

Computers in healthcare: A brief study

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Highlights:

- Application of computers in healthcare.
- Application of ICT in data analysis.
- ICT enable Hospital management system.
- Use of computers in Therapy.

Abstract:

Computer systems are progressively used by healthcare professional. There are multiple kinds of interactions between pharmaceuticals and digital technology. The whole article was published to raise computer understanding among healthcare workers and also to instill in them the significance of computer systems approaches in pharmaceuticals, health, as well as health care services.

Keywords: Computer, Hospital, Health, Software, Hardware.

Introduction:

Now a day's computer is very popular among all. Computers are reached to every level of the society. Presently in the form of smart phone every one can reach to their doctor as well as the can check their medicine and their health status .Also they can easily understand the symptoms of the diseases. Computer are uses in diagnostic equipment, hospital information system, data analysis in medicine, medical imaging, pathological tests, computer assisted therapy and assistance for critically ill patients and many more.

Component of computer system:

There are two components of computer hardware and software.

We divide computers into three basic units:

1 Input device: input devices take data from all input units and covert it into machine readable form (machine language).this data is now passed to the central processing unit or the computer. Some input devices are: keyboard, mouse, scanner etc.

2. The central processing unit(CPU):CPU called the brain of the computer . Major calculations are done here. It has three units arithmetic and logic unit, memory unit and control unit.

a) Arithmetic and logic unit: in this unit arithmetical and logical calculations take place.

b) Memory unit: In this unit storage of memory takes place.

c) Control unit: The whole computer control is present her including input unit and output unit.

3. Output Unit: Output devices accept the result which is provided by CPU after processing. Output device are printer and visual display unit.

Software: Set of program are which are use to fulfill a special purpose are called software.

Software is of two types: system software and application software.

a) System software : system software are allow user to interact with the computer hardware software are of two types: compiler, assembler and translator. For eg: windows, DOS. UNIX etc.

b) Application software: these software are develop for special purpose. It has two types: application software and utility package. For eg: ms-office, lotus 123, dbase etc.

Application of computer in health care:

Multiple application of computer in healthcare is discussed:

Hospital information system:

In the health care, hospital information system is swiftly growing. Hospital information system helps to manage patients care, biomedical research and education. A hospital management system helps to monitor all transactions and storage of consistent dataset also helps to access valuable information of patients. Hospital physicians can direct access the patient data through his/her own computer.

Lots of software are developed for hospital management system. Hospital management system software(package) covers registration, admission of patient's, discharge of patient's, transfer of patient's, billing, medical record, ward details, index, operation theater scheduling, stores, pharmacy, diet, CSSD, biomedical maintenance, payroll system, accounts, etc. Its ready to use or everyone can customize according to their requirements.

Data Analysis in medicine:

In medical field everyday large number of data is collected. For research purpose we have to compiled, cleaning of data, analysis and interpretation of data. For this purpose we have to use statistical package like SPSS OR PSPP (open source), BMD etc. For the calculation of standard deviation, standard error, test of statistical significance like Z-test, unpaired and paired T- test and Chi-square test .

a) Statistical package for the social sciences (SPSS): This is a paid software mainly used for statistical analysis of social sciences data but also we can use it for the analysis of medical data.

b) Biomedical computer package: this package is developed to provide standard set of statistical analysis program.

c) PSPP: this is a open source software and alternative version of SPSS, developed by IBM. Its work same as SPSS.

d) Genstat: this powerful package is used to analysis of variance.

e) Epi-Info: this package is developed by WHO. In this package we can do epidemiological study. It has features like data analysis, word processing and graphical abilities. Questionnaires are made in this package.

Laboratory computing:

Laboratory computing or pathological computing is related to provide accurate result to the patients in short time period. Result produced through this method should meet the patent identification this analysis we include blood tests microbiological test photometry tests etc. quick pathological analysis helps to quick diagnosis of patients.

Computer assisted decision making (CMD):

This computer system based on machine learning or AI to assists Doctors in decision making or diagnoses the patients. The system is supported doctors to make judgment with computer's vast memory.

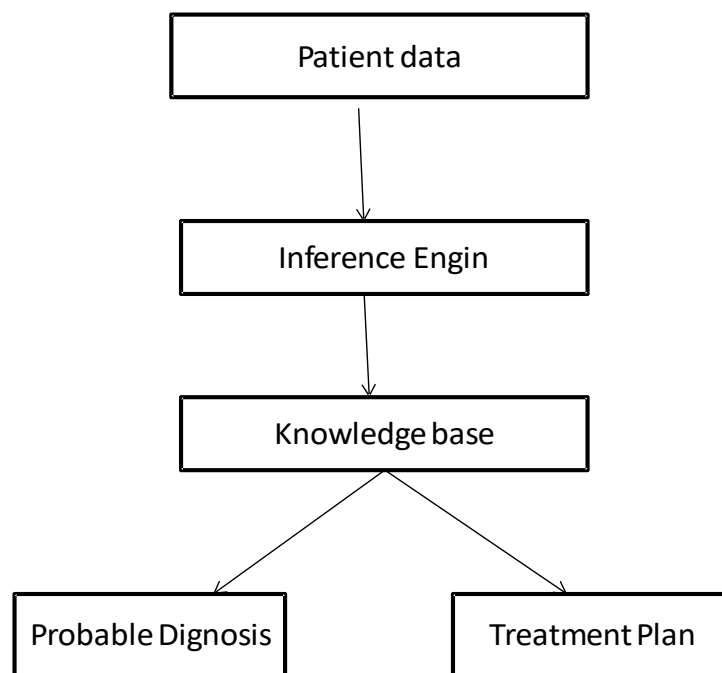


Fig: CMD

Critically ill patients care:

Large number of therapeutic interventions is required for critically ill patients. For this purpose data collected frequently to give them better assistance. Data derived from that is made available to doctors and nursing staff. Data collected in large amount so its lose their significance. now total management is based on computerize system management of data recorded on the patients. Data management of a patients includes patents entry, reporting of all reports including pathological reports, integration, medication given to the patient, intake and output volumes of patients. Patients are providing input signal to computer with the help of an intra-arterial canula.

Computer assisted therapy:

This method helps for planning, monitoring and adjusting the drug dosages regimens of strong and powerful drugs.

The physicians can plan the dosages regimens.

Medical imaging:

Computers are used for high resolution image generation. For this purpose dedicated hardware and software is required to generate these type of images like in Ct, MRI, ultrasound and gamma cameras. This equipment's can integrate with the hospital information system. These devices can produce 3D images of human anatomy.

Other applications of computer:

Computers can used in all most field like primary health care, telemedicine, Psychiatry, physiological measurement, aid to the handicapped, research, and medical education.

Limitations:

Computer can store large amount of data and can perform very complicated analysis in minimum time period. But it major limitation is that it can't take decisions like human brain and its not sensitive like humans. Data entry is a big problem in medical profession due to huge amount of data.

Conclusions:

Computers are very important in the field of health science. It completely transformed modern medicine. Complete hospital process is streamline with the help of hospital management system. Computer also improves the operational as well as diagnosis efficiency .Security of patients' records are become more stronger.

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