COMPUTERISED CASENOTE SYSTEM

(A CASE STUDY OF NIGERIA POLICE CLINIC, MINNA)

BY

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A PROJECT SUBMITTED TO THE DEPARTMENT OF MATHEMATICS/COMPUTER SCIENCE, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA. IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF POSTGRADUATE DIPLOMA IN COMPUTER SCIENCE.

SEPTEMBER, 2001

DEDICATION

This piece of work is dedicated to Almighty God, My creator. And My Most worthy Parents Mr. & Mrs. Z.O. Ogunsanwo for being vehicle to this existence.

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To all my course mates – you have all been wonderful.

Finally, to God Almighty, without whom I could do nothing. Be thou Exalted, honored and glorified.

CERTIFICATION

This project work has been read and certified by the undersigned as meeting the requirement of the Department of Mathematics/Computer Science, Federal University of Technology, and Minna.

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Dr. S. A. Reju **Date**

Project Supervisor

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Dr. S. A. Reju Date

Head of Department

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External Examiner Date

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ABSTRACT

The police clinic Minna like any Health institution suffers the problem of managing case note of patients.

The problem of inefficiency in handling patient case note, motivated me as a student of computer science to wanting to solve this common problem using my background as a medical practitioner to design software to meet this challenge.

With this in mind, this project will design computerized casenote system software to solve above problems. This effort will be achieved using an effective and efficient programming language the database management system IV (Dbase IV).

CHAPTER ONE

1.0 INTRODUCTION

Information technology is the latest news in this new millennium. Medical Information systems are so vast that virtually all aspects medicine is computerized. In advanced societies Medicare is so computerized that medical practice is done with ease. Right from patients card through consultation, diagnosis, treatment to billing is done by the computer.

But here in Nigeria only very few medical practices can boast of full computerization. This is mainly due to lack of computer knowledge, and we pay great price for this deficiency. In ways of lack of efficient patient management planning system.

A visit to many health institutions particularly the medical record room will reveal piles of patient cards, case files, that are sometimes scattered all around. This is because there are lots of records to handle, and more so handling manually makes work very tedious and lots of time is wasted in seeking for information of a particular record.

If a computer is introduced , the time used in retrieving or accessing a record will be minimized.

The above scenario is similar to activities in records department of police clinic Minna where medical records are manually arranged and sorted. To solve this problem I have developed software to handle both medical record and clinical notes which I call case note system. This project is to develop the software called computerized case note system.

This study contains about five chapters, chapter one deals with introduction, chapter two involves the history and literature review, chapter three is system analysis and design, chapter four deals with the software and program presentation, while chapter five is findings, summary conclusion and

Recommendation of study.

1.1 OBJECTIVES OF THE STUDY

The patient casenote system will achieve the following objectives:

i. To provide clinicians with, easy way of inputting patients clinical notes into a computer system.

ii. To provide clinicians with easy, fast way of access to clinical records of their patients.

iii. To provide a Software program that can generate reports from patient clinical records.

iv. To create Data base on personal patient records and data base on patient clinical notes by medical record of staff and clinician respectively.

v. To explore the application of the computer in hospital setting.

vi. To provide a filing system for long-term storage.

vii. To increase sharing of information, patient data within clinicians

viii. To provide a computerized system that is accurate, and error free as compared With manual system.

1.2 PRESENT PROBLEM

The focus on the present problems will lead us to arriving at right answers to questions and ensure the achievement of the objectives of this study.

The problems are as follows: -

a. Difficulties in retrieving and processing data.

b. Difficulties in tracing records.

c. Problems of confidentiality of clinical notes.

d. Problem of missing records.

e. Errors in filing records.

f. Problem of time wasting.

g. Lack of trained personnel to handle records of case file.

h. Lack of facilities to enhance proper record keeping such as, Folders Note sheets,

Cabinets etc.

i. In most cases exercise books are used, and this is most unorthodox.

j. Poor attitudes on part of patients (police officers) who sometimes misplace their hand cards.

k. The general lack of adequate space for proper storage of patient case notes/files.

1.3 THE SCOPE OF STUDY

The scope of the computerized patient casenote system in this study will cover a functional system in a small clinical practice like the police clinic. However, there are different departments in standard Hospital setting in which modified system will be very suitable.

1.4 SIGNIFICANCE OF STUDY

Since Medical records are usually large i.e. thousand files are sometimes accessed frequently, then the advantage of computer over manual method becomes more apparent.

Therefore the purposes of this study are as follows: -

a. That this study will help in the use of computer in hospital setting.
b. That the findings will also help in no small way to make an easier, accurate and reliable logical comparison between records.
c. To ease the cumbersome inflow of data in medical records, because piles of files will be reduced.
d. The findings of this study will also help in efficient storing, filing and processing of data and information in hospital records.
e. Lastly, the finding of this study will form the basis for further investigation.

CHAPTER TWO

2.0 HISTORY OF POLICE CLINIC MINNA

The police clinic Minna was commissioned in May 1985. To render medical services to all members of the Nigeria police force both in service and retired including their immediate families. Suspects in police custody, sister organization like Road Safety Corps, NDLEA. also benefit from the clinic.

The Clinic has full compliments of medical staff; this is made up of one medical officer, Nurses and Midwives, Community health workers, Pharmacy technicians, health workers, and other supporting staff.

The clinic runs it medical services 24 hours daily. It consists of two consulting rooms, Medical record card room, two wards, Injection room, observation room, Pharmacy and administrative office.

The medical record office, constitute the card room where patient records are kept.

A new patient coming for treatment in the Clinic visits the card room first where he obtains patient's card. The patient card comprises of an exercise book and patient hand card. Patient's card number is boldly written on the exercise book and hand held card.

The exercise book now act as casenote. Every detailed event of consultation with the doctor is recorded in the exercise book/casenote. All the casenotes are usually returned to the card room after every day activity for save keeping. The casenotes are confidential records and are not allowed to be taken out of the Clinic premises by patients.

2.1 PATIENT CASENOTE/RULES GUIDING MOVEMENT:

(1) No record can be removed from a casenote.

(2) All casenotes are to be returned to Card room at close of day.

(3) Only staff of medical record department are authorized to have access to case notes, except nurses who might need case notes during emergency or evening and night duties.

(4) Casenotes are to be handed with care to avoid loss of pages.

(5) Casenotes are to be arranged in alphabetical order and year of attendance.

(6) The shelves for filling are to be kept tidy by authorized personnel.

2.2 PATIENT CASENOTE (CASE FILE)

This is a term commonly used in the hospitals, clinics, nursing homes, maternity centers, and in fact any health institution. Patient casenote consists of folder, patient hand card, clinical notes, results of investigations, letters (i.e. report, referral etc).

Patient case file and patient casenote means the same thing.

The Patient casenote usually contains main two records: -

i. Patient personal records: such as Name, Address, Age, Sex, Religion, Occupation, Marital-Status, etc.

ii. Patients Clinical notes: includes, Presenting complaints, examination findings, Laboratory investigations, Diagnosis, Treatment, Admission, Follow up visits, and etc.

Patient casenote is a confidential record with restricted access to medical persons.

All patient casenotes are stored in filling cabinets, wall shelf or cupboard, in the medical records department. They are to be secured from damage or loss

and unauthorized access.

A good casenote supplies the physician or clinician the information that he will not readily remember about a patient. It gives a complete clinical picture of a case i.e. Presenting complaints, the diagnostic findings, treatment and final outcome of his management.

In view of above facts, the relevance of casenote in patient management cannot be over emphasized. The success of any medical practice depends on how medical records are handled. The casenote serves as a basis for planning patient's case as it forms basis for review, study and evaluation of a progress or regression of a disease state.

Patient casenotes are also indispensable for medical research into diseases patterns. It supplies practical and reliable materials for research purposes.

The present management of patient casenote is manually operated system. The casenote is usually compiled by medical record staff and is error prone. Such errors include wrong record entry, misplacing of patient record, disarrangement of casenotes and etc.

But introduction of a computerized patient casenote system, clinician will have input in the arrangement of clinical details. The physician or clinician will only need a computer system on his table, where he can access patient records and clinical notes. This he can do within few seconds. The medical record staff will only need to provide patient personal record data, which will be data management system based.

2.3 WHY COMPUTER IN PATIENT CASENOTE

Since the human brain cannot accommodate all the relevant information of individual patient. Therefore, the function of computer is to store and bring together information referring to the same individual patient derived from different sources.

Computers are being used in hospitals to read electrocardiograms,

echocardiogram, to compile, list and print out laboratory data reports.

The concept of computer in patient casenote is to develop a system aimed at efficient patient care to assist the medical staff and hospital administrators in evaluating the quantity and quality of patient case, to collect, collate, analyze patient care data.

This can be used to develop policies and procedures to further provide consultancy services to various health facilities and research projects.

2.4 RELEVANCE OF CASENOTES

a) Source of documenting the course of the patient's illness and serve as medical treatment for in and outpatients.
b) Serves as communication unit between the physical and other medical profession.
c) Providing basis for planning and control of surveys and researches in the medical field
d) Providing continuity of patient care on subsequent admission of the patient.
e) Provide data to assist in protecting the legal interest of the patient, hospital and others.

CHAPTER THREE

3.0 SYSTEM ANALYSIS AND DESIGN

The system analysis and design, is an aspect of the study, which involve analyzing the present patient case file system in order to guide the designing of a new system.

The section will elaborate the existing modes or methods, and outline existing problems or elements associated with.

From this inferences will be drawn to expect desired benefits from the new system.

3.1 PROBLEM OUTLINES/DEFINITION

Doctors and Nurses who run the Police Clinics in various state police commands have the responsibility of keeping the case file or notes of all officers and there families.

In carrying out this responsibility certain problem arises, such includes:

(a) Lack of trained personnel to handle records of case file.

(b) Lack of facilities to enhance proper record keeping such as, Folders Note sheets, Cabinets etc.

(c) In most cases exercise books are used, and this is most unorthodox.

(d) Poor attitudes on part of patients (police officers) who sometimes misplace their hand cards.

(e) The general lack of adequate space for proper storage of patient case notes/files.

3.2 DESIGN PHASE

The system will be subdivided into subsystem, sub subsystems, and so on until the system has been subdivided into simple subsystem that can be developed separately.

Two database files will be used in this system. The first is P-RECORD.DBF, containing patient medical records.

The structure of P-RECORD.DBF is shown below:

Structure for database: C:\DBASE\P-RECORD.DBF

Number of data records: 0

Date of last update: 22/03/01

Field	Field Name	Type	Width	Dec	Index
1	NAME	Character	50		N
2	AGE	Character	15		N
3	DATE	Date	8		N
4	ADDRESS	Character	60		N
5	RANK	Character	15		N
6	DEPT	Character	50		N
7	CARDNO	Character	10		N
* * Total * *			209		

The second file is the patient clinical note database file CLININOTE.DBF

The structure of CLININOTE.DBF is shown below:

Structure for database: C:\DBASE\P-RECORD.DBF

Number of data records: 0

Date of last update: 22/03/01

Field	Field Name	Type	Width	Dec	Index
1	CARDNO	Numeric	12		N
2	DATE	Date	8		N

3	HISTORY	Character	150	N
4	EXAM	Character	150	N
5	DIGNOSIS	Character	50	N
6	LAB	Character	250	N
7	TREAT	Character	250	N
8	FOLLOWUP	Character	50	N
9	ADDMISSION	Character	20	N
* * Total * *			841	

The patient casenote system shall consist of the following subsystems.

1. PATIENT RECORD – P-RECORD.DBF Maintenance subsystem
2. CLINICAL NOTE - CLININOTE.DBF Maintenance subsystem
3. REPORT
4. UTILITY
5. HELP

Each performs the several functions, which are explained below:

3.3 PATIENT RECORD

The function of this sub-system is to maintain P-RECORD.DBF which consist of the following functions:

1. New Patient Records from P-RECORD.DBF file
2. View Patient Records
3. Update Patient Records
4. Delete Patient Records
5. Exit

3.4 CLINICAL NOTES

This is to maintain CLININOTE.DBF which consist of the following functions:

1. New Patient notes From DBF files
2. View Patient notes
3. Delete patient notes

3.5 REPORT

The function of report generating subsystem is to produce various reports. The following reports should be produced.:

1. Patient Diagnosis
2. Patient History
3. Discharge Report

3.6 UTILITY

This is to produced back up files

1. Backup Files
2. Retrieve Files

3.7 HELP

This subsystem is to produce help.

1. About the program
2. About the Author

3.8 FEASIBILITY STUDY.

The feasibility study of this project will entail passing the new system through three feasibility features.:

(1) Operational: - The present patient case file, retrieval is very slow as a result of a manual system. These could be overcome in few minutes of computer is used with right type of software.

(2) Technical: Technical feasibility will indicate whether the existing setup meet with operational requirement in ideal practice.

(3) Economic feasibility: If the development of a "patient case file" software, its operational and maintenance cost is affordable to police force or any medical institution desirous of it.

3.9 COST ANALYSIS OF THE PROPOSED SYSTEM

Development Cost

System Analysis and Design ---------- =N= 25,000

Software Implementation ---------- =N= 15,000

Equipment – 1 Personal Computer ---------- =N= 70,000

Printer ---------- =N= 40,000

Stabilizer / UPS ---------- =N= 35,000

Personal Training (1wk) ----------=N= 15,000

Installation ---------- =N= 10,000

Miscellaneous ---------- =N= 15,000

=N= 225,000

Operating Cost

Supplies ---------- =N= 10,000

Equipment Maintenance ---------- ----=N= 10,000

Programmer Maintenance ----------=N= 10,000

Labor Cost----------=N= 10,000

Utilities ---------- ---=N= 10,000

Air Conditioner ---------- ---=N= 40,000

Miscellaneous ---------- ----=N= 20,000

Total =N= 110,000

The total cost including development and operating cost ---- =N=335,000

CHAPTER FOUR

4.1 SOFTWARE DEVELOPMENT

Software is a program design to solve a specific problem. With out the software, hardware cannot be put to effective use. The casenote system will be developed into software using an already existing program language.

4.2 CHOICE OF PROGRAM LANGUAGE:

The language to be used in developing casenote system will be DBASE IV. DBase IV offers complete applications generator and forms, reports, and queries generators. For a customized application like casenote system dBase IV will be a rewarding language to use to write it. It has powerful features such as data validation and menu –building abilities.

4.3 FEATURES OF CHOSEN LANGUAGE

Ashton Tate designed DBASE IV. It is an advanced version of dBase, which provides a full relational database to users. It has a control center from where one can design database, manipulate, edit records files and generates report. Other features include: -

- A program compiler
- A program editor
- Memory variables and arrays
- Tools for ensuring data security and integrity.
- A program debugger
- Tools for distributing an application.
- And etc.

4.4 HARDWARE REQUIREMENTS:

A Personal computer – with at least a Pentium microprocessor, Minimum Ram

of 16 MB, and a speed of about 166Hz. The Pc should have hard disk of about 4.3 Gigabyte and a floppy disk drive unit providing for 3.5 inches diskette.

Printer – Laser set printer 5L or 6L

A printer of high letter quality feature and speed of about 1200 lines per minute with a maximum width of 132 characters per line is recommended.

UPS/Stabilizer

An automatic voltage regulator is very important to the life of the hardware equipment, likewise UPS (uninterrupted power supply) to store power to enable proper switching off of the system.

4.5 SOFTWARE REQUIREMENT

The casenote system will need the following software to run in any system: -

Dbase IV

Microsoft Disk Operating System.

4.6 CHANGE – OVER PROCEDURE

Switching from manual to new system.

1. Parallel method – old and new system are run concurrently. The output are compared, reasons for difference is resolved, until the new system has been accepted.

2.Direct method – Replacement of old system with new. The old system is kept in event of failure, where the institution can revert to former or old system.

3. Pilot Change Over --- Variation of the two methods

A parallel is therefore recommended --- for police clinic Minna, Niger State.

4.7 MAINTENANCE

This is the routine check to access the quality of its work for the purpose of the system.

The computer like any other electronics needs to maintained for time to time.

4.8 Training

The staff needs to be trained on how to use the system. This is essential for Records department. The training required for the personnel is in terms of using application packages. Specially, the personnel are expected to be trained on the following: -

Dbase IV

Word Perfect.

Ms Word.

The training in Dbase is to enable the personnel carry out little maintenance on the software developed.

The word Perfect or Ms Word is expected to be used for preparation of official document. In addition, the personnel in the department and where chances permit from other departments in hospital should be properly trained on how to use the proposed system. This is important so as to avoid unexpected problems while using the system.

4.9 CREATING THE CASENOTE SYSTEM

Open the dBase IV program editor in one of the following ways:

From the control center, select < create> from the applications panel and then choose dBase program from the prompt box that appears.

Create the program command containing the commands you want to run.

From the dot prompt, type MODIFY COMMAND CASENOTE and press enter key.

A blank program editor screen appears. In the program editor window the program documented at appendix is type exactly as it appears.

Check for code accuracy and make any needed changes. Once the

program is correct, press Ctrl-End to save it.

You can run it from either the control center or the dot prompt.

From dot prompt, type DO CASENOTE and press enter.

When you first execute your program file, dBase IV compiles the source code (a file with a .prg extension) into executable object code (a file with a .dbo extension) before it runs your program.

If the program runs, you will see the screen shown below.

4.10 PROGRAM DESCRIPTION

To access the program for diskette:

Insert diskette containing the program into the disc drive.

Change the system to DOS environment.

With drive in C, enter Dbase environment, i.e. Type "CD Dbase".

At the Dot prompt, set Default to A.

Type "DO CASENOTE"

- The screen will be shown (see Appendix)

4.11 INPUT SPECIFICATION

Input data are provided in the registration form. This is divided into two sections

i. Input for patient records

ii. Input for clinical notes.

i. Input specifications for patient records

   a. Name

   b. Age

   c. Date

   d. Address

   e. Rank

f. Department/Divisions

g. Card No.

ii. Input specification for clinical notes

a. Card No

b. Date

c. History

d. Diagnosis

e. Laboratory

f. Treatment

g. Follow-up

h. Admission date/Discharge date

4.12 OUTPUT SPECIFICATION

The output is what is expected to be produced by the case note system. The following can be obtained from operating case system.

i. Individual patient record

ii. Clinical note of patient

iii. Report on patient

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

From the study, it was discovered that manually operated casenote system is very slow and very cumbersome.

Introduction of computer will help eliminate these problems.

A computerized casenote system, when used effectively makes consultation and keeping medical record very easy. Hence patient-time stay in the hospital is greatly reduced.

5.1 RECOMMENDATION

The New casenote system will bring a lot of relieve to Clinicians. In terms of quick access to patient medical records.

It is therefore recommended to all Hospital and health institutions.

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