

Unit One - Terms and Tech

Information Technology Applications - Student Lecture Guide

Name _____ Date _____

Introduction

- Computers have become essential in almost every aspect of health care.
- Computers are processors of information.
 - Process large amounts of information at incredible speeds, accurately, and consistently.
 - Their processing speed is their major advantage over humans.
- All health care services have gained a greater ability to treat, diagnose, and care for patients thanks to computers.

Examples

- What are some of the many computer interactions you have had today?
 - Car
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 - Microwave
 - Cash register
 - VCR/DVD
 - Telephone, cell phone
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 - Store scanner
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 - etc.
 - ATM

Computer Literacy

- Whether you want to be a physician, nurse, lab technician, nurse's aide, radiology technician, dietician, pharmacist, physical therapist, or any other type of health care professional, you must have a working knowledge of computers.

•Computer literacy:

- A basic understanding of how a computer works and of the applications used in your profession.
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Four Areas Computers Are Used

1. Hospital Information Systems (HIS) or Medical Information Systems (MIS)

- Managing budgets, inventories, lab reports, ordering, personnel scheduling, and general records.
- Maintain and retrieve vital patient information including demographics, insurance, etc.
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- Drug interaction alerts.

- Patient scheduling.

- Clinical Pathways/Care Maps – standardization of care

2. Diagnostic Testing

- Computerized Tomography (CT Scan), Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET), Stress Testing, Electrocardiograph, and Ultrasonography.

- Development of these types of computer applications have contributed to more accurate and less invasive methods of diagnosis and treatment.

3. Educational Tools

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- Research has shown that computer-based learning decreases time on the task, and increases achievement and retention of knowledge.

4. Basic & Applied Research

- Statistical analysis of data.
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- Computer controlled research testing.

History of the Computer

- First computers were installed in hospitals in the late 1950's and early 1960's.
- They often overheated and became inoperable for many hours.
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- Computers are now much smaller, more powerful, and less expensive.

Computer Predictions

- **1949 – “Computers in the future will weigh no less than 1.5 tons”** (Popular Mechanics).
- **1943 – “I think there is a world market for maybe 5 computers”** (Thomas Watson, Chairman IBM).
- **1977 – “There is no reason anyone would want a computer in their home”** (K. Olson, founder of Digital Equipment Corp).
- **1981 – “640K ought to be enough for anybody”** (Bill Gates).

Computers Can Be Frustrating

- Not always user-friendly, don't know how to use them.
- Steep learning curve; always changing.
- Down time – when they aren't working it seems impossible to get our work done.
- Put information in and can't get it back out.
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Contingency Plans

- Whenever humans depend on machines, contingency plans need to be made just in case the machine stops functioning.
- Computer downtime may be scheduled or unexpected.
- Medical facilities must have manual methods available to accomplish all of the tasks a computer does.
- Examples: patient admissions, bed assignments, medical records, ordering, scheduling, etc.

Computers Can Be Our Friends

- They can make our jobs simpler.
- Examples:
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 - Presentation of information
 - Internet
 - Databases
 - Appointment scheduling (coordinate multiple appts, auto reminders)
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 - Medical claims
 - Paperless records (pharmacy, lab results, radiology)
 - Information at our fingertips (electronic medical records)
 - Email systems
 - Off site/telemedicine
 - Payroll, employee info
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 - Create documents (word processing, spreadsheets)

Ethics and Confidentiality

- The health care worker must remember the importance of ethics and confidentiality when using a computer.
- Computers contain privileged information that must be protected.
- Keep your identifications codes and passwords confidential to protect you and the patient.

Communication

- Email (Electronic Mail)
 - A means of creating and sending messages from one computer to another using a system of networks.
 - Now a standard professional communication tool.
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 - It is essential that email messages be clear and accurate.
 - Keep messages brief and to the point.
 - No personal email correspondence - employers have the right to read and monitor any messages sent through their computers.

Fax Machines

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- Connects to a normal phone line and allows you to transmit pieces of paper to someone else instantly.
- Image sensors look for black or white in a single line of the document, translates those into “bits” which travel through the phone line and arrive at a receiving fax machine. Bits are decoded and reassembled into the scanned lines of the original document.

Telemedicine

- Medicine is practiced over telephone lines.
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- Benefits:
 - Allows patient access to specialists located far away.
 - Communicate vital signs from home to a facility.
 - Perform physical exams from a distance.
 - Link physicians to emergency medical workers in the field.

- Problem: Most state licensing laws do not allow physicians to give medical advice via telephone to patients in other states.
- Technology is advancing more quickly than society.

Telepharmacies

- Allow dispensing of drugs at sites other than pharmacies.
- Instructions for prescriptions are sent to a computerized dispensing unit over telephone lines.
- The dispensing unit prepares and releases the exact dosage.
- Safety features are built into the system to prevent incorrect types and amounts of drugs from being dispensed.

Virtual Communities

- Individuals who use the Internet to communicate and share information.
- Discussion groups and methods for exchanging information can be very valuable.
- Health care workers and patients can share information and experiences about specific health conditions.
- Examples:
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 - Listserves – receiving a newsletter/info on specific topics.

Internet

- Began as a method for government authorities to communicate in case of a nuclear attack.

- Has rapidly grown to become a principal means of communicating, conducting business, shopping, learning, and securing needed information.

- Medical uses for the Internet:

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- Research and information.

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Summary

- Computers are an essential part of health care and also a necessity.

- All health care services have gained a greater ability to treat, diagnose, and care for patients through computerization.

- Every health care worker should have basic computer literacy.

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