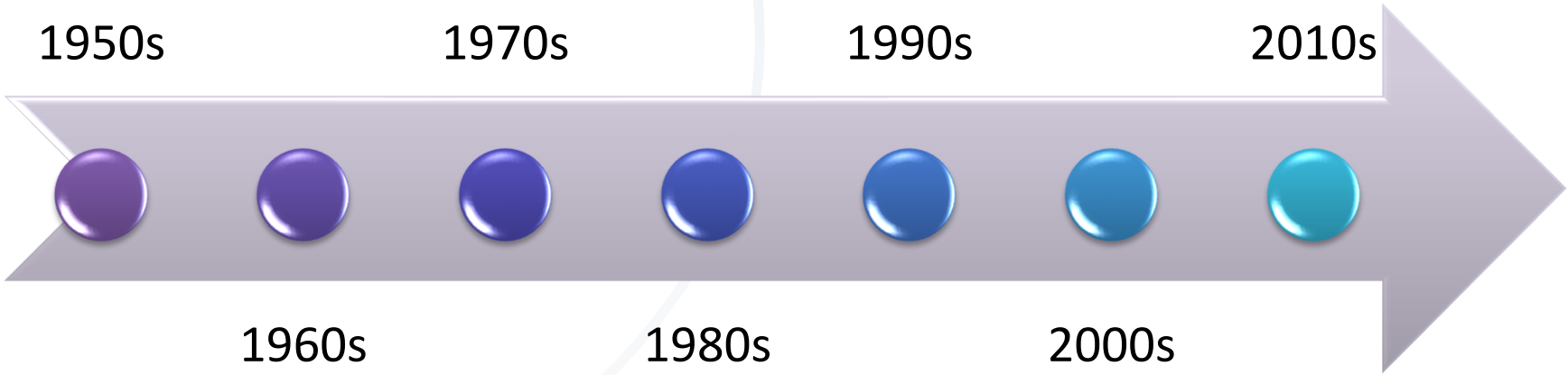
Unit Review Exercise/Activity

On the timeline below, list a major event in the evolution of health informatics for each of the decades given:



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