Computer based patient-record systems

Dr. Adrian Mondry
Computer- based patient record systems: a definition

A computer based patient record system is a repository of electronically maintained information about an individual’s life time health status and health care, stored so that it can serve multiple legitimate users.

It may be linked with an information management tool to provide clinical reminders, link to knowledge sources for health care decision support and aggregate data for further analysis.
History (1/3)

In the 19th century, physicians began keeping little organized notes of their patient’s diseases, and how they had treated them.

In 1910, A. Flexner recommended keeping a patient-oriented medical record.

In the 1940s, hospital-accrediting bodies in the USA began to insist on the availability of accurate, well-organized medical records as a condition for accreditation.
History (2/3)

In the 1960s, computer based Hospital Information Systems were introduced. Their main intended purpose was to collect chargeable items.

Disadvantages: mostly text based, therefore difficult to analyze. Storage only for a short while after discharge.

1969: Lawrence Weed introduced the “problem-oriented medical record” which stressed the importance of the structure of a medical record of any kind.
1983: Morris Collen used computer based Hospital Information Systems to store and present laboratory-test results as part of preventive care.

From then on, these systems add increasing amounts of decision support modules to their functionalities.

Examples: CCC (Bleich, 1985), HELP (Pryor, 1988).
Where is the data?

From: The Economist, Oct 19th 2002
CPR vs. paper record: advantages

CPR is flexible.
Input process may be facilitated if linked to other data storage devices.
Usable for both individualized patient care, and management needs, plus public health demands.
Better accessibility than paper record.
Better legible, and better organized.
Interactive control of completeness and accuracy.
Reusability of data, e.g. in discharge letters.
CPR vs. paper record: disadvantages

CPR is more costly.
Input process must be learned by staff.
Use of CPR will change workflow, and interaction with patients.
Conversion from paper to CPR takes time.
Better legible, and better organized.
Interactive control of completeness and accuracy.
Reusability of data, e.g. in discharge letters.
Functional components of a CPR (1/5)

Integrated view of patient data:

Data usually needs to be acquired using interface engines as even mature standards (such as HL7) will not be completely implemented throughout a given environment.

Functional components of a CPR (2/5)

Clinical decision support:

Feature is needed at time and place physician makes decision.

Physician must be able to override recommendation.

Image from: Decision Support System for NUH/EDTU by BII/MIG
Functional components of a CPR (3/5)

Clinician order entry:

This feature can be combined with decision support.

Helps orders being carried out.
Functional components of a CPR (4/5)

Access to knowledge resources:

This feature can help in decision making process.

Queries usually made with regard to specific patient => access when record is viewed enhances query frequency.
Functional components of a CPR (5/5)

Integrated communication support:

This feature allows to confer messages to other members of treatment team that may be localized elsewhere, or when patient is transferred.

Can be used as tracking tool (e.g.: are prescribed orders carried out?).
Fundamental issues of CPR (1/3)

Data entry:
- Capture
- Input
- Error prevention
- Manually entered data
Fundamental issues of CPR (2/3)

Data display:
- Flowsheets of patient data
- Summaries and abstracts
- Turnaround documents
- Dynamic displays
Fundamental issues of CPR (3/3)

Query and surveillance systems:
- Clinical care
- Clinical research
- Retrospective studies
- Administration
Challenges ahead

- Users’ information needs
- User interface
- Standards
- Legal and social issues
- Cost and benefits
- Leadership
Questions you should know to answer after this lecture:

What is the definition of a computer-based patient record (CPR)?

How does a CPR differ from a paper record?

What are the functional components of CPR?

What are the benefits of CPR?

What are the impediments to development and use of a CPR?