

Use of Computer Software Applications in Health Care

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Introduction

- Greatest advancement in information processing since invention of printing press
- Use of computers has become a necessity in health care

Health sector today

- Health is a major consumer of the public (and private) purse
- Situation in the sector
 - Information overload - numbers, text, x-rays, ultrasounds, (data doubles every five years)
 - Shared care (One professional can no longer adequately care for patients)
- Cost containment is a major driving force
- Improving quality of care is equally important
- Public has more knowledge about healthcare (Internet)
- Tension between demand for increased quality of care vs. reduction in costs
- Efficiency vs. cost-effectiveness
- Multi-vendor (heterogeneous) – no one vendor can support all the processing needs of all.

Implications for healthcare organisations

- Unnecessary duplication of tests and investigations
- Valuable time wasted trying to track down relevant information
 - Studies have shown that at least 20% of healthcare professionals time is spent reading, writing, sorting and searching through notes (up to 70% has been claimed by some)
 - Appropriate healthcare not provided as efficiently and cost effectively as possible

This implies....

- Ability to share information between care providers is key
- The right information in the right place, in the right format and at the right time
- Computers (Information Technology) are the key - enabling technology for improved health care

What is a Computer?

- Electronic device that is a complete information processing system
- Basically comprises the following:
 - i. Hardware
 - ii. Software



Computer Literacy

- Ability to understand basics of how a computer works and applications used in your field or profession
 - Essential to every health care professional
 - Comfortable in using a computer for job
 - Practice and experience in using computers is necessary to develop computer literacy

Uses of computers in health care

- Management
 - Word processing
 - Compiling databases
 - Maintaining financial records
 - Maintaining inventories
- Hospital or medical information systems (HIS or MIS) or Health records
- Diagnosis and treatment
 - Patient monitoring
 - Computer assisted surgeries
 - Telemedicine
- Education and Research:
 - statistical analysis of data
 - searching the internet

Software applications

- Two main divisions
- Proprietary
- Free
 - Open source

Software applications

- Operating systems
- Word Processors
- Spreadsheets
- Presentation
- Browsers
- General search engines
- Healthcare search engines
- Statistical software
- Free journal applications
- Healthcare management software

Software applications

- Operating systems
 - Windows (Proprietary)
 - MAC (Proprietary)
 - Linus (Free and open source)
 - Google OS (Free)

Software applications: Word Processors

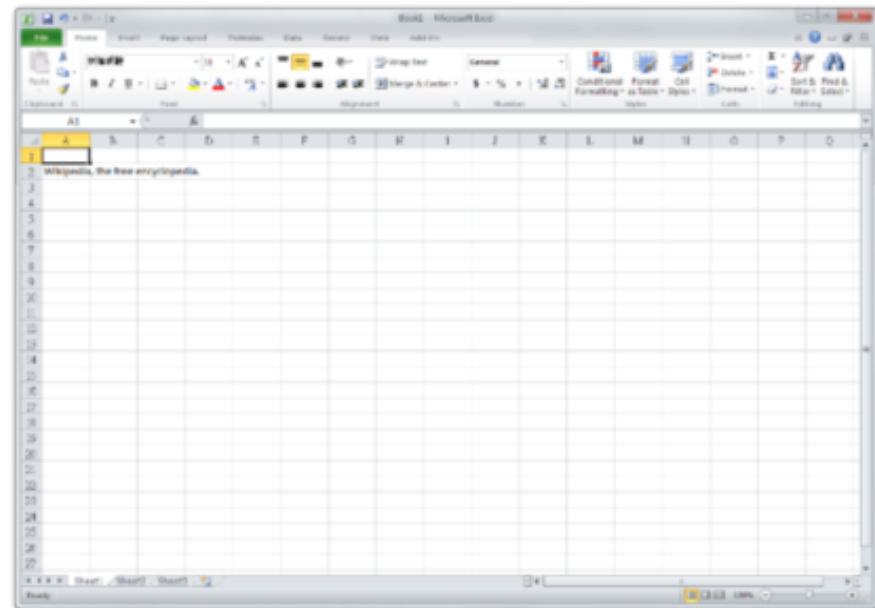
- A word processor is a computer software application used for the production (including composition, editing, formatting, and possibly printing) of any sort of printable material
- Examples are:
 - Microsoft Word (Proprietary)
 - Adobe Pagemaker (Proprietary)
 - Open Office (Free)
 - Word Perfect (Proprietary)
 - Google Docs (Cloud Computing)

Software applications: Presentation

- Computer software package used to display information, normally in the form of a slide show.
- It typically includes three major functions:
 - i. an editor that allows text to be inserted and formatted,
 - ii. a method for inserting and manipulating graphic images
 - iii. a slide-show system to display the content
- Examples are
 - Microsoft PowerPoint
 - Corel Presentation
 - OpenOffice.org Impress (open source)
 - Apple Keynote
 - Google Docs (Cloud Computing)
 - IBM Prezi (WebBased)

Software applications: Spreadsheets

- A program with which data, formatted in rows and columns of cells, can be viewed on a screen and manipulated to make projections, calculations
- Examples include:
 - Microsoft Excel
 - OpenOffice.org Calc
 - Corel Quattro Pro
 - Google Docs Spreadsheet (Cloud Computing)
 - Apple Numbers
 - Gnumeric



Software applications: Web Browsers

- A web *browser* is a software application for retrieving, presenting, and traversing information resources on the World Wide Web
- Examples are:
 - Internet Explorer
 - Mozilla Firefox
 - Chrome
 - Opera
 - Safari



Software applications: Search engines

- A web search engine is designed to search for information on the World Wide Web and FTP servers
- The search results are generally presented in a list of results (hits)
 - Google
 - Bing
 - Yahoo
 - AOL
 - Ask.com



Software applications

- Healthcare search engines and online databases
 - PubMed
 - AJOL
 - OVID
 - CINAHL® (Cumulative Index to Nursing and Allied Health Literature)
 - EBSCOhost



Software applications: Statistical software

- A statistical software is a (or a suite) of computer programs that are specialized for statistical analysis
- Examples include:
 - SPSS
 - Epiinfo
 - STATA
 - SAS
 - MedStat

Software applications

- Free journal applications
 - HINARI
- Healthcare management software

Software applications

- Healthcare management software
- Classes of such software include:
 - Electronic health records
 - Accounting software
 - Relationship database software

Computer Applications for Diagnostics

- Computer-based diagnostic tests
- Analyzing blood tests
- Electrocardiogram (ECG) computerized interpretation systems
- Computerized tomography (CT) scanner
- Magnetic resonance imaging (MRI)
- Positron emission tomography (PET)
- Ultrasonography

Using the Internet

- Network of computer users
- Modem attached to computer, telephone line, or cable lines and specialized software
- Readily connects to others
- Many services and sources available
- Major use in health care relates to education and researches
- Telemedicine

Search Engines

- Defined as a database of Internet files
- Engines include: search program, index, and retrieval program
- Types of search engines: crawler-based, human-powered, mixed
- Many different search engines available

Searching the Web

- Must develop a strategy
- Identify key words
- Combine key words
- Vary your search

Searching the Web (continued)

- Evaluate the source of all information
 - Not all data is accurate or current
 - Check source of information
 - Check the credentials of the author
 - Note the date of publication
 - Evaluate references if listed
- Health care workers can research many topics; can be an excellent learning tool

Summary

- Computers are cost-effective and efficient tools
- Enhance quality patient care
- Used for many areas of health care
- Computer technology has had tremendous impact on health care field

Thank you for your attention