

“शिक्षा मानव को बन्धनों से मुक्त करती है और आज के युग में तो यह लोकतंत्र की भावना का आधार भी है। जन्म तथा अन्य कारणों से उत्पन्न जाति एवं वर्गगत विषमताओं को दूर करते हुए मनुष्य को इन सबसे ऊपर उठाती है।”

- इन्दिरा गांधी

“Education is a liberating force, and in our age it is also a democratising force, cutting across the barriers of caste and class, smoothing out inequalities imposed by birth and other circumstances.”

- Indira Gandhi

Block

3

APPLICATION OF COMPUTERS IN NURSING

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Computerization in Nursing **5**

PRACTICAL 2

Networking for Hospitals and Clinics **11**

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Internet and Nursing **41**

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This block has been adopted from Post Basic B.Sc. Nursing of IGNOU Course Code BNSL-112, Block 2.
January, 2012

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ISBN : 978-81-266-5807-7

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Further information on the Indira Gandhi National Open University courses may be obtained from the University's office at Maidan Garhi, New Delhi-110 068.

Printed and Published on behalf of the Indira Gandhi national Open University, New Delhi by Registrar, MPDD

Printed at: Apex Printers, Delhi-92

BLOCK INTRODUCTION

In Block 2 of BNSL - 034 you have studied about the computer in general. In this block you will learn about application of computers in nursing. Specifically the benefits of computerization in medical and nursing field, communication amongst the various departments of hospital. While going through these practicals you would be able to decide on developing or purchasing a software for various nursing activities. This block has the following four practicals:

Practical 1 : Computerization in Nursing

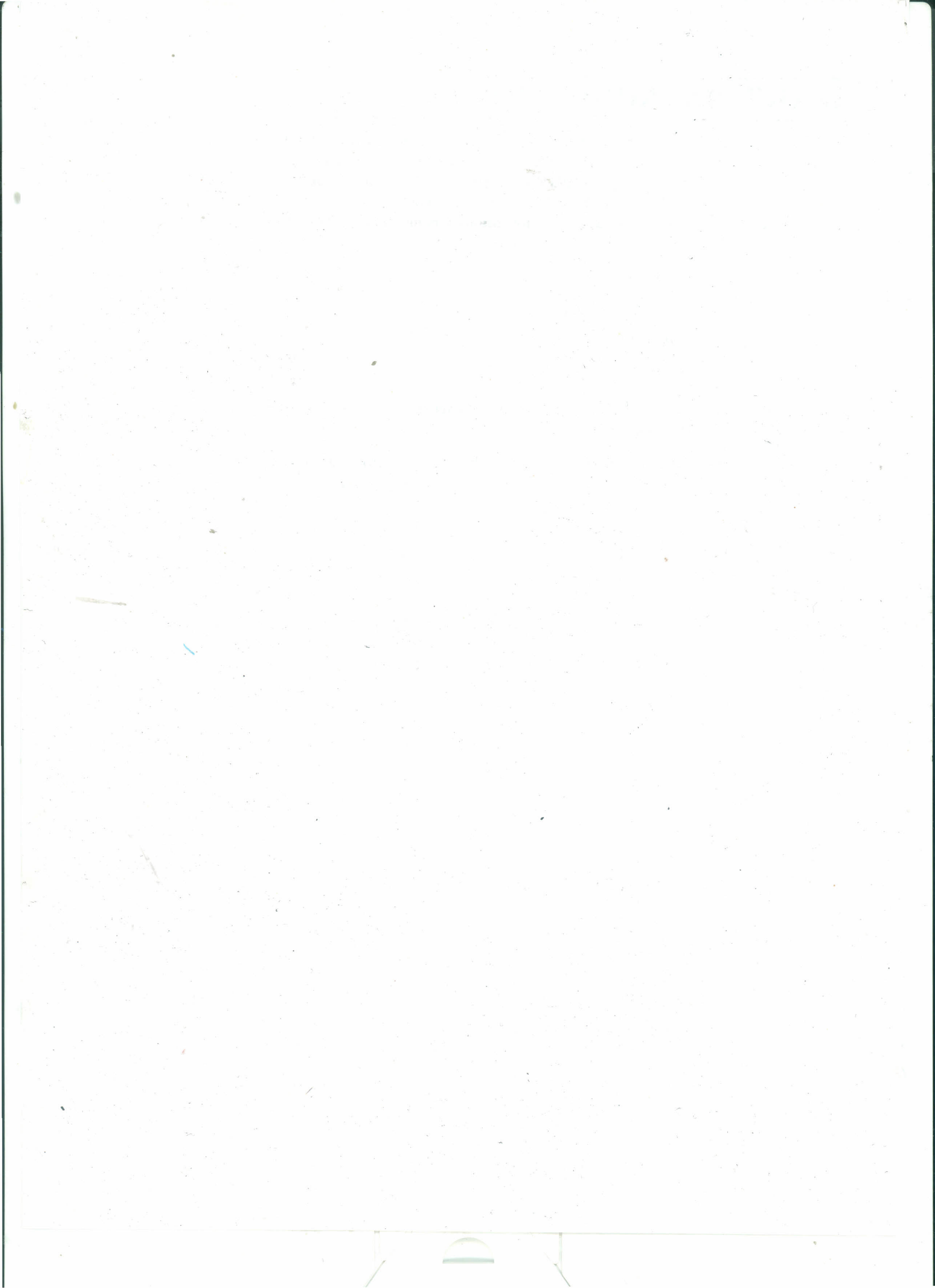
Practical 2 : Networking of Hospital and Clinics

Practical 3 : Electronic Patient Records

Practical 4 : Internet and Nursing

As you are going through these practicals try to use computer simultaneously so that you are able to develop hands on skills.

We are sure learning of computers would be an enjoyable experience for you and you will be able to use computers more effectively during your nursing practice.



PRACTICAL 1 COMPUTERIZATION IN NURSING

Structure

- 1.0 Objectives
- 1.1 Introduction
- 1.2 Why Computers in Nursing
 - 1.2.1 Goals of Computerization in Nursing Practice
 - 1.2.2 Benefits of Computerization
 - 1.2.3 Applications of Computers in Medical and Nursing Establishment
- 1.3 Let Us Sum Up
- 1.4 Answers to Check Your Progress
- 1.5 Further Readings
- 1.6 Activities

1.0 OBJECTIVES

After completing this practical, you should be able to:

- explain the significance and benefits of computerization in nursing;
- apply the knowledge of a computer in a hospital; and
- explain about term telemedicine, tele-nursing and its basic concepts.

1.1 INTRODUCTION

This practical is dedicated to computers and their use in the field of medicine in general and Nursing in specific. In BNSL-112, Block 1 you have learnt how to run various applications and programmes on the computer. However, their practical applications in day-to-day life in a clinic or hospital needs to be understood.

In this practical we will discuss on the various applications of a computer in Nursing practice. You will also learn the different aspects of a computer that may be helpful and useful in a hospital setting.

1.2 WHY COMPUTERS IN NURSING

With fast changing information technology system use of computers have become essential in medicine and nursing practice. The nursing practice techniques are well translated on computer networking. So it is important for every nurse to develop the efficiency in use of computer.

1.2.1 Goals of Computerization in Nursing Practice

Improved Efficiency: Computers can rapidly process, store, and retrieve information, helping the nurse clinician in nursing diagnosis and in planning Nursing Care of the patient.

To Do Work Accurately: Computerized data, including medical and nursing records and prescriptions, eliminates the possibility of human mistakes, offering considerable advantages over manual methods.

To Create a Modern Image of the Clinic/Hospital: By offering efficient services in a timely manner, computers help Nurses to provide better care to their patients. Computerization enhances clinical efficiency, in turn enhancing the image of the hospital and its working staff.

Better Utilization of Resources: Computerization allows for quick and easy data sharing, eliminating needless duplication of work and allowing hospital staff to devote more time to clinical practice and patient care.

Decreasing Expenditure and Saving Time: The appropriate use of computers can help decrease hospital expenses and save precious time in patient care.

Valuable Guidance to Patients Over (His/Others) Past History: Easy accessibility to records help in providing prompt guidance to patients over past history.

Use Accumulated Data for Research and Analysis: The data you have possessed over a couple of years can be used for valuable research and analysis of medical and nursing interventions.

1.2.2 Benefits of Computerization

Computerization were the following benefits in nursing:

- Improved professional care
- Better accuracy (by decreasing human error)
- Effective time management
- Better ward management and hospital administration
- Enhanced image of nursing and hospital set-up
- Useful tool for educating both the patients, the nursing students and peer group.

1.2.3 Applications of Computers in Medical and Nursing Establishment

As computers are heavily used for storing and retrieving data the application can be administrative, clinical, telenursing, teleconferencing etc. also. The following text describe the application of computer in medical and nursing establishment.

Administrative

Administrative work is a part of any nursing practice, whether it is a small clinic in a quiet rural area or an acute-care hospital serving an entire state. Computers are effective devices that help to reduce the amount of clerical work, thus saving time and utilizing for patient care. They have proven to be very useful for a number of administrative issues few example are given below:

Patient's Appointments: Depending upon the workload, doctor appointments/patient appointments can be scheduled for better patient care and time management. Registrations of the patients (OPD, Indoor and Emergency) can be well maintained.

Follow-up/Track-Missed-up Visits: Medical software offers great flexibility in checking follow-up visits, which are so vital for patient's convenience. Rescheduling

visits when they are missed, reminder letters, and substitute consultations are better managed with the help of computerization.

Billing and Accounting: Computerization also helps the clinic with its financial needs such as patient billing, break-up of collection, statement of expenses and staff salaries. Good accounting softwares are available which can be used.

Inventories of Drugs and Supplies: Computers are extremely useful for better management of supplies and available stock of drugs, linens and equipment. Due to oversight and manual mistakes, many drugs are wasted because of their expiry dates. This, and many other inventory-related problems, can easily be tackled by a computerized inventory system. Whenever any drug/equipment is purchased and/or utilized, the computer can generate a list of stock in hand, along with a valuation at any given point of time. This helps in effective ward management.

Staff Details/Payroll: Details such as staff bio-data (in detail), attendance and absenteeism, taking care of paid/unpaid leave, etc., can be efficiently managed with the help of a good Payroll Software. More accuracy and sophistication can be implemented by the use of Smart Card /Magnetic Card Readers. These devices can be attached to the computer where the check-in/check-out/in between exit from the office premises by the staff can be automatically recorded.

Correspondence: Reports, Referral letters and "Thank You" notes can be created easily, and addresses or graphs can be prepared and updated regularly.

Clinical

The clinical applications of computer in the health-care field deal with aiding a nurse in her/his professional practice, which may vary depending on specialty. Several areas of clinical practice are streamlined with the help of computerization.

Prescription: A computerized prescription will do away with the age-old saying that a doctor's handwriting is always illegible. Printed from a computer, a prescription will be clear and decent looking, dosage will be automatically calculated, and time consuming writing work of nursing personnel is eliminated as relevant instructions and important side-effects could be printed in common language.

Investigations: Computerization of diagnostic services is an immense benefit to the patient. As it will help in starting the treatment for the patient early. Computer-generated reports have the advantage of a built-in checks for accuracy and reference values based upon the age and the sex of the patient. Computerized interpretation of reports such as cardiopographs have become available, which will help the nurse to plan nursing interventions immediately based on nursing diagnostic. Computer-aided management, such as estimation of risk of chromosomal anomalies such as Down's syndrome, are now available as well.

Drug Dosages: Calculation of drug dosages becomes a difficult task when dealing with hepatic/renal diseases, debilitating conditions or children. With available software, dosage calculations are easily performed, and specific instructions for the patient are just as easily viewed or printed.

Nursing Records: Computerized Nursing records are more efficient and more useful as compared to manually prepared records. Such a nursing care records nurses notes, I/O Charts, nursing diagnosis records can be retrieved very easily. These records can be extremely helpful for statistical analysis, nursing audit, medical audit and medico-legal purposes.

Patient/Parent Education: Software packages offer an important tool for health education in nursing practice. These programs can be used to educate patients while they wait for their turn in the reception area of the hospital. This issue assumes further

importance due to increased public awareness on health and disease such as diet, immunization, first-aid measures, and stress management.

In-patient Care: Computerized indoor records help to keep the patient's history details, examination findings, investigations, treatment, and surgery/procedures performed nursing care provided. Computerization also helps in patient monitoring.

Computers in ICU: ICU nursing personnel need ready access to volumes of miscellaneous information, like protocols and drug dosages. A Computer in the ICU, with Internet access, connects the caretaker to all the information s/he may need.

Other Nursing Applications of Computers

Internet and E-mail

The advent of the Internet and E-mail allows the international nursing community to interact and collaborate in an incredibly convenient way. The sharing of medical and nursing knowledge and academic discussions are immensely facilitated by the Internet through a computer modem. Mailing lists and online forums allow the global nursing community to advance in unison, the whole being far greater than the sum of its parts.

Outlook Express provides secure and personalized features for E-mail and newsgroup communications.

With Net Meeting and Video Conferencing you can hold digital conversations with doctors and nurses or any team associates around the world without spending a fortune. Net Meeting also makes it possible for you to work with a group of people, sending text messages, and transferring files. With the correct hardware installed on your computer, you can also have live, face-to-face meetings, video conferencing, etc.

Internet, in fact, provides a wide range of interactive and informative contents.

Telenursing

Telenursing refers to the exchange of expertise in various areas like nursing diagnosis data over a distance. It is divided into the following categories:

- a) ***Tele-consultation:*** A nurse clinician and nurse specialist providing consultation to the student/nurse at a distance. It is used through palm computers in developed countries.
- b) ***Tele-mentoring:*** A nurse clinician providing training/advice to another nurse clinician at a remote site, specially for mental health nursing, maternal and child care, medical surgical nursing and community nursing.

The Internet has made tele consultation and tele-mentoring much cheaper and more effective for many practising nurses, as all that is required is a PC, a high-speed modem, and a webcam (a camera allowing video in real time to be transmitted to another computer). The ease and accessibility of modern telemedicine\telenursing has dramatically aided the health care systems of Third World countries, who in times of crisis can receive consultations from world-class subject and clinical specialists thousands of miles away.

Nursing Presentation

Using programs like Microsoft PowerPoint to create visually pleasing presentations gives an added depth to the topic, and enhances the learning experience for the

audience. Photographs taken in the Ward, can be managed and tailored to a nurse's needs with a computer.

Nursing Education

Computer-Assisted Instruction (CAI) is a valuable teaching aid for health care students, testing them with frequent quizzes to ensure that the material read has been properly absorbed. While human instruction and feedback has no substitute, various computer programs can act as a supplementary educational tool, enhancing the students' learning experience and quality of education. Studies done by Nurse researcher on computer assisted learning does explain the use of computer complimenting of the content.

Research

Through an electronic patient database, well organized for easy data retrieval, clinical research and statistical analysis of patient data is tremendously facilitated.

Literature Search

On-line access to MEDLINE connects a practitioner to an enormous amount of nursing literature and academic journals, allowing the nurse researcher to stay current and up-to-date with what is happening at the forefront of her/his particular field.

Check Your Progress

1) Discuss the clinical uses of computers in Nursing.

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2) Describe the advantages of computerisation in a hospital or clinic.

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3) What do you understand by Telenursing? Explain the categories.

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1.3 LET US SUM UP

Computerization of any hospital or clinic is desirable as it improves efficiency, increases accuracy of work, creates a modernised image of the establishment, reduces expenditure, saves time and assists in patient counselling, research and analysis.

1.4 ANSWERS TO CHECK YOUR PROGRESS

- 1)
 - a) Prescription: A prescription will be clear and decent looking, dosage will be automatically calculated, and time consuming writing work is eliminated. Investigations: Computer generated reports have the advantage of a built-in check for accuracy and reference values based upon the age and the sex of the patient.
 - b) Drug dosages: With available software, dosage calculations are easily performed, and specific instructions for the patient are just as easily viewed or printed.
 - c) Nursing records: Computerized nursing records are more efficient and more useful as compared to manually prepared records, and can be retrieved very easily. These records can be extremely helpful for statistical analysis, medical audit, Nursing audit and medicolegal purposes.
 - d) Patient/Parent education: Software packages offer an important tool for health education in nursing practice.

In-patient care: Computerized indoor records help to keep history details, examination findings, investigation, treatment, nursing care and surgery/ procedures performed.

- 2)
 - Improved professional care
 - Better accuracy (by decreasing human error)
 - Effective time management
 - Better word management and hospital administration
 - Enhanced image of nursing and hospital set up
 - Useful tools for educating both the patient and the medical student.
- 3) Telenursing refers to the exchange of medical and nursing diagnosis *data over* a distance: It is divided into the following categories:
 - a) Tele-consultation: A nurse clinician providing consultation to the students/ nurses the help of palm computer at a distance.
 - b) Tele-mentoring: A nurse clinician providing training/advice to another nurse clinician at a remote site.

1.5 FURTHER READINGS

Thacker, Naveen, *Computers for Doctors*.

Lele, Ramchandra, *Computer in Medicine—Progress in Medical Information*.

1.6 ACTIVITIES

- 1) Make a list of various types of records being maintained on the computer in your hospital or health facility.
- 2) Identify and list the types of records being maintained on computer by nursing personnel.

PRACTICAL 2 NETWORKING FOR HOSPITALS AND CLINICS

Structure

- 2.0 Objectives
- 2.1 Introduction
- 2.2 Why Networking in Hospitals
- 2.3 Basic Networking Terminology
 - 2.3.1 LAN
 - 2.3.2 WAN
 - 2.3.3 Server
 - 2.3.4 Client
 - 2.3.5 Workgroup
 - 2.3.6 Login
 - 2.3.7 User Accounts
 - 2.3.8 Rights
 - 2.3.9 System Administrator
- 2.4 Hardware and Software for Networking
 - 2.4.1 Hardware
 - 2.4.2 Software
 - 2.4.3 Windows and Networking
 - 2.4.4 Network Interface
 - 2.4.5 Accessing Other Computers
- 2.5 Audio/Video Applications on Network
- 2.6 Let Us Sum Up
- 2.7 Answers to Check Your Progress
- 2.8 Further Readings
- 2.9 Activities

2.0 OBJECTIVES

After completing this practical, the student should be able to:

- develop knowledge on the need and benefits of networking;
- get familiar with basic concepts and terminology used in a network;
- explain different types of computer set-up in an hospital/clinic;
- enumerate the hardware and software options available for a network;
- develop skills on use of a network — copy, share and move files and folders; and
- design a network suitable for nursing in hospital.

2.1 INTRODUCTION

A group of interconnected computers is called a Network. Networking computers is a tremendous advancement in information technology. It has revolutionized the way people work and share information.

As you have read in BNSL-112, Block 1 that networks allow computers to communicate with each other no matter how far apart they are physically.

Imagine a Nursing Superintendent's office where a group of nurses are working on a particular project to improve the patient care. Assume that all of them have a computer each to work on. Each team member records his/her ideas in the computer. Also, each member stores information related to her work on the project in the computer.

Most of the time, the team members would like to share their information and ideas.

Consider the case when none of the computers are interconnected. Information has to be shared by paper printouts (usually multiple copies). Ideas have to be shared by all the team members collecting together for a meeting (not all members may be able to attend at the same time, which can result in rescheduling). All this can result in a significant loss of productivity. In essence, an otherwise efficient team might produce a very average output.

Now consider the case when all the computers of nursing team are interconnected. Information is easily shared between team members. All information is accessible through the network. This prevents the need for printing multiple copies of documents. Any ideas can be exchanged without all the team members having to group together physically. The team members need not even come to the office. They can communicate with each other from their homes by e-mail or chat using a modem.

2.2 WHY NETWORKING IN HOSPITALS

Sharing of data is essential, especially in any kind of hospital setting. For staff and doctors of a hospital, if they have details of patients readily available at their disposal, they definitely will be able to provide prompt and proper treatment and nursing care. The key to proper and timely treatment is obviously the availability of proper data at proper place and time.

Computerization of patient records has made life much easier as bulky files or folders do not need to be carried around by the staff. But if the patients, files are located on a particular computer and is not accessible to people at different locations, the problem still remains the same.

In such a situation, it is always desirable that computers at different locations are able to share the data stored in them with each other. This would ensure that critical information about a patient is always available to the people who require it, as and when required. Hence the role of "networking" arises.

2.3 BASIC NETWORKING TERMINOLOGY

As you have already studied in BNSL-112, Block 1, we shall review these terms for your practical.

2.3.1 LAN

LAN stands for Local Area Network. This kind of network consists of a set of interconnected computers that are not geographically spread out over a large area.

For example, computers within a college of Nursing campus or in the office of Nursing Superintendent may be connected to each other through a LAN. Typically LANs are not spread out over an area exceeding 2 to 4 square kilometers.

Some examples of a small sized LAN which may be useful in a Hospital are indicated diagrammatically below:

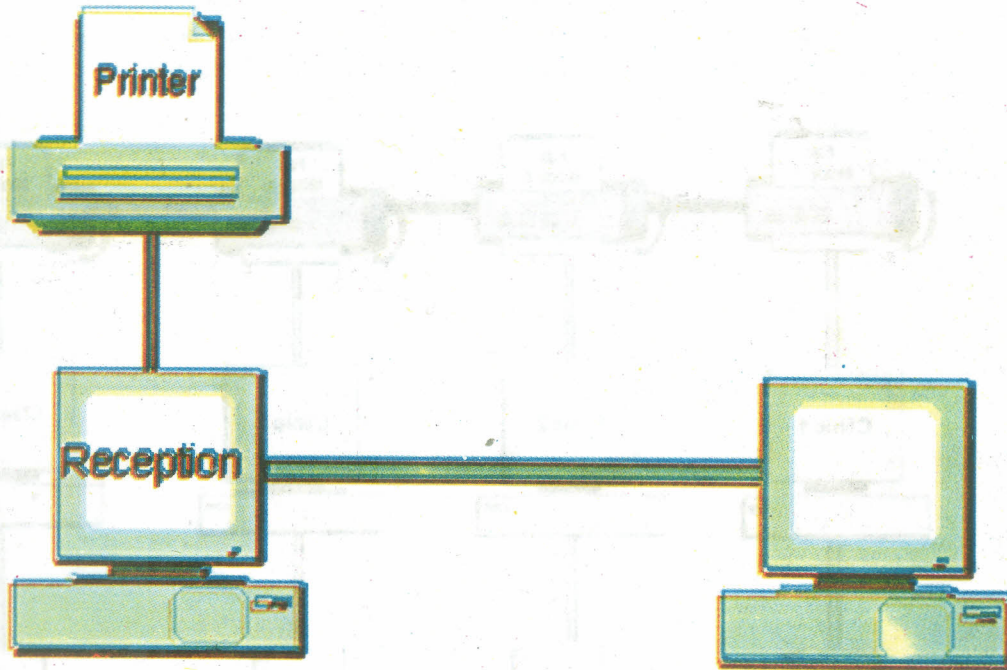


Fig. 2.1: A small LAN comprising a network between the doctor and Nurse's Station. A single printer is shared by both the computers.

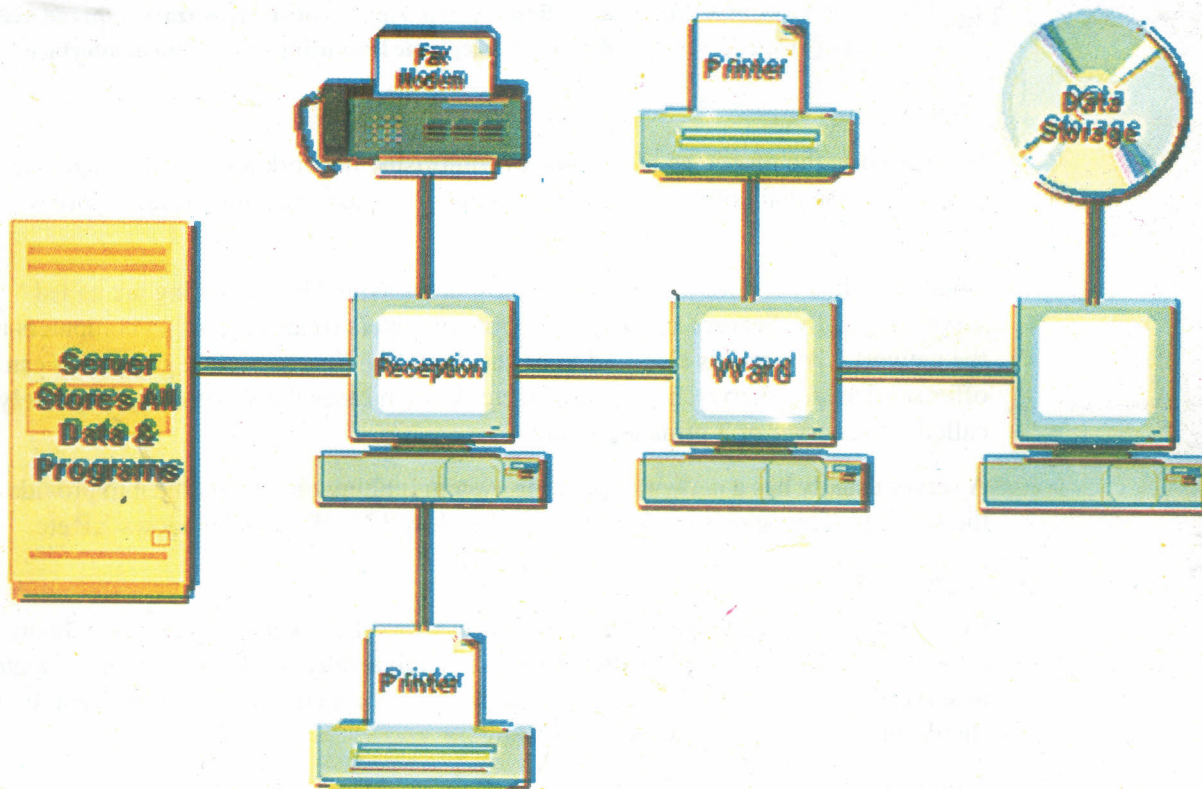


Fig. 2.2: A small LAN comprising a network between three sites—nurse's station, ward and reception. Usually the data is stored on the server. Multiple printers and a data storage device (CD Writer, Tape Drive, etc.) are shared by different users. A fax-modem is also shared through which an Internet connection can be used at all the sites.

2.3.2 WAN

You have read in BNSL-112, Block 1 that WAN stands for a Wide Area Network. This kind of network is spread out over a very wide geographical area. The area might include cities, countries and even continents. Communication between computers is usually established through modems, telephone lines or satellite links.

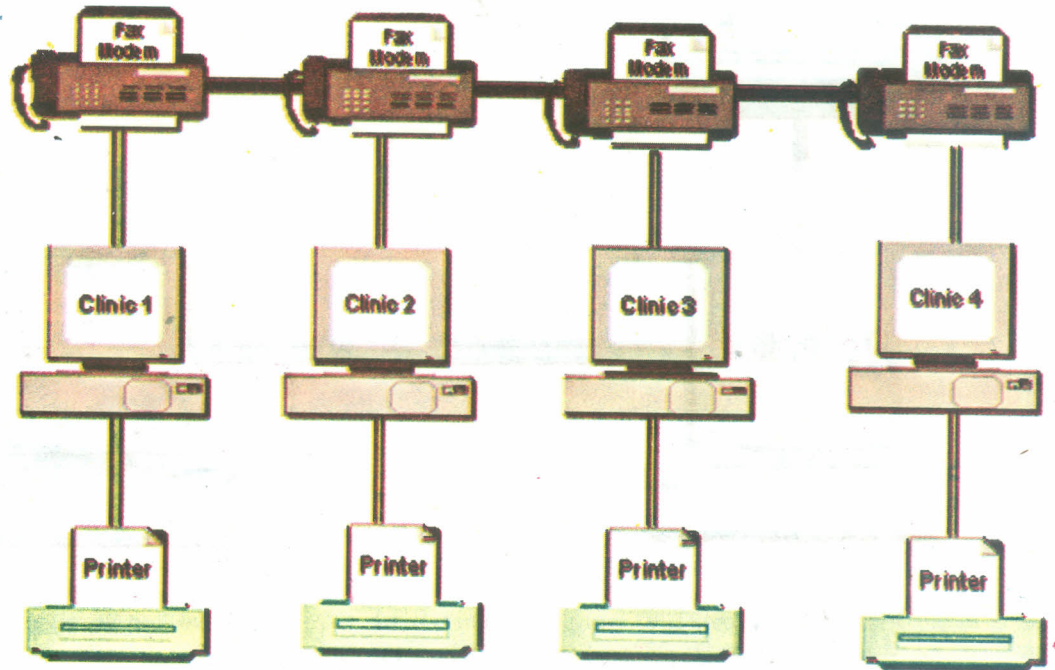


Fig. 2.3: A WAN connecting various clinics or departments of an organization spread over a long distance, connected through telephone lines using a fax-modem interface.

2.3.3 Server

In a network, the resources of computers comprising network are usually shareable. In fact, one of the main objectives of networking is to make the computing resources shareable.

Computers in a network that make their resources available for sharing are called server. Typically, Servers are very powerful computers (relative to other computers in the network). A server is also said to be the one providing services e.g. a server can offer services for sharing files, printers, etc. In such cases the server is appropriately called a file server or a print server etc.

A server usually has a network operating system running on it to enable it to provide the services. This operating system could be Novell NetWare or Windows XP etc.

2.3.4 Client

Computers that avail the services provided by a server are known as clients. Clients are usually less powerful computers (this is not universally true). Clients are connected to servers to give them access to services. In order for a computer to be a client, it should run appropriate networking software.

A typical manner in which a server and a client interact is shown in the figure above.

2.3.5 Workgroup

A Workgroup is a group of people who are working together on the same project. The members of such a group are usually (not always) located in close physical proximity to one another – typically in a single room. The computers that these team members use are also said to be belonging to the same workgroup.

The concept of workgroups makes it very simple to communicate to a group of relevant people at the same time. Most network operating systems support the workgroup concept.

2.3.6 Login

Because the information on a network is sharable, networks are very susceptible to unauthorized intruders. In order to prevent unauthorized access to use the services of the network, the user identifies self by providing name and a confidential password. The NOS then allows access only if both the name and password are correct.

This process is known as Login. The user is said to be logging into the network. The name which the user uses to enter the network is called the login-ID or login name.

2.3.7 User Accounts

Every authentic user in network has an account on it. The user account includes information on the user, e.g., his home directory, the amount of disk space that he can access or use at a given time, the times that s/he is allowed to login, her/his password and personal data, etc.

2.3.8 Rights

Every user has a set of permission for using the network resources e.g., not all users are allowed to modify critical information like the financial information of the organisation/hospital. Only relevant users can access this information. This set of permission is also referred to as the rights that the user has in the network. If the user attempts to access some data, resource or program for which s/he has not been assigned rights, s/he is denied and unable to access it.

2.3.9 System Administrator

The System Administrator is in-charge of maintaining the network. This includes, creating new users, accounts, creating disk space for storing additional information, removing unused information, configuring the network resources, etc. The system administrator is generally well aware of network technology and is a highly skilled person.

Check Your Progress 1

What do you understand by the following terms:

1) LAN

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2) WAN

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3) Workgroup

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4) Server

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2.4 HARDWARE AND SOFTWARE FOR NETWORKING

For Networking you would need Hardware and Software.

2.4.1 Hardware

Hardware includes the cable and a Hub/Switch that will connect the participating computers together. Printers or any other peripherals connected to one computer can be shared across on any terminal on the network. Typically, each computer requires a LAN (or Ethernet) Card to be installed in it. To this LAN Card the cable is attached, with the other end terminating in the Hub/Switch. A Hub/Switch is a device which connects different computer cables and allows communication between various computers of the network. You could also say that the Hub acts as a policeman, standing on a busy crossroad, directing traffic. Similarly, the Hub directs traffic (here data) between various computers, allowing uninterrupted flow of information from one point to the other.

Over the years, new computers have the LAN card inbuilt on the motherboard. Also wireless LAN cards and Switches/Routers are now available, which facilitate and permit the transmission of data from one system to other without the need of laying down cumbersome wires.

2.4.2 Software

Any Windows i.e. from 95 onwards has the capacity to connect two computers with the help of Ethernet cards (generally known as LAN card) and CAT5 cable. This set-up of connecting two computers is called Peer-to-Peer Networking. More than two computers can be connected with the help of a 8/16 port Hub/Switch. Such networks ideally require special software and appropriate hardware.

Software system for large scale networking are Novell-Netware and Windows NT/Server 2003.

2.4.3 Windows and Networking

You have read about Window 1995, Window 2000, Window 2005 and XP. These include built-in networking support with a wide range of improvements over earlier versions of Windows. This includes built-in support for popular networks plus an open, extensible networking architecture.

2.4.4 Network Interface

Windows provides an easy to use interface to configure the network settings of your computer. All network components are installed and configured by using the

“Network” option in the Control Panel rather than by editing configuration files manually.

The Windows set-up program automatically installs the network software based on information detected about the existing networking components in the computer.

Any computer running Windows NT Server can be set-up to serve as a file and print server for other computers on the network. Resources can be protected from unauthorized access by assigning each resource a list of authorised users and their respective rights.

Using Windows NT, it is possible to establish simultaneous connections to multiple networks on a computer. The number of network connections allowed on a computer running Windows NT depends only on the limits assigned in the networking software’s configuration.

2.4.5 Accessing Other Computers

The advanced networking features of Windows combined with the easy to use user interface make the task of sharing information with other computers/users quite simple and intuitive.

In order to share information between two computers, certain conditions must be satisfied.

- The computers must be connected to a common network.
- The resources of the computers must be made shared.
- The persons using the computers should have sufficient rights to access those resources.

Accessing other computers is done through the “Network Neighborhood”. To open this object, double click on the Network Neighborhood icon on the desktop and a window opens. This window is the interface to the entire network. Using this window you can access the resources of any computer in the network provided you have sufficient rights to access the resources.

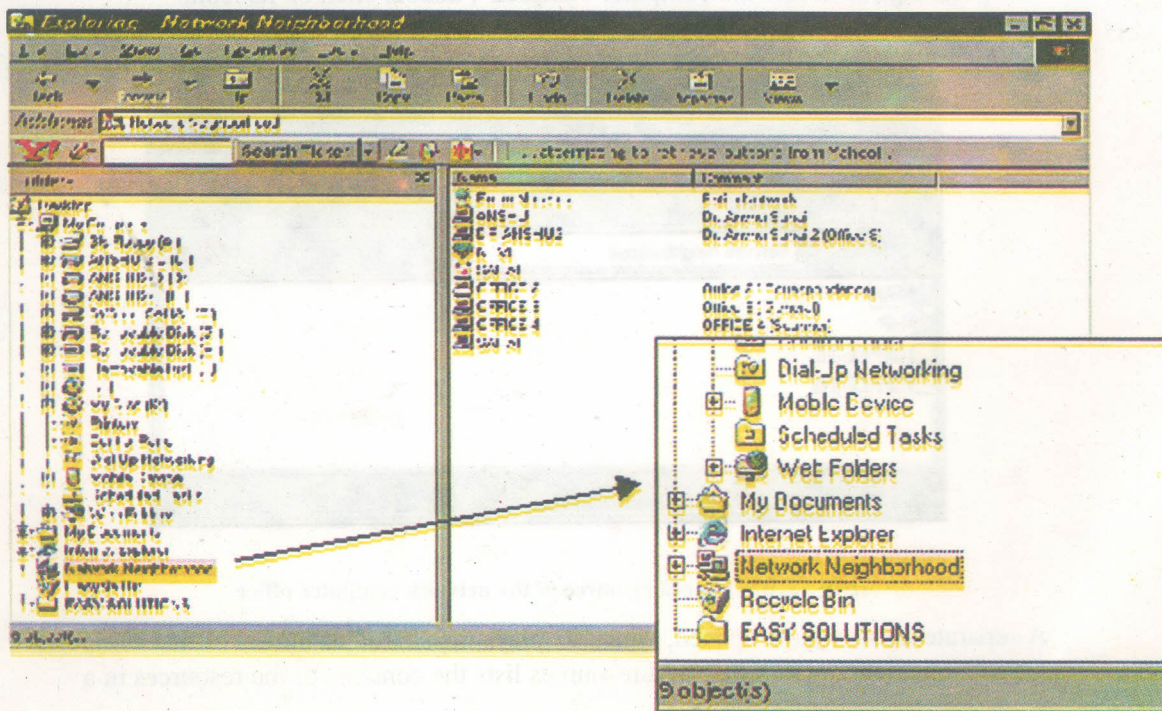


Fig. 2.4: Using network neighbourhood to view shared resources

The Network Neighbourhood window displays a list of computers in the network.

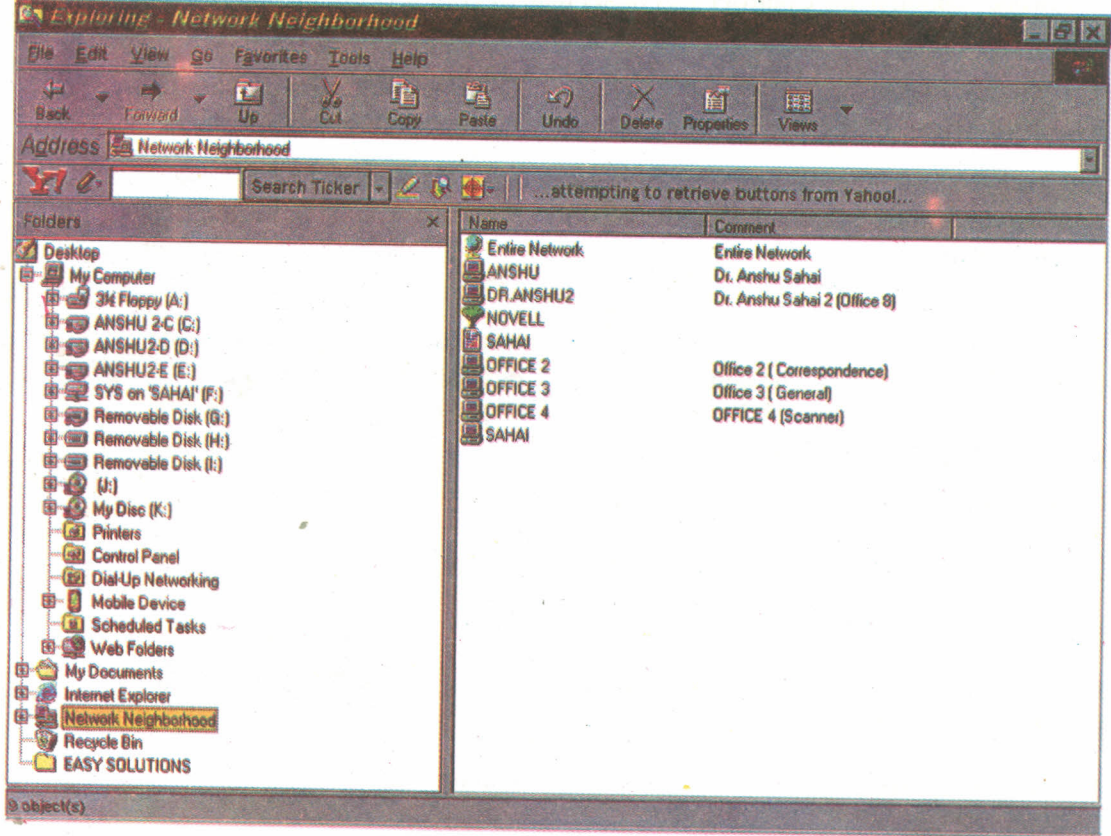


Fig. 2.5: List of computers on the network

By default only those computers are listed that belong to the same workgroup. Even your own computer is also listed.

Computers that have been accessed recently are also listed in the Network Neighbourhood window.

In order to access the resources of another computer, double-click on the icon for that computer e.g., to access the computer “Office2”, double click on its icon.

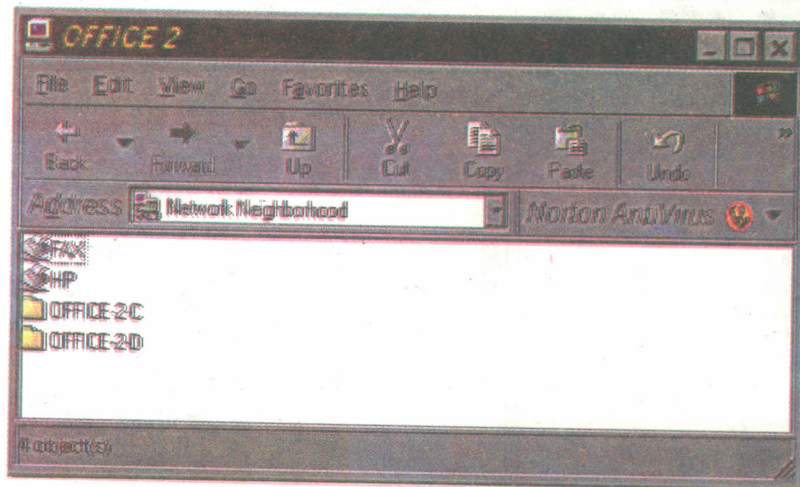


Fig. 2.6: Shared resource of the network computer office

A separate window gets opened, which displays the shared resources of that computer. Double-clicking any of the shared resources lists the contents of the resources in a window.

To access a computer not in your immediate workgroup, double-click the “Entire Network” icon or Shortcut in the Network Neighborhood window.

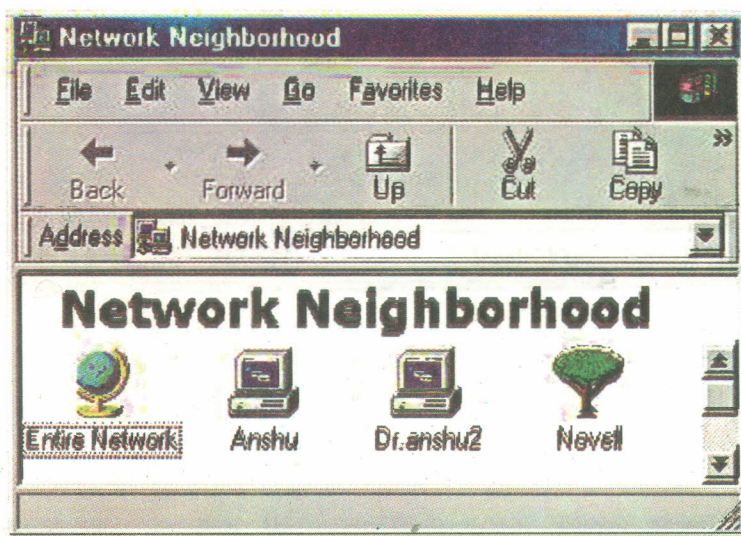


Fig. 2.7: Use of entire network lists all computers of different work group on the network

This lists all the computers in the network. The computers are listed in two ways:

- a) Computers belonging to the same workgroup or which have been accessed recently are listed one-by-one. An icon followed by its name represents each computer.
- b) The rest of the computers in the network are not listed, but the workgroups they belong to are listed.

To access another computer not in your workgroup, double-click on the workgroup to which that computer belongs to, e.g., to access the computer "Office5" in the "B.Sc. Nursing" workgroup, double-click on the "B.Sc. Nursing" Office workgroup icon.

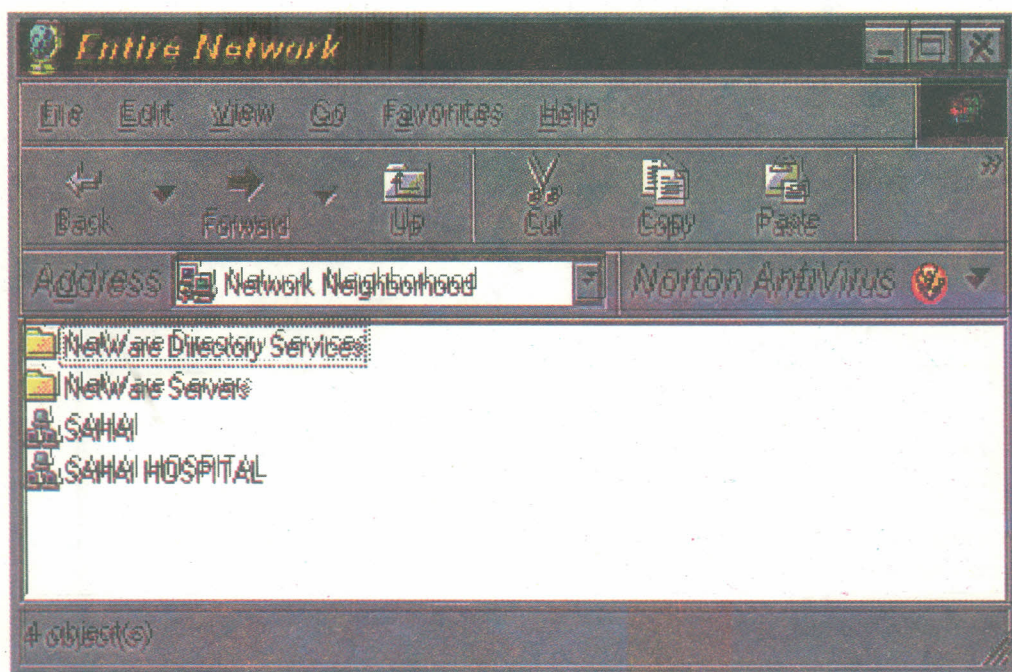


Fig. 2.8: The various workgroups on the network

Accessing Folders and Printers

Accessing folders, files and printers of another computer is as easy as accessing another computer. To access folders and printers of another computer, it is necessary to access the other computer first. For example, to access the folders and printers of the computer "OFFICE 2", it is necessary to access the "OFFICE 2" computer. The computer itself can be accessed through the Network Neighborhood.

Double-clicking on "OFFICE 2" displays its contents.

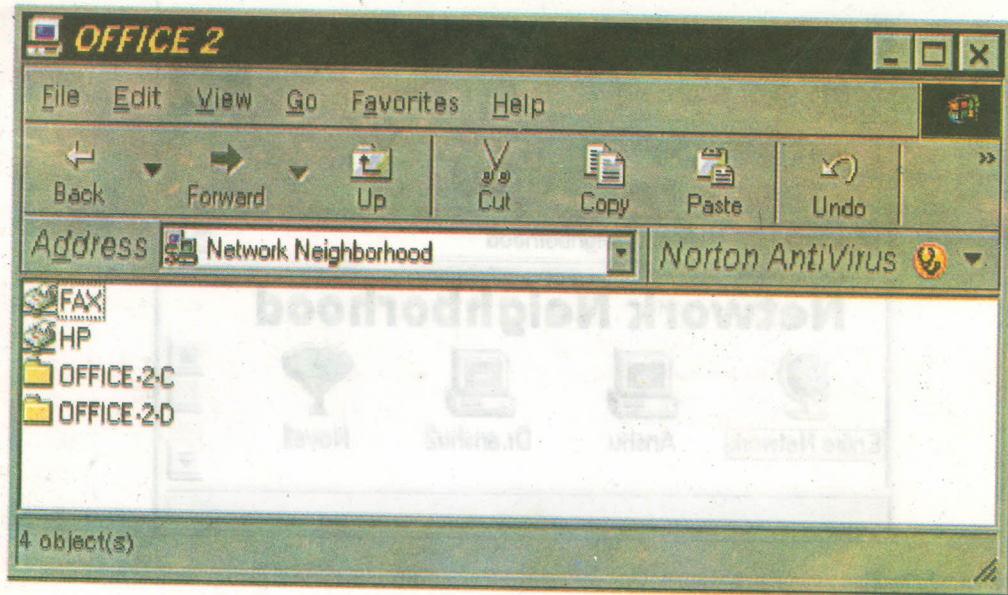


Fig. 2.9: The shared components of office 2 computer

The contents include a list of shared folders, drives and printers available on the computer. To browse through each folder in this, double-click on the corresponding folder's icon. The contents of the folder are displayed in a separate window e.g. to browse through the folder "OFFICE 2-C", double-click on its folder icon.

How to Share Folders/Printers

Making a folder on your computer accessible to other users is done in two steps.

You may have to share folder of patients with all the shift nurses.

- Mark the folder sharable and assign a share name.
- Granting rights to users who need to access that folder.

This paragraph describes the procedure for making a folder shared and granting access to a shared folder.

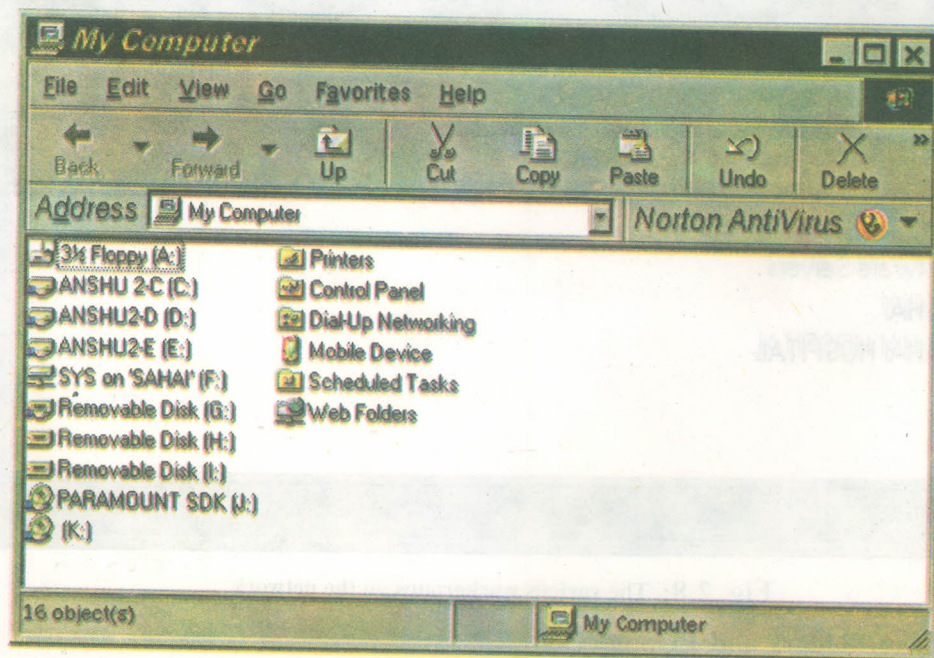


Fig. 2.10: List of components of the computer which may be made shareable

To make a folder sharable, you need to access the folder first. If the folder is on the Desktop, it is already accessible. If the folder is not on the Desktop, you can use Windows Explorer or My Computer to access the folder.

To make that particular folder sharable, point to it and click the right mouse button. The following menu appears:

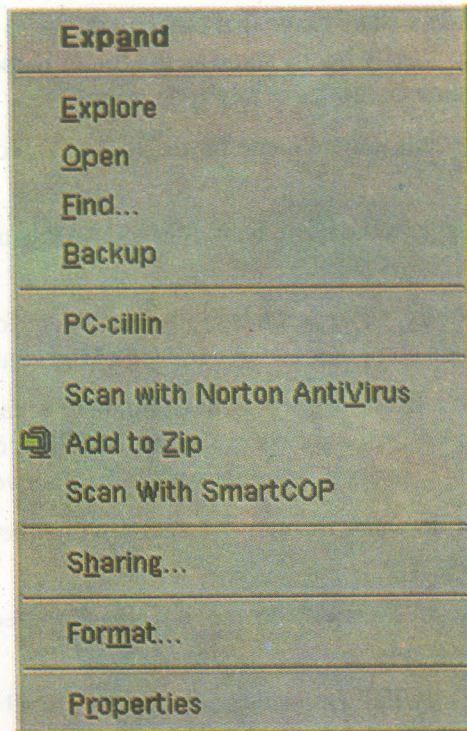


Fig. 2.11: Right click on a folder brings up the option for sharing

One of the options in this menu is “Sharing”. Point to this option and click. The Properties dialog box for the “Nursing Foundation” folder appears. The sharing property gets displayed.

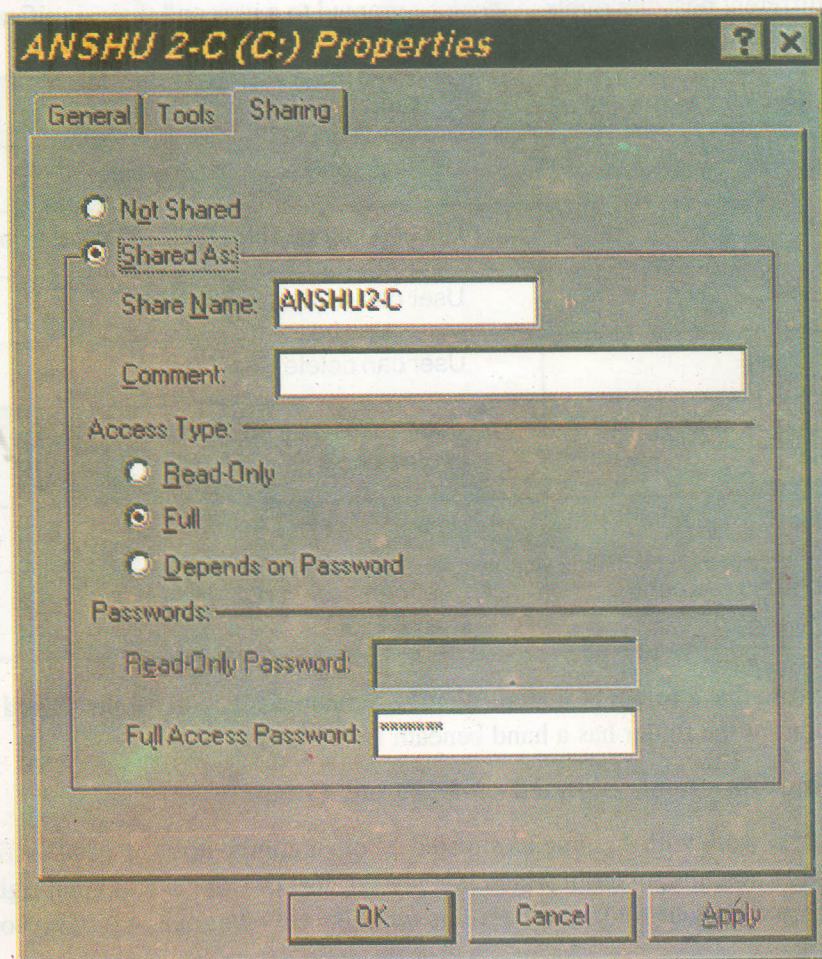


Fig. 2.12: Security and sharing options for the computer folder

If the folder is currently not shared and this is indicated by the "Not Shared" option being checked. To make the folder sharable, click on the "Shared as" option. This makes the folder sharable and accessible to other people on the network.

The next step is to provide a share name that others will use to access this folder. A share name need not necessarily be the same as the folder name, but it helps to have a similar name. A share name cannot have any spaces in it.

Windows provides by default a share name for the folder. You can either accept it or type a new name.

In this case Windows suggests the share name "MS". As this name suits us, fine, we will accept it.

In the "Comments" text box, we type a descriptive comment for this sharable folder. Users who will browse this computer can get an idea of the contents of this folder.

The next step is to create a list of users who have rights to access this folder. To create a list of users who will have access to the shared folder, click the ADD button. Windows will get the lists of users in your network from a network server.

Depending on the type of network, the network server will either be a Windows NT server or Novell NetWare.

This is a security feature in Windows to prevent unauthorized access to the shared information.

Assigning rights "Read Only/Full/Depends on Password" to all users in the network. A specific set of rights that you should assign to a user will depend on his requirement. If the user needs to access the folder to both, read and write files, he should be given both "read and write files" access.

Different Networking Softwares have different security options.

The different possible rights that can be granted to a user and their significance is listed below:

Rights	Significance
Read	User can only read or copy files
Write	User can modify files but can't create new files
Create	User can create new files
Delete	User can delete files
Change attributes	User can mark files read only or change a read file to read and write
List files	User can list files in the folder
Change access control	User can assign rights to other users to access the shared folder.

To indicate that a folder is shared, Windows changes the icon for the shared folder. The icon for the folder has a hand beneath it.

Opening Documents Situated on Different Computers

In order to work with documents situated on other computers, you need sufficient rights to access the folder in which it is placed. Just as you have to grant rights to other users to access your folders, other users will also have to grant you rights to access their folders.

This paragraph tells you how to open a document situated on a different computer. It is assumed that you have sufficient rights to access the folder in which the document is placed.

In this paragraph we will access the remote document "Sample Text Nurse" on computer named "Office-2".

The first step to open a document is to access the shared folder in the remote computer. This is easily done through Network Neighborhood. Double-click on the Network Neighborhood icon on the Desktop and on "OFFICE-2" computer in the Network Neighborhood window.

This will list all the share-out folders on "OFFICE-2" machine.

Double-click on the shared folder "My Documents" to access the files placed in it.

Double-click on the document to open it. Depending on the applications you loaded on your system, either the MS-Word or WordPad applications will be launched to display the contents of the file.

You can now change the contents of this document and save it back on "OFFICE-2" machine.

Copying and Moving Documents on Other Computers

To make a local copy of the document, simply drag the icon and drop it on your desktop. The document will be copied on to your desktop.

To move the file instead of copying it, press "shift" while dragging the icon.

2.5 AUDIO/VIDEO APPLICATIONS ON NETWORK

Clinical applications of a computer include recording of slit lamp images on a computer. These still images or even videos can be recorded on a data storage server or the local computer itself. The images can then be edited, enhanced and stored for use in the patients management, presentations or just for the sake of completeness of the patients records. Since these images are usually big in size, copying them on a floppy and transferring them from one system to the other is a cumbersome job. Even more so for a video recording made either of nursing care of patient in ICU image from the slit lamp or from the camera mounted on the operating microscope in the operation theatre while assisting in the complicated surgery. The sheer size of most image or video clippings make them difficult to transfer. Also storage and archival becomes an issue. The option of having these images available at different locations also needs to be considered.

In most cases a simple solution of all these issues is a properly set-up network, with a dedicated data server. Some people also like to use the term "Image Server" for the server which is used to store clinical nursing care images. These servers ideally should have sufficient space to permit storage and archival of the images for an extended period of time. For the purpose of storage, the server would ideally have a large hard disk capacity (something like 80 gigabyte or further multiples of this as required) or cassette tape drives for secure storage. ACD writer or DVD writer is also a desirable option so as to enable the administrator to have a back-up disk of the data in the rare situation of problems with the data server. Presence of the data on the server enables all the people who have been assigned rights to view and utilize these images and videos.

One major advantage of the network is to collect and organize all data pertaining to a single patient together as a single directory and record on a single system. All this data

- Two computers, which are at the same level in the network, are called Peers.
- In order to prevent unauthorized access to network resources, almost all network operating systems provide features for security of information in the network.
- Every authentic user in a network has an account it.
- Every user has a set of permission for using the network resources called as his rights.
- The system administrator is incharge of maintaining the network. This includes, creating new user accounts, creating disk space for storing additional information, removing unused information, configuring the network resources, etc.
- The Windows operating system includes built-in networking support with a wide range of improvements over earlier versions of windows.
- All network components are installed and configured by using the network option in control panel rather than by editing configuration files manually.
- The Windows Set-up Programme automatically installs the network software based on information detected about the existing networking components in the computer.
- Any computer running Windows can be set-up to serve as a file and print server for other computers on the network.
- Windows also provides plug and play networking support.
- Accessing other computers is done through the Network Neighborhood Objects.
- The Networking Neighborhood window displays a list of computers in the network.
- You can access your own computer through network.
- To access the folders and printers of another computer, it is necessary to access the other computer first.
- Making folder on your computer accessible to other users is done in two steps:
 - Make the folder sharable and assign a share name.
 - Granting rights to users who need to access that folder.
- In order to work with documents situated on other computers, you need sufficient rights to access the folder in which it is placed.
- To make a local copy of a document, simply drag the icon and drop it on your desktop. The document will be copied on to your desktop.

2.7 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

- 1) LAN stands for Local Area Network. This kind of a network consists of a set of interconnected computers that are not geographically spread out over a large area. Computers within a college campus or an office may be connected to form a LAN. Typically LANs are not spread out over an area exceeding 2 to 4 square kilometers. The computers in a LAN are connected using twisted pair or coaxial cables. The number of computers in a LAN usually does not exceed 400.

- 2) WAN stands for a Wide Area Network. This kind of network is spread out over a very wide geographic area. The area might include cities, countries and even continents. Communication between computers is usually established through modems, telephone lines or satellite links.
- 3) A workgroup is a group of people who are working together on the same project. The members of such a group are usually located in close physical proximity to one another. The computers that these team members use are also said to be belonging to the same workgroup
- 4) In a network, the resources of computers comprising network are usually shareable. In fact, one of the main objectives of networking is to make the computing resources shareable.

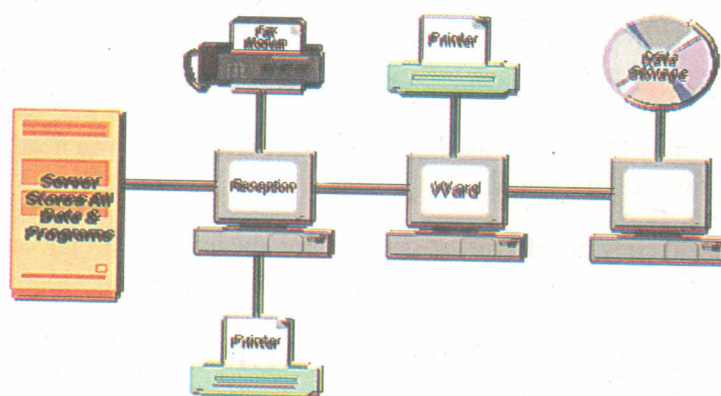
Computers in a network that make their resources available for sharing are called server. Typically, Servers are very powerful computers (relative to other computers in the network). A server is also said to be the one providing services e.g. a server can offer services for sharing files, printers, etc. In such cases the server is appropriately called a file server or a print server etc.

A server usually has a network operating system running on it to enable it to provide the services. This operating system could be Novell NetWare or Windows XP etc.

Check Your Progress 2

- 1) Accessing other computers is done through the "Network Neighborhood". To open this object, double click on the Network Neighborhood icon on the desktop and a window opens. This window is the interface to the entire network. Using this window you can access the resources of any computer in the network provided you have sufficient rights to access the resources. In order to access the resources of another computer, double click on the icon for that computer.
- 2) Sharing is the process of making a folder on your computer accessible to other users. To make a folder sharable, you need to point to it and click the right mouse button. A menu appears with the option "Sharing". Point to this option and click. To make the folder sharable, click on the "Shared as " option. This makes the folder as sharable, and accessible to other people on the network. Now we create a lists of users who have rights to access this folder.

3)



- 4) Clinical applications of a computer network includes recording of patient images or videos on a computer. The images can then be edited, enhanced and stored for use in the patients management, nursing care records presentations or just for the sake of completeness of the patients records. "Image Server" are servers used to store clinical images. The network can also be utilised for transfer storage and archival of images and videos from various diagnostic equipment. Images

from a Fundus Camera, Visual Field Analyser, B-Scan ultrasound, Digital X-Ray, CT Scan, Corneal Topography Unit, and various other equipment can similarly be transferred, stored and archived on the data server through the network. Advantage of the network is to collect and organise all data pertaining to single patient together as a single directory and record, on a single system.

2.8 FURTHER READINGS

Comer E. Douglas, *Internetworking with TCP/IP*.

Crawford, Sharon, Chapter 2, *Windows 98—No Experience Required*.

Hutchinson, *Computer, Communication, Information: A Users Introduction*, Tata McGraw Hill Publications.

Michael, *Understanding the Network*, BPB Publications.

Orfali Robert, Harkey Dan, Edwards Jeri, *The Essential Client Server*.

Patrick, *Networking Foundation*, BPB Publishers.

Perry Greg, *Windows 2000 in 24 Hours*.

2.9 ACTIVITIES

- 1) Find out the type of network you have in the hospital.
- 2) List the source of communication through the network you get in your hospital.

PRACTICAL 3 ELECTRONIC PATIENT RECORDS

Structure

- 3.0 Objectives
- 3.1 Introduction
- 3.2 Manual versus Computerized Record-keeping
 - 3.2.1 Disadvantages of Manual Records
 - 3.2.2 Advantages of Computerised Record-keeping
- 3.3 Hospital Software
 - 3.3.1 How Should an Ideal Software be?
 - 3.3.2 What Features Should the Software Contain?
 - 3.3.3 Outdoor Patient Department (OPD) Features
 - 3.3.4 In-door Patient Department
 - 3.3.5 Medical Counter/Shop
 - 3.3.6 Financial Accounting Software
- 3.4 Readymade versus Custom-made Software
- 3.5 Nursing Software—Dos and Don't
 - 3.5.1 Before Purchasing
 - 3.5.2 After Purchasing
- 3.6 Let Us Sum Up
- 3.7 Answers to Check Your Progress
- 3.8 Further Readings
- 3.9 Activities

3.0 OBJECTIVES

After completing this practical, you should be able to:

- explain the importance of computerized patient database;
- develop understanding of the basics of computer software and their types in relation to patient information management;
- relate the significance and be able to select a proper software for your needs; and
- enumerate the features and modules a hospital software requires.

3.1 INTRODUCTION

Patient records, when maintained on a computer, are far easier to record, store and retrieve than their cumbersome paper hard copy equivalents. Computerized records greatly improve the efficiency of the nursing care, and can easily be used for statistical analysis, medical audit, nursing audit, and medico-legal purposes. With the help of a network, patient records can be shared amongst the nursing community, eliminating redundancy and providing quality nursing care.

3.3.2 What Features Should the Software Contain?

Although the needs of every nursing department, hospital, pharmacy, would vary, certain common features are desirable in the software.

The common essential features of a hospital management software are:

- a) Registration of patients for OPD consultation and indoor.
- b) Registration of doctors and nursing staff with specializations and experience.
- c) Entry of diagnosis and prescription related to a patient.
- d) Print-outs of medicines prescribed, tests suggested, preventions advised, nursing care given, nursing records maintained.
- e) Preparation of bills and consultation charge slips.
- f) Inventory management, including issue of drugs, list of poisonous drugs etc.
- g) Inventory of medicines, consumables (like syringe etc.), linen, furniture, fittings, etc.
- h) Preparation of various reports:
 - **Administrative**
 - Financial Reports
 - Stock Reports
 - Attendance Reports
 - **Nursing Reports**
 - Morning, evening and night reports
 - Number of nurses of various category on duty, per day, per week, per month
 - Record of nurse's activities
 - Admission and discharge records
 - **Other Reports**
 - Prescription records
 - Reminders
 - Circulars
- i) Auto logging of check-in and check-out hours of nursing staff.

3.3.3 Outdoor Patient Department (OPD) Features

The following modules can be developed for various areas and workers.

1) A Receptionist Module

Receptionist updates all basic patient information and keeps track of all patients checked in and/or manages the OPD registration/collection details.

- Detailed options for recording the data for new patients.
- Fields for primary patient information (name, address, telephone, etc).
- A patient/doctor appointment schedule.
- Rescheduling of appointments.
- Facility for easy recording of anthropometrics (weight etc).
- Ability to retrieve data based on any of the above parameters.

EASY OPDHAL BY EASY SOLUTIONS (RAJENDRA)

DR. EOP Easy Opdhal (Easy Solution) (RAJENDRA)

RECEPTION

APPOINTMENT LIST (SUSPECTED PATIENTS)					UNCHECKED PATIENTS LIST (CHECKED-IN PATIENTS)				
DR.	PATIENT	App TIME	REG.#	P.Visit	DR.	PATIENT	TIME	REG.#	
AS	RAJENDRA ;	12:18	036905	10/05/2005	AS	CHIRANJI LAL SHARMA	4:46	036710	
CNS	SATY HARAYAN NAYAK	12:15	036882	10/05/2005	AS	TILAK ANIN		03627	
CNS	BARATH SHARMA	11:58	035859	14/04/2005	AS	ANSH RAMANI	14:33	025477	
CNS	CHIRANJI LAL SHARMA	10:35	036710	06/05/2005	CNS	ANSHULI GOEL	11:02	001018	
CNS	MEHA SURANA	10:32	013491	22/05/2003	JP	SHAKUNTLA SHARMA	14:39	036900	
CS	RAJENDRA SHARMA	14:57	00515	30/11/2000	JP	BHORI HEENA	14:39	036684	
PRK	VIJANDRA KASANA	13:16	036780	07/05/2005	PRK	VIJANDRA KASANA	5:17	036780	
PRK	BAHESHWARI SHARMA	12:24	035693	10/05/2005	PRK	RAJENDRA ;	12:18	036905	
RKS	SAROJ SHARMA	11:50	003593	10/05/2005	WG	MUSKAN	13:58	032961	
WG	ANINA ;	11:41	036087	10/05/2005					
WG	BACHAU RATI	12:05	036891	10/05/2005					
WG	HANIROODH ;	12:08	036892	10/05/2005					
WG	MUSKAN	13:58	032961	13/01/2005					
WG	KAILASH HEENA	14:15	036896	10/05/2005					

DOUBLE CLICK IF THE PATIENT HAS CHECKED-IN.

Current Missed New Patient Old Patient Exit

CHECKED IN PATIENTS LIST

Fig. 3.1: Receptionist module of a typical OPD program (Easy Solution)

2) A Doctor Module

Doctor has a list of the patients waiting for consultation. The doctor's module should include all the following details:

- Fields for common complaints, with drop down menus for common ailments (flu etc.) and duration.
- Patient/Family History options.
- An option for short follow-up entries.
- An exhaustive list of diagnosis and investigations (with an address list of pathological laboratories).
- Printable instructions and prescription information for the patient regarding the disease and its treatment.
- Facilities for entering periodic findings and recording monitoring parameters.
- The ability to generate a discharge summary.

The capacity to statistically analyse various parameters.

DOCTOR MODULE

DOCTOR	PATIENT	TIME	REG.#
ANSHU SAHAI	TILAK	0:	03627
ANSHU SAHAI	RAJENDRA	12:18	036905
CHITRA SITARAN	CHIRANJI LAL	44:6	036710
CHITRA SITARAN	ANSHULI	11:02	001018
J.P. NATHUR	SHAKUNTLA	14:39	036900
J.P. NATHUR	BHORI	14:39	036684
P.RATAN KUMAR	VIJANDRA	51:7	036780
VINIE GANGUL	MUSKAN	13:58	032961
VINIE GANGUL	ANSH	14:33	025477

New Patient Old Patient Exit

PRESS <TAB> TO ADD, <ENTER> TO MODIFY

Fig. 3.2: A Doctor's module showing list of patients waiting to be seen

3) **A Patient Registry**

- Name, Surname and Address
- Sex
- Caste
- Contact Numbers
- Area (Rural/Urban/Suburban)
- City/District
- State
- General Examination details
- Prescriptions and Advice
- Suggested/Actual Treatment details
- Patient Guidance (Audio/Video Aids)
- Nursing Diagnosis, Nursing Care given
- Scheduling Appointments
- Image Storage (Auto extracted from any peripheral device attached to the computer).
- A detailed Case Sheet of Patient/Family History
- Inventory details, if any,
- Billing/Accounting details

4) **Nursing Care Activity Module**

- Retrieving of identification data of patient
- Assessment of the patient
 - Physical
 - Mental
 - Personal
 - Socio-cultural
- Nursing Diagnosis
- Identification of nursing needs
- Prioritisation of nursing care
- Planning of nursing care
- Implementation of nursing care actions
- Evaluation of nursing care given
- Modifying the nursing care plan as per the evaluation of patient's condition
- Retrieving of various charts, I/O, Temp, B.P. pulse and respiration.
- Retriving of various reports, treatment depending upon the department in which a nurse is working.

- Opening of files for various nursing information from the office of nursing superintendent, ward sister.
- Information on networking sites.
- Any activity specially carried on by nursing colleagues.

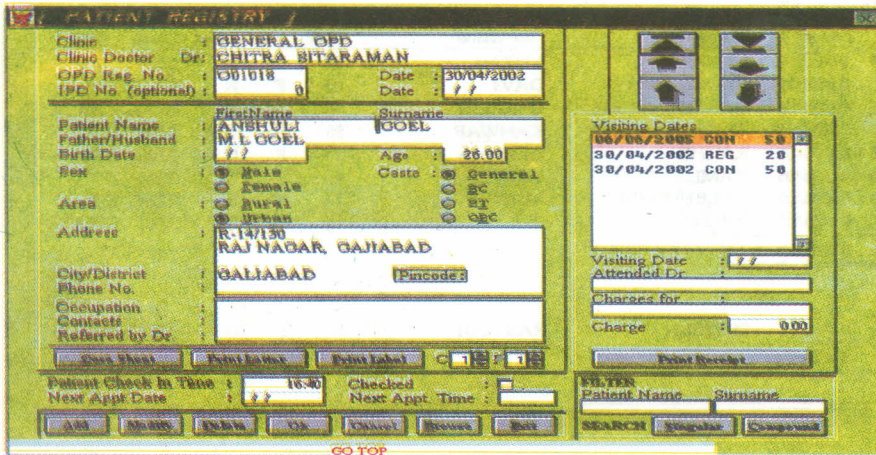


Fig. 3.3: Patient registry

5) Necessary Nurses Records

The software should generate all registers/reports in detail/summary for various permutations and combinations of options. A powerful SQL (Structured Query Language) software will simplify all your reporting queries.

- Nurses notes
- Intake out put chart
- Temperature and B.P. records
- Records of Nursing diagnosis
- Nursing care implemented

It should be so user friendly that merely on selecting or specifying various parameters the report output should be displayed and/or printed.

Graphical representation of the reports can also be generated by the software. If not, it could be at least made compliant to divert the report output to Microsoft Excel or Word, where in you could generate the graphs at ease.

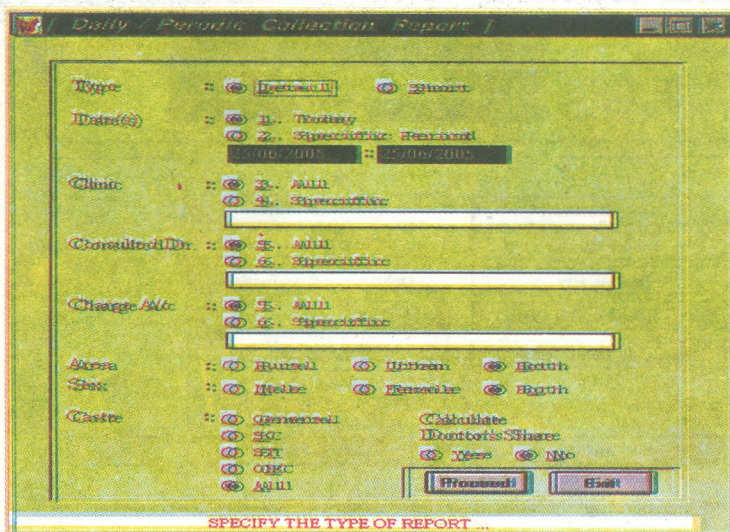


Fig. 3.4: Collection report

Page Preview

Patient Registry Detail for the specified period 01/06/2005 - 01/06/2005
 OPTIONS - (CLINIC:ALL) (DOCTORS:ALL) (AREA:BOTH) (SEX:BOTH) (CASTE:ALL)

Run Info :SATURDAY JUNE 25TH, 2005 - 00:58:11

Reg.No.	Date	Name	Surname	Age	Sex	Area	Caste	City
O37704	01/06/05	MUKESH	MEENA	20	M	R	GEN	DAUSA
O37705	01/06/05	BHOORI DEVI	DAVI	60	F	R	GEN	JPR
O37706	01/06/05	GORI SHANKAR	SHARMA	4	M	R	GEN	KAROLI
O37707	01/06/05	SAYA	KANWAR	55	F	U	GEN	JPR
O37708	01/06/05	RAKHE	SHARMA	39	F	U	GEN	JPR
O37709	01/06/05	KAMLA	YADAV	41	F	U	GEN	JPR
O37710	01/06/05	KULBHUSHAN	MISHRA	13	M	R	GEN	JPR
O37711	01/06/05	VIVEK	:	18	M	R	GEN	SIKAR
48 Patients								
RETINA								
R03619	01/06/05	SUSHILA	RASTOGI	66	F	U	GEN	JPR
1 Patients								

Fig. 3.5: Specimen of patient detail register

3.3.4 In-door Patient Department

- Ideally all features of OPD.
- Both OPD and IPD modules should be inter-linked.
- In addition all details pertaining to the patient's medical/surgical history, examinations performed, suggested/actual treatment, details of different kinds of operations, nursing care given etc.
- Follow-up options for patient care.
- Inventory control of OT would be an added feature.
- The software can be made complete to extract data from any electronic equipment used in the regular course of treatment, nursing diagnosis, nursing care or technique need in operation theater

Case Sheet

Clinic : RETINA
 Clinic Doctor Dr. : ANSHU SAHAI
 OPD Reg No. : R03627 Date : 06/06/2005
 Patient Name : TILAK AMIN

SELECT FOR FURTHER DETAILS

Fig. 3.6: Patient's case sheet menu

3.3.5 Medical Counter/Shop

The Software for medical counter/shop should maintain:

- Complete Customer Details
- Inventory Control
- Billing
- Linked to Accounts
- Have certain Audio/Video clips/presentations/documentary for patient's guidance.

Code : 1: Code

Full Name : Mr. 3: Name 4: Surname

Birth Date : 5: BirthDate 6: Age Anniversary : 7: ADate

Category : A B C EXCL.

Area : 9: AreaN Religion : 10: Castell

Group : 11: GroupN

Address : 12: Address1 13: Address2 14: Address3 15: PinCode

Phone No. (R) : 16: Phone

Phone No. (O) : 17: PhoneO

Mobile : 18: Pager

E-Mail No. : 19: Telex

Fax No. : 20: Fax

Occupation / Remarks : 21: Occupation

Refraction Details Doctor : 22: DoctorN Date : 23: PDate

SPECTACLE

ADD		Right Eye				Left Eye				
22: AE	23: AD	SPH	CYL	AXIS	VA	SPH	CYL	AXIS	VA	
42: Distance	24: DRE	25: DRE	26: D	6	27: D	28: DLE	29: DLE	30: D	6	31: D
43: Reading	34: RRE	35: RRE	36: R	N	37: R	38: RLE	39: RLE	40: R	N	41: R

CONTACT LENS

H	V	B.C.	DIA.	O.Z.	Pwr/SPH	CYL	AXIS	VA	
44: REH	45: REV	46: REE	47: RED	48: REC	49: REP	50: REC	51: R	6	52: REV
53: LEH	54: LEV	55: LEE	56: LED	57: LEC	58: LEP	59: LEC	60: L	6	61: LEV

RE: 62: ContactLN LE: 63: Contact2LN

Fig. 3.7: Customer details

3.3.6 Financial Accounting Software

An Ideal Accounting Software should have the following features:

- Purchase Details
- Invoice Details
- Purchase/Sale Return (Debit/Credit Note) Details
- Tracking of Damages
- Tracking of Receipts and Payments
- Tracking of Outstanding Receivable/Payable
- Banking Transactions

- Purchase/Sale>Returns Registers
- Maintaining various Day Books (Cash/Bank/ PettyCas.,etc.)
- Ledgers
 - General Ledger
 - Sub Ledger
 - Customer Ledger
 - Supplier Ledger
- Trial Balance
- Final Accounting Reports
 - Trading Account
 - Profit & Loss Account
 - Balance Sheet
- Various Management Reports
 - Account Receivable/Payable
 - Advances
 - Graphical Outputs for any Accounting Head
 - P&L Expenses List
 - Department wise Budgeting options
 - Funds Inflow/Outflow Statement
 - Receipts/Payments over a specified Amount
 - Sales/Purchase over a specified Amount
 - Interest/T.O.D. Calculation Routines

3.4 READYMADE VERSUS CUSTOM-MADE SOFTWARE

Nursing care software can be in two forms. Software can be custom-made with the help of a computer programmer, suited for a client with very specific software needs. Alternatively, it can be a readymade programme, manufactured for use in a wide range of healthcare settings that can be purchased from a vendor. In most cases, the readymade programme can be customised so as to fulfil the individual client's requirements.

Whether a custom-made software is developed or an off the shelf software is purchased, both must be purchased with a proper number of user licence, a maintenance contract and upgradation option as and when newer options/features become available.

Readymade	Custom-made
<ul style="list-style-type: none"> ● Generally more user friendly, and less knowledge of computers is required. ● Many packages can still be customized, allowing for some degree of specific software tailoring (however, this is often quite expensive). ● The program is usually too general to satisfy all of client's software needs. ● It has been more or less thoroughly tested. ● It usually costs less than a custom program. ● It is better suited for smaller clinics and nursing homes. ● Many options provided may not be necessary at all, thereby consuming data entry time. ● Existing Reporting Formats may not suit the management. 	<ul style="list-style-type: none"> ● Developing software is often long and tedious, but a very high degree of specificity can be met. ● Miscommunication between nurse and programmer is a strong possibility, as it is likely that neither is very familiar with the other's area of expertise. ● More of the nurse's specific software needs can be met. ● It has not been tested, so glitches and other bothersome malfunctions are nearly certain to occur. ● Since it's tailor made, it is relatively expensive. ● It is better suited for large hospitals and facilities where a higher degree of specificity is required. ● Only those options that are required are incorporated and hence is certainly more user friendly. ● All reports are precise and exact as per management requirements.

3.5 NURSING SOFTWARE – DO'S AND DON'T

While purchasing an nursing software the following do's and don'ts should be kept in mind.

3.5.1 Before Purchasing

- Ideally it's wise to buy a readymade software with options to further customise it to suit your managerial functions.
- A totally Custom-made software developed right from scratch would take a phenomenal amount of development/testing time.
- Try the demonstration copies of different kinds of software, each for a week or two, to find out what are its first-hand advantages and disadvantages.
- Check for references from those who have used the program, and search the Internet for reviews of the software.
- Look into upgradation costs and availability of the programmer/consultant.
- Inquire about warranty aspects and annual maintenance charges.
- Its very important to ensure that the company has developed the software and not merely marketing it.
- Procure a users list of the software from the vendor and enquire from the existing users how satisfied they are regarding functionality, ease of its use and the after-sales service and maintenance record of the company.

3.5.2 After Purchasing

The following points should be considered for after purchase facilities.

- Avail of any training the software engineer or vendor may provide, even if it is at a cost. Insist if no training is explicitly offered!
- Prepare a well thought out contingency plan in case of software failure, chances are you may need it, and being unprepared is detrimental to your practice.
- Ideally more than a couple of staff should be provided training on the operational features of the package and a manager/supervisor should get trained on technical aspects of the package like loading, handling data corruption, back-up, restore etc.

Above all, nursing software should be easy to use while increasing the efficiency and economy of your work.

Check Your Progress

- 1) Would you like to maintain your patient records on a computer? If yes, then discuss why?
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.....
- 2) Describe an ideal nursing software.
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.....
.....
- 3) List the different parts (modules) of an OPD Patient Management Software.
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- 4) Discuss the relative merits and demerits of a readymade versus custom-made software.
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.....
- 5) What important aspects should you focus upon before and after purchasing a patient management software.
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.....

3.6 LET US SUM UP

The need of the day is to maintain your patient records on a computer database. This provides the advantage of ease of access, convenience of storage and a saving on storage space and manpower.

However a reasonably good nursing software is required to ensure that advantages of a computer are properly tapped. A judicious decision needs to be taken whether to procure a ready made software with minor customisation or whether to get a package custom made to meet your requirements. Irrespective of the above your software needs to be able to handle various aspects including patient, nursing care planned and implemented, billing, accounts, inventory, pharmacy, indoor and operation theatre detail management and possibly a patient counselling module.

A careful research into the packages available and services provided and expenses to be incurred should be done prior to procuring the package

3.7 ANSWERS TO CHECK YOUR PROGRESS

- 1) Yes, I would like to maintain the patient records of my patient care on a computer as it provides various benefits and advantages. In maintaining computerized records less manpower is required for upkeep. Recording, storing, and retrieving are all much faster and, with little practice, easier. It requires far less space, and paper copies can be made when needed. Records are more complete, and less prone to human error. Photographs and other visuals can be easily incorporated into the record. Indoor patients can be monitored with a checklist of various parameters, and charts can be readily compiled, recorded and retrieved. Comprehensive nursing records can be organized into database that highlights trends in, for example, a clinician's prescription habits, allowing for introspection and improvement in nursing practice. Their thoroughness and organization lends to more accurate nursing research that is easier to carry out. Electronic records, with the aid of a modem and internet connection, immensely facilitate sharing patient data with the nursing community.
- 2) An ideal nursing software:
 - Should be easy to operate, with minimal training.
 - Should be reliable, and thoroughly tested.
 - Should be flexible (not too many compulsory fields to fill out).
 - Operationally Fast.
 - Data Access/Security Features
 - Have an instruction manual and/or online help web-page.
 - Have data Backup/Protection features
- 3) An OPD Management Software should contain the modules for a Receptionist, a Nursing Module, A Doctor's Module and a Patient Registry.

4)

Ready made	Custom-made
<ul style="list-style-type: none"> ● Generally more user friendly, and less knowledge of computers is required. ● Many packages can still be customized, allowing for some degree of specific software tailoring (however, this is often quite expensive). ● The program is usually too general to satisfy all of client's software needs. ● It has been more or less thoroughly tested. ● It usually costs less than a custom program. ● It is better suited for smaller clinics and nursing homes. ● Many options provided may not be necessary at all, thereby consuming data entry time. ● Existing Reporting Formats may not suit the management. 	<ul style="list-style-type: none"> ● Developing software is often long and tedious, but a very high degree of specificity can be met. ● Miscommunication between Nurse and programmer is a strong possibility, as it is likely that neither is very familiar with the other's area of expertise. ● More of the Nurse's specific software needs can be met. ● It has not been tested, so glitches and other bothersome malfunctions are nearly certain to occur. ● Since it's tailor made, it is relatively expensive. ● It is better suited for large hospitals and facilities where a higher degree of specificity is required. ● Only those options that are required are incorporated and hence is certainly more user friendly. ● All reports are precise and exact as per management requirements.

- 5) Before Purchasing: It is wise to buy a ready made software with options to further customise it to suit your managerial functions. Try the demonstration copies of several different kinds of software to find out what the advantages and disadvantages are firsthand. Check for references from those who use the program, and search the Internet for reviews of the software. Look into upgradation costs and availability of the programmer/consultant. Inquire about warranty aspects and annual maintenance charges. Ensure that the company has developed the software and not merely marketing the same. Procure a user list of the software from the vendor and enquire from the existing users how satisfied they are regarding the functionality. Check; for ease of use of the software and the after sales service and maintenance record of the company. " After Purchasing: Avail yourself of any training the software engineer or vendor may provide. Prepare a well thought out contingency plan in case of software failure. Ideally more than a couple of staff should be provided training on the operational features of the package and a manager/supervisor should get trained on technical aspects of the package like Loading, Handling Data Corruption, Backup, Restore etc.

3.8 FURTHER READINGS

Contact Mr Tilak Amin - CEO Easy Solutions, Mumbai. email - easysol@rediffmail.com
Lele, Ramchandra; Computers in Medicine - Progress in Medical Informatics. Thacker.
Naveen, *Computers for Doctors*.

3.9 ACTIVITY

Explain the nursing software/medical software which is being used in your hospital/ neighbouring hospital/health facility.

PRACTICAL 4 INTERNET AND NURSING

Structure

- 4.0 Objectives
- 4.1 Introduction
- 4.2 Internet and E-mail
- 4.3 Literature Search
- 4.4 Nursing Journals and Websites
- 4.5 Discussion Groups
- 4.6 Telementoring
- 4.7 Let Us Sum Up
- 4.8 Answers to Check Your Progress
- 4.9 Further Readings
- 4.10 Activity

4.0 OBJECTIVES

After completing this practical, you should be able to:

- use the internet to search for medical and nursing-related information; and
- subscribe to various discussion groups of your interest.

4.1 INTRODUCTION

As discussed in BNSL-112, Block 1 the Internet is an incredibly valuable tool for nursing research purposes. Most nursing organizations now have websites* that allow a member, and sometimes even an outsider, to access information about the organization, details of clinical research, nursing models, nursing research findings, publications, and a large amount of information regarding diseases, treatment modalities, and schedules. With the help of a Web, a vast amount of nursing information is available at the click of a button, and any nurse's clinician, with the desire to serve his patients to the best of her/his ability, would be wise to take advantage of the wealth of knowledge it provides.

4.2 INTERNET AND E-MAIL

The advent of the Internet and e-mail allows the international nursing community to interact and collaborate in an incredibly convenient way. The sharing of medical, nursing knowledge and academic discussion is immensely facilitated by the modem and the Internet. Mailing lists and online forums allow the global nursing community to advance in unison, the whole being far greater than the sum of its parts.

4.3 LITERATURE SEARCH

On-line access to MEDLINE, for example, connects a researcher to an enormous amount of literature and academic journals, allowing the nurse clinician to stay current and up-to-date with what is happening at the forefront of his particular field. At the

* A website is an online address of a company, an organization, or a person. It allows anyone with a modem and Internet connection to gather information, to view multimedia, to contact and to learn more about whatever the webmaster (the person making the page) wants them to know! This new form of communication has irrevocably changed the world we live in, forever altering business, entertainment, and interpersonal interaction.

4.4 NURSING JOURNALS AND WEBSITES

Given below are the websites of nursing journals, which you can use for nursing material.

Journal	Website
British Journal of Nursing	www.britishjournal of nursing.com
Canadian Journal of Nursing	www.cjnr.mcgill.ca
American Journal of Nursing	www.nursingworld.org www.ajnonline.com www.lww.com www.ovid.com
The American Journal of Maternal Child Nursing	www.mcnjournal.com
Journal of Advanced Nursing	www.journalofadvancednursing.com
International Journal of Nursing Practice	www.blackwellpublishing.com/journals
American Association of Critical Care Nurses	www.aacn.org
Australian Journal of Nursing	www.anf.org.au
Nursing Journal of India	www.tnaionline.org/thenursing.htm

4.5 DISCUSSION GROUPS

E-mail Discussion Groups are a form of telementoring that allows a group of peers in the same speciality to stay connected with one another. When E-mail is sent to the server, it is forwarded to all the members, allowing for many minds to work and collaborate on one problem or query. Now, A patient with an abnormal problem has the benefit of the brainpower of many physicians instead of just one, dramatically increasing the chances of having the best of consultation/treatment. Listserves can either be:

- a) **Open (Op)** : Allowing anyone to E-mail the server.
- b) **Moderated (M)** : Controlled by a member who screens all e-mails coming through the server before allowing them to be sent to all members.
- c) **Restricted (R)** : A membership into the mailing list must be granted before queries to its members can be made. Usually the server is E-mailed first with the request to join.

4.6 TELEMENTORING

Telementoring is used by a nursing teacher providing training/advice to another nurse consultant at a remote site. The Internet has made teleconsultation and telementoring much cheaper and more effective for many nurse practitioners, as all that is required is a PC, a high-speed modem, and a webcam (a camera allowing video in real time to be transmitted to another computer). The ease and accessibility

of modern telemedicine and telenursing has dramatically aided the health care systems of Third World countries, who in times of crisis can receive consultations from various resources.

Check Your Progress

- 1) Describe the role of nursing websites.
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.....
.....
.....
- 2) What way can a nursing website help you learn your subject/profession.
.....
.....
.....
- 3) What do you understand by the terms Open, Restricted and Moderated List serves.
.....
.....
.....

Activities

- 1) Study the website of any one organisation out of the list given above. Discuss what you like and dislike about the site. What information did you find useful?
- 2) Design a website for your hospital/clinic.

4.7 LET US SUM UP

The Internet is a gold mine of information in all aspects of life, especially in medicine and nursing. A lot of information is available on various web-sites hosted by different organisations, hospitals and clinics. Using the internet and online access libraries like the MEDLINE, medical information can be collected, which may be useful in research activities, or simply to increase one's knowledge of the latest development in the field of medicine. By becoming a member of a discussion group you can share your experiences with others and seek solutions to your problems. Various journals provide abstracts or full text of their articles on the internet.

4.8 ANSWERS TO CHECK YOUR PROGRESS

- 1) Nursing organizations now have websites that allow a person to access information about the organization, details of clinical research, publications, and a large amount of information regarding diseases, treatment modalities, and schedules. Nursing information is available at the click of a button.
- 2) On-line access to MEDLINE connects a nursing practitioner to an enormous amount of medical and nursing literature and academic journals, allowing the nurse clinician to stay current and up-to-date with what is happening at the forefront of her particular field. A user can visit the website of a medical and nursing journal and find the articles s/he is looking for.

- 3) Open (Op): allowing anyone to e-mail the server.

Moderated (M): controlled by a member who screens all e-mails coming through the server before allowing them to be sent to all members.

Restricted (R): a membership into the mailing list must be granted before queries to its members can be made. Usually the server is e-mailed first with the request to join.

4.9 FURTHER READINGS

Lele, Ramchandrat, *Computers in Medicine—Progress in Medical Informatics*.

Levine John R, Baroudi Carol, Young Margy Levine, *The Internet for Dummies*.

Zimmerman Scott, Brown Christopher LT, *Website Construction Kit*.

4.10 ACTIVITIES

- 1) Study the website of any one organisation out of the list given above. Discuss what you like and dislike about the site. What information did you find useful?
- 2) Design a website for your hospital/clinic.
- 2) Send an email to your peer group explaining the type of post basic B.Sc. Nursing programme you are going through to you may CC bimlakapoor@hotmail.com also.

List of Self Activities

Sr. No.	Practical	Title of the Activity	Hours	Marks
1.	Block 1 Practical 4	Select any topic related to nursing care of a patient Plan and conduct a demonstration to the first year general nursing students	10	10
2.	Block 1 Practical 4	Conduct a bedside clinic on a patient in an intermediate care setting for the 2 nd year students of general nursing programme	8	10
3.	Block 1 Practical 5	Prepare a clinical rotation plan for GNM/ B.Sc. Nursing students (a batch of 50) for the medical surgical nursing II (including specialty). Follow INC guidelines for reference	8	10
4.	Block 1 Practical 6	Select commonly used clinical records in critical care unit/ medical unit and compare them with what you have learnt in this practical	5	5
5.	Block 1 Practical 6	Select a patient in the ICU of your hospital/s. <ul style="list-style-type: none"> • Go through the nurses records of the patient. • Prepare nurse's notes and document the care given. • Write the progress notes for the patient over three days 	25	5
6.	Block 1 Practical 7	Select a high dependency clinical area of your hospital <ul style="list-style-type: none"> • Draw a schematic diagram of the physical layout of intensive care unit • List down the suggestion you would like to give if there is a remodeling plan for the same 	6	5
7.	Block 1 Practical 8	Select two patients with any problem/s from Medical Surgical area of your hospital <ul style="list-style-type: none"> • Review the literature • Write these two problems as research statements 	10	5
8.	Block 1 Practical 8	<ul style="list-style-type: none"> • Select a research article published in any nursing journal. • Critique the study with recommendations wherever necessary 	6	10
9.	Block 2 Practical 1	Try to use the computer for getting familiar with the monitor, keyboard and printer	8	5
10.	Block 2 Practical 8	Send an email to your colleague about the name of the hospital and department where you are posted. Place a copy of print out for your records.	8	2
11.	Block 3 Practical 1	<ul style="list-style-type: none"> • Prepare a list of various types of records being maintained on the computer in your hospital or health facility. • Keep a copy of print out for your records 	7	5
12.	Block 3 Practical 2	<ul style="list-style-type: none"> • List the type of network you have in the hospital • Enumerate the sources of communication which you get in your hospital through the network • Place a print out copy in your records 	7	3
13.	Block 3 Practical 3	Explain the nursing software / medical software which is being used in your hospital / neighboring hospital / health facility	6	10
14.	Block 3 Practical 4	<ul style="list-style-type: none"> • Study the website of anyone organization out of the list given in your practical. • Discuss what you like and dislike about the site. Which information did you find useful. 	6	10
		Total Hours	120	100

List of Supervised Activities

Sr. No.	Practical	Title of the Activity	Hrs.	Marks
1.	Block 1 Practical 1	Select two patients in critical care unit. <ul style="list-style-type: none"> • Prepare a Nursing care plan • Provide care on daily basis • Discuss in your group 	5	10
2.	Block 1 Practical 2	Select one patient in critical care unit <ul style="list-style-type: none"> • Prepare a case study • Make case presentation to peer group 	20	10
3.	Block 1 Practical 3	Select two nursing procedures that you have to perform for the patients in critical care unit <ul style="list-style-type: none"> • Prepare an observation checklist for these procedures • Observe the procedures among the peer group or selected students 	20	10
4.	Block 1 Practical 4	Select the peer group or any other group of students / staff <ul style="list-style-type: none"> • Plan two clinical teachings related to any problem/s of patients in critical care unit • Conduct teaching for the selected group • Use different methods of teaching 	10	10
5.	Block 1 Practical 5	Select a group of GNM / B.Sc. Nursing Students (Batch of 40-50) <ul style="list-style-type: none"> • Prepare rotation plan for providing Clinical experiences (in any four areas of critical care units / ICU) to the GNM/ B.Sc. students • Present to the peer group 	5	10
6.	Block 1 Practical 8	Select a research area / topic / problem of your choice. <ul style="list-style-type: none"> • Write problem statement and objectives • Prepare a research proposal based on guidelines given in practical manual • Prepare the tool • Collect data and prepare a term paper or a research report • Use mean median mode / percentage graphs for analyzing data 	26	25
7.	Block 2 Practical 2	Click on the following and explain how did you operate them and what did you find? <ul style="list-style-type: none"> • Icons • Taskbar • Opening a folder • Copying a file and renaming it 	7	3
8.	Block 2 Practical 3	Type a text of nursing diagnosis of a patient based on his/her history Take a print out of the typed text	4	3
9.	Block 2 Practical 4	Select any document from the existing folders Changing the font size and font style. Try highlighting the text applying bold attributes. Try using the spelling and grammar check	5	2
10.	Block 2 Practical 6	Copy and paste the content from one file to another	4	2
11.	Block 2 Practical 7	Do a PowerPoint presentation on any topic from nursing	10	10
12.	Block 3 Practical 4	Send an email to your peer group explaining the type of critical care programme you are going through. You may cc it to pkoul@ignou.ac.in	4	5
Total			120	100

NOTES

BNSL – 034 Clinical Nursing Practice in Critical Care - II

Block 1 - Nursing Intervention Modalities

Practical – 1 Nursing Care Plan

Practical – 2 Nursing case study / case presentation

Practical – 3 Observation Checklist

Practical – 4 Conducting Clinical Teaching

Practical – 5 Preparing a Clinical Rotation Plan

Practical – 6 Patient Care Documentation, Records and Reports

Practical – 7 Design of Critical Care Unit

Practical – 8 Developing a Research Proposal And Term Paper

Block 2 – Introduction to Computer Basics

Practical – 1 Introduction to Computers

Practical – 2 Microsoft Windows

Practical – 3 MS Word : Part I

Practical – 4 MS Word : Part I

Practical – 5 Introduction to Spreadsheets

Practical – 6 MS Excel Toolbars

Practical – 7 MS Power Point

Practical – 8 Internet and E-mailing

Block 3 – Application of Computers in Nursing

Practical – 1 Computerization in Nursing

Practical – 2 Networking for Hospitals and Clinic

Practical – 3 Electronic Patient Records

Practical – 4 Internet and Nursing