
UNIT 11 ELECTRONIC PATIENT RECORDS

Structure

- 11.0 Objectives
- 11.1 Introduction
- 11.2 Manual versus Computerized Record-keeping
- 11.3 Hospital Software
 - 11.3.1 How Should an Ideal Software be?
 - 11.3.2 What Features Should the Software Contain?
 - 11.3.3 Outdoor Patient Department (OPD) Features
 - 11.3.4 In-door Patient Department (IPD) Features
 - 11.3.5 Medical Counter/Shop
 - 11.3.6 Financial Accounting Software
- 11.4 Readymade versus Custom-made Software
- 11.5 Nursing Software-Dos and Don't
 - 11.5.1 Before Purchasing
 - 11.5.2 After Purchasing
- 11.6 Let Us Sum Up
- 11.7 Answers to Check Your Progress
- 11.8 Activity

11.0 OBJECTIVES

After completing this unit, 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.

11.1 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.

11.2 MANUAL VERSUS COMPUTERIZED RECORD-KEEPING

As you know there is manpower shortage of technical nurses with so much of time spent on non-nursing activities. Record is another such activity which takes lots of time of nursing personnel. Let us discuss some of the disadvantages of manual records and the advantages of computerized record-keeping.

Disadvantages of Manual Records

- More manpower is required to record/store/retrieve the data.
- Bulky paper records take up more space and this problem increases with time.
- Painfully meticulous methods are used to organize and maintain the records.
- Very tedious to extract necessary reports.
- No 100 per cent guarantee on the validity of data.
- Records can be manipulated, manual errors may remain uncorrected.
- Almost impossible for any further research and analysis.

Advantages of Computerized Record-keeping

- Less manpower is required for upkeep.
- Recording, storing, and retrieving are all much faster: easier and with little practice (Just a click of button is required).
- Requires far less space and print-outs 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 for nursing.
- Comprehensive records can be organized into a database that highlights trends in methods of nursing care, allowing for introspection and improvement in nursing practice.
- The thoroughness and organization lends more accurate nursing action research that is easier to carry out.
- Electronic records, with the aid of a modem and Internet connection, immensely facilitate sharing nursing care data with the nursing community.

11.3 HOSPITAL SOFTWARE

Let us discuss if there is availability of nursing software that should be considered.

11.3.1 How Should an Ideal Software be?

An ideal software should be:

- Easy to operate, with minimal training of nursing personnel.
- Should be reliable, and thoroughly tested in various nursing settings.
- Should be flexible (not too many compulsory fields to fill out).
- Operationally fast.
- Data access/security features should be clear.
- Have an instruction manual and/or online help web page.
- Have data back-up/ protection features.

11.3.2 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 can be taken.
- 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.

The various records and reports are:

- **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
 - ◆ Auto logging of check-in and check-out hours of nursing staff.

11.3.3 Outdoor Patient Department (OPD) Features

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

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 like:

- 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. (Refer Fig 11.1 for the e-hospital features of AIIMS Hospital, Delhi)

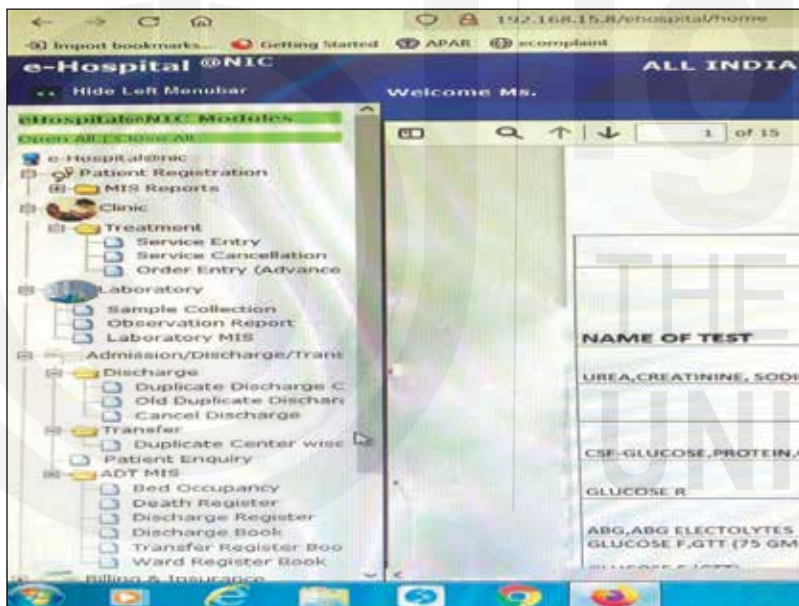


Fig 11.1: Modules of the e-hospital of AIIMS Hospital

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/ 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 analyze various parameters. (Fig 11.2)



Fig 11.2: Doctor appointment schedule

3. A Patient Registry

This includes:

- Name, surname and Address
- Gender
- 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 peripheral device attached to the computer).
- A detailed Case Sheet of patient/ family History
- Inventory details, if any,
- Billing/accounting details (Fig 11.3)

Fig 11.3: Patient registration data

4. Nursing Care Activity Module

This includes:

- Retrieving of identification data of patient
- Assessment of the patient :
 - ◆ Physical
 - ◆ Mental
 - ◆ Personal
 - ◆ Socio-cultural
- Nursing Diagnosis
- Identification of nursing needs
- Prioritization 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.
- Retrieving of various reports, treatment depending upon the department in which a nurse is working like:

From Nursing Department

- 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.

5. Necessary Nurses Records

The software should generate all register/ reports in details / summary for various permutations and combinations of options. A powerful SQL

(Structured Query Language) software will simplify all your reporting queries and includes:

- 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.

11.3.4 In-door Patient Department (IPD) Features

This includes:

- 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 needed in operation theater.

Refer Fig 11.5 regarding the Laboratory results/reports of IPD patients.

NAME OF TEST	OFFICER	LOCATION OF LABS	PERFORMING	TEMPLATE NAME	BARCODE	ONLINE	PENDING	SAMPLE COLLECTION
HbA1c (fasting)								
HbA1c (non-fasting)								
HbA1c (postprandial)								

Fig 11.5: Lab status/reports of IPD patients

11.3.5 Medical counter/shop

The Software for medical counter/shop should maintain:

- Complete customer Details
- Inventory Control

- Linked to Accounts
- Have certain audio/video clip/ presentation/documentary for patient's guidance. (Fig 11.6)



Fig 11.6: Lab status/reports of IPD patients

11.3.6 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/return register
- Maintaining various Day Books Ledger (cash/bank/pettycash etc) like
 - ◆ 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
- Receipt /payment over a specified Amount
- Sales/purchase over a specified Amount
- Interest/T.O.D Calculation Routines

11.4 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 customized so as to fulfill the individual client's requirements.

Whether a custom-made software is developed or an off the shelf software is purchased, both must have proper number of user license, a maintenance contract and up gradation option as and when newer options/feature become available. The differences are given in Table 11.1

Table 11.1: Difference of Readymade and Custom made software

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.

	<ul style="list-style-type: none"> ● Only those options that are required are incorporated and is certainly more user friendly. ● All reports are precise and exact as per management requirements.
--	---

11.5 NURSING SOFTWARE-DO'S AND DON'T

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

11.5.1 Before Purchasing

- Ideally it's wise to buy a readymade software with options to further customize it to suit your managerial functions.
- A totally Custom-made software developed right from scratch would take an amount of 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.

11.5.2 After Purchasing

The following points should be considered for after purchase facilities.

- Avail any training the 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

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

11.6 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 customization 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 counseling module.

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

11.7 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. 	<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.

<ul style="list-style-type: none"> ● 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"> ● 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 there 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 customize 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.

11.8 ACTIVITY

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