

INTERNSHIP TRAINING

AT

NATIONAL HEART INSTITUTE, EAST OF KAILASH, NEW DELHI

Quantitative and Qualitative Analysis of Medical Records in Tertiary Care
Hospital

BY

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ENROLL NO. - PG/14/005

UNDER THE GUIDANCE OF

Dr. A.K Agarwal

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INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT
RESEARCH

NEW DELHI

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(Completion of Dissertation from respective organization)

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In recognition of having successfully completed her internship in the
department of

Quality and Operations

And has successfully completed her project on

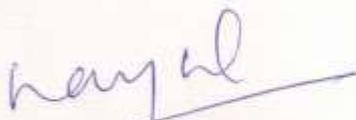
**Qualitative and Quantitative analysis of medical records in a tertiary care
hospital**

Date:-11th May 2016

Organization:- National Heart Institute

He/ She comes across as a committed, sincere & diligent person who has a
strong drive & zeal for learning

We wish him/her all the best for future endeavors



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TO WHOMSOEVER IT MAY CONCERN

This is to certify that Dr. Alisha Aggarwal student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at National Heart Institute from 1st February 2016 to 1st May 2016.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfilment of the course requirements.

I wish him all success in all his future endeavours.



Dr. A. K. Agarwal
Dean, Academics and Student Affairs
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Certificate of Approval

The following dissertation titled "Quantitative & Qualitative Analysis of Medical Records" at "NATIONAL HEART INSTITUTE" is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

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Certificate from Dissertation Advisory Committee

This is to certify that Dr Alisha Aggarwal, a graduate student of the **Post –Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision. She is submitting this dissertation titled 'Quantitative and Qualitative Analysis of Medical records' at 'National Heart Institute' in partial fulfilment of the requirements for the award of the **Post Graduate Diploma in Health and Hospital Management**.

The dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.



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**INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH
NEW DELHI**

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled 'Quantitative and Qualitative Analysis of Medical Records' and submitted by **Dr. Alisha Aggarwal** enrolment No. **PG/14/005** under the supervision of **Dr. Ashok K Agarwal** for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from **1st February 2016 to 1st May 2016** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning


Signature

Dissertation Writing

FEEDBACK FORM

Name of the Student:

Alicia Sindal

Dissertation Organisation:

National Heart Institute

Area of Dissertation:

Quality of operations

Attendance:

Good.

Objectives achieved:

Yes

Deliverables:

Strengths:

Communication skills
Dedication & integrity.

Suggestions for Improvement:

Have to be more open to
suggestions / advice.

Signature of the Officer-in-Charge/ Organisation Mentor (Dissertation)

Date: 13/02/2016

Place: New Delhi,

Dissertation Writing

25

ABSTRACT

PROBLEM STATEMENT:-Quantitative &Qualitative Analysis of medical record in a tertiary care super speciality hospital.

BACKGROUND:- Records may be termed as any information and documents kept in a systematic, scientific and easy ways that help to receive the required data at the time of necessity. Similarly, Medical record is also a systematized way of storing the required data, information and other relevant documents with the objective of making easy availability of necessary data at the time of its need. With the passage of time Medical record has been a backbone for developing a new dimension in the health sector in each of the countries in the world. It has been indispensable for countries for continuing the research works, to deliver the appropriate health services to the patients, create the skilled manpower and to enhance the goodwill of the nation as well. Considering the significance of medical record, no hospitals and health centres are opened without establishing separate and well-equipped medical record sections. Medical record consists of name of patient, address, age, sex, occupation, disease, modes of diagnosis and recommendations made the after by the concerned doctor in course of undergoing treatment. It helps patients to acquire the right and apt treatment. Moreover, it acts as a tool for the doctor who is looking into the patient.

AIM:-To quantitatively analyse the medical records and subsequently check the quality of documentation.

OBJECTIVES:-

- Compliance to complete consent
- Compliance to surgical safety check list
- Compliance to all required documentation in discharge summary.

EXPECTED OUTCOME: - As the hospital is NABH accredited since 5 years, the compliance rate is expected to be high. However, specific areas like consents, infection control bundles is expected to have some variation due to high Bed occupancy rate and moderate nurses attrition rate.

TIME FRAME:-2 Months

ACKNOWLEDGEMENT

It was indeed a great opportunity to pursue my dissertation from such a well-established hospital. I would like to express my gratitude to

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- Mrs. Kirti Udayai, Assistant Dean, for her inputs which helped me not just in better learning but also improved the quality of my work.
- Entire Quality and Operations team of National Heart Institute comprising of Mr. Nayan Roy Choudhury (Assistant Manager- Quality and Operations) and Dr. Vandana Sharma (Assistant Manager- Quality and Operations) for their support and guidance.
- Last but not the least, I would like to express my gratitude to my college IIHMR, New Dekhi, the faculty and my batch mates for sharing their knowledge and enhancing my learning skills.

LIST OF ABBREVIATIONS AND SYMBOLS

| | | |
|-----------------|------------|--------------------------------|
| <u>1</u> | NHI | National Heart Institute |
| <u>2</u> | MLC | Medico Legal Cases |
| <u>3</u> | LIC | Life Insurance Corporation |
| <u>4</u> | MRD | Medical Record Department |
| <u>5</u> | RNO | Registration Number |
| <u>6</u> | ECG | Electro Cardiograph |
| <u>7</u> | DHS | Directorate of Health Services |
| <u>8</u> | RHD | Rheumatic Heart Disease |

INTRODUCTION TO NATIONAL HEART INSTITUTE

National Heart Institute, brain child of doyen of cardiology in India, Dr. S. Padmavati, was inaugurated in 1981 by the Prime Minister of India, Mrs Indira Gandhi, as the Clinical Research and Medical Care Delivery wing of All India Heart Foundation, with the aim of providing State-of-art Modern Cardiac Care to the financially impoverished section of society. It was intended to be a self-sufficient facility and therefore it was decided that people with paying capacity should also be taken up and the surplus generated from them be channelized for the treatment of the poor.

The National Heart Institute is the research & referral tertiary care heart hospital of the All India Heart Foundation, which acts as a nucleus for diagnosis and treatment of heart ailments and allied diseases and is equipped with state of the art equipment's. Surgical services include all kinds of closed and open heart surgeries like coronary artery bypass surgery, off pump bypass surgery (beating heart surgery), valve repair & replacement surgeries, aortic / carotid surgeries, congenital heart surgeries including blue babies and minimally invasive (Key hole) surgeries. It has modern Cath lab facilities where procedures like angiographies, angioplasties, stenting of the coronary arteries, valvotomies, correction of birth heart defects and closure of holes of the heart, electrophysiological studies, radio frequency ablation, rot ablation, Intra-vascular ultrasound, pacemaker and internal defibrillator implantation are carried out. Highly qualified staff, trained in India & abroad, with extensive experience in Cardiology & Cardiac Surgery service these areas.

Apart from indoor treatment, the Institute also provides comprehensive medical check-up, at nominal rates with a view to ensuring good physical conditioning and health of all individuals. Cardiac patients with other ailments are also admitted to this hospital, as specialists for diseases other than heart are available round the clock for consultation and treatment. The Institute has been recognised for open heart surgeries, coronary artery bypass surgery, angiography and angioplasties and other specialised cardiac treatment by the Central Govt. Health Scheme (CGHS), Employees State Insurance (ESI), Ex Service Men Contributory Health Scheme (ECHS), besides the Governments of Uttarakhand, Himachal Pradesh, Haryana, Madhya Pradesh, Mizoram and Govt of NCT of Delhi. Ministry of Defence, Office of the Director General of Armed Forces Medical Services and Directorate General of Medical Services Naval Headquarters have recognised NHI for treatment of their employees and their families. 154 Public sector bodies, almost all the TPAs and International

Organisations like World Health Organisation & UNICEF are also empanelled with the National Heart Institute.

NHI VISION



"To create long term relationships by caring as no one has done ever before "[NHI MISSION](#)



"To provide superior, compassionate and innovative cardiac care to prevent and treat disease maintaining highest standards in safety and quality"

OUR VALUES



"We take pride in our care....for it's heart to heart"

THE LOGO



ADMINISTRATIVE STRUCTURE

The affairs of the foundation are managed by a “Board of Directors” who collectively form the governing body. The members are eminent doctors, legal experts, philanthropists, scientists, bureaucrats, auditors, financial analysts and administrators of high standing. In keeping with its all-India character, it has branches in other parts of the country.

OBJECTIVES

The main objectives of the Foundation are scientific research in the area of cardiology in all of its various aspects, stimulation and development of heart care through public health education, training of doctors and paramedical personnel, improving diagnostic and therapeutic modalities, development of national educational programmes to control all types of heart diseases and treatment of heart patients. Rheumatic Fever (RF) and Rheumatic Heart Disease (RHD), the most important cause of heart disease in children and young adults, have been the subject of study since 1966. A model registry for RF/RHD has been created and maintained for follow-up since 1977.

PUBLIC HEALTH DEDICATION

The AIHF has carried on public health activities since its inception. It publishes its own Newsletter, “HEART NEWS” since 1962 without break. Blood pressure, cardiovascular risk factors like obesity, smoking, high blood lipids, physical inactivity, diabetes, stress etc. are equally important. The foundation has been regularly featuring articles on these aspects in its bulletins. The organization has also brought out several brochures relating to heart diseases for the use of laymen. A book on "Heart Disease and the Layman" by Dr. S. Padmavati was published in English by the National Book Trust of India in its Popular Science series and translated into Tamil, Hindi, Urdu, Gurmukhi and Marathi. Lectures, radio talks and television programmes on many aspects of heart disease are given by the directors and other senior members of the foundation throughout the year in English and regional languages in Delhi and elsewhere.

COLLABORATION WITH INTERNATIONAL INSTITUTES

The AIHF is the only heart foundation in India affiliated to the “World Heart Federation”, which is an international body for coordinating heart societies and foundations throughout the world. Thus it has links with other national heart foundations throughout the world for exchange of information and knowledge so that it could be disseminated for the benefit of professionals and laity, alike, in the country. It is recognized as a collaborative centre of “WHO” in preventive cardiology since 1980, the only one in the SEARO region. It is a member of the World Hypertension League and Heart Beat International.

HEALTH EDUCATION AND OTHER ACTIVITIES

National Heart Institute celebrates World Heart Day on 29th September, World Diabetes Day on 14th November, World Health Day on 7th April, World Hypertension Day on 17th May and World No-Tobacco Day on 31st May, every year. In all these functions a large number of individuals from the public are examined by our Consultants, investigations done and advice regarding preventive aspects like proper diet, exercise and other lifestyle modifications is given. Exhibition on preventive health care and screening of health education film is also done. National Heart Institute caters to outdoor consultation, education and counselling on Diabetes, obesity, cholesterol related diseases, thyroid disorders, alcohol and smoking. Indoor care for Diabetes & Lifestyle disorders is also taken care of.

OUTREACH PROGRAMMES

We have conducted over 25 free heart check-up camps in Delhi and nearby states of U.P., Madhya Pradesh, Haryana and Uttarakhand etc. in the last one year and on an average 150 patients were seen and given advice in each of these free camps. Heart Camps are organised in suburban towns and rural areas around Delhi with the help of Rotary and Lions Clubs. In these camps patients are examined and treatment prescribed by a specialist team of 2 or 3 doctors. These camps provide an opportunity for community education using audio-visual aids. Many poor patients have a cardiac check-up for the first time and are able to avail of proper treatment and surgery if required.

ACCREDITATIONS:-

NABH



National Accreditation Board for Hospitals & Healthcare Providers (NABH) is a constituent board of Quality Council of India, set up to establish and operate accreditation programme for healthcare organisations. Accreditation by NABH signifies maintenance of the highest standards of clinical practice and patient care. NHI has been an NABH-accredited Hospital for nearly half a decade.

NABL



To strengthen the laboratory accreditation system accepted across the globe by providing high quality, value driven services, fostering APLAC/ILAC MRA, empanelling competent assessors, creating awareness among the stake holders, initiating new programs supporting accreditation activities and pursuing organisational excellence, laboratory services at NHI have been NABL-accredited for over half a decade

OUR CSR PROGRAMMES:-

India is a developing country and one of the world's fastest-growing economies. However facilities for treatment of heart diseases are very limited. Considering the fact that 80% of medical care facility is in the hands of private sector in India, CSR efforts like those initiated by NHI have stepped in to bridge the gap and make quality heart care available to those from the poorer sections of society. These activities can be broadly divided as under.

Free OPD

Our Senior Consultant Cardiologists, Cardiac Surgeons and Physicians provide consultation and investigations free of charge 6 days a week. The total number of patients seen in the free OPD in the last 12 months was 840. The value of services provided in the free OPD is over Rs.7 lacs per year.

Free In-patients

National Heart Institute has reserved 10% beds for poor patients where every facility available in our hospital (All Lab tests, Radiological procedures, Non-invasive Lab procedures, Cath Lab procedures and all types of Cardiac Surgeries) are provided free of cost to the patients of poor economic status. It is worth mentioning here that the National Heart Institute is the referral centre for treating patients belonging to Economically Weaker Section (EWS) with cardiac ailments by the Government of NCT of Delhi. Such patients are referred to us by the Nodal Officers of Safdarjung and Hindu Rao Hospitals. Seventy seven patients were admitted and treated under these categories in the last one year and the cost of service provided was over Rs.59 lacs.

Rotary "Gift of Life" Programmes

Approximately 8 of every 1000 children in India suffer from birth heart defects (Congenital Heart Disease – CHD). One of the chronic diseases, therefore, which account for almost 20 percent of infant mortality in India is Congenital Heart Disease. Similarly almost 1-5% of children develop rheumatic fever before the age of 15 years (Disease of the heart valves). However facilities for complex heart surgery in children in our country are very limited. Either the children do not have access to treatment or they do not have the financial resources to meet the hefty costs of surgery. Considering the fact that 80% of medical care facility is in the hands of private sector in India, Rotary International approached National Heart Institute, New Delhi in the year 2006 for a humanitarian partnership to save the lives of these unfortunate children. During the Silver Jubilee Celebrations on 20th of August, 2006, National Heart Institute in association with Rotary Club, East End and Rotary International launched the Gift of Life Programme. Under this programme, children were provided free cardiac surgery, medicine, food, accommodation, hospitality, conveyance etc.

National Heart Institute is the main centre in India for the “Gift of Life” programme of Rotary International wherein poor children from all over India and adjoining countries like

Pakistan, Nepal , Bangladesh and Sri Lanka are brought for surgery of congenital (birth) defects like holes in the heart; blue babies, valve replacement surgeries etc. More than a 100 children have been operated under this programme.

Till date over a 100 open heart surgeries have been performed at National Heart Institute under our Corporate - Social Responsibility programme. Children have come to NHI from all parts of India especially from remote areas of North East India, Jammu & Kashmir, and Kerala. All surgeries are performed by a team of surgeons led by Dr. O. P. Yadava, Chief Executive Officer & Chief Cardiac Surgeon, National Heart Institute. Under this programme our team performed lifesaving open heart surgery on a critically ill child from Uganda under 'Gift of Life' programme. The successful valve replacement of Kabuki Emmanuel, a 16 year old boy marked the beginning of a new relationship between the people of India and Uganda according to Her Excellency Ms Nimisha Madhvani, High Commissioner of Uganda to India, who visited NHI to meet the child. Kabuki underwent open heart surgery at NHI on 29 December, 2009 and returned to Uganda on 14 January 2009. This case was a challenge for NHI because Kabuuka's surgery was rejected by 5 different hospitals in the US, being a high risk case.

This was followed by launch of a new programme called 'Our Hearts are in Uganda' & subsequently many more children from Uganda successfully underwent complex surgeries in the form of valve replacement and correction of congenital heart defects. This programme is a classic example of how Rotary and NHI can promote peace and understanding between nations through international humanitarian service as this initiative transcends borders, caste, creed, region, religion, race and colour. Through 'Gift of Life' partnership Rotary and NHI are giving life to children otherwise born to die! Many children from North East India have also undergone successful heart surgery at NHI. His Excellency Gen J J Singh, then Hon'ble Governor of Arunachal Pradesh & Mrs J. J. Singh visited NHI to congratulate the team personally. Rotary International President Rtn D K Lee also visited NHI to congratulate the team while seven children were being successfully operated. Rotarians and the hospital staff at NHI, that are working on these children, are an answer to a parent's prayers and are changing the world, one little heart at a time. NHI and Rotary intend to arrange 100 surgeries per year in the coming years. We invite all our friends & well-wishers to join in this venture & help bring a smile to at least one face each.

‘Vyadhi Nidhi’ Programme

Similarly National Heart Institute has tied up with Govt. of Uttarakhand for taking tertiary care services to the people of the remotest parts of the hill state of Uttarakhand. Under this scheme, regular heart check-up camps are organized in the Himalayan belt of Kumaon and Garhwal and those patients suffering from advanced heart disorders needing interventional treatment or heart surgery are brought to Delhi. Over 165 patients have undergone complex Open Heart Surgeries at National Heart Institute under the Vyadhi Nidhi Programme in which the hospital performs the surgery free of cost and only the cost of disposables is met by the Govt. of Uttarakhand. This is one shining example of a successful public private partnership for the welfare of humanity.

Winning Heart Programme

As the ‘Gift of Life’ programme caters to only children and the ‘Vyadhi Nidhi’ is limited to residents of Uttarakhand, the ‘Winning Heart’ programme was started at National Heart Institute with a view to helping others, who did not fall under the purview of the above two categories, specially people in the middle and elderly age group. We have operated on 17 patients under the ‘Winning Heart’ scheme and here donations are accepted from Friends of NHI and well-wishers of humanity. When we take up a patient for surgery, any small amount that we can raise for the patient is acceptable & welcome and the balance is subsidized from the hospital resources. All this has been possible because of the blessings of God Almighty & combined efforts of the Rotarians, especially Mr Sushil Gupta, Advisor - Gift of Life, Mr A.C Peter, National Coordinator – Gift of Life, Staff, Faculty and Friends of National Heart Institute, like Padma Bhushan Mr P.P Rao and Padma Bhushan Mr Harish Salve Senior Advocates, Supreme Court, and many more, without whose patronage these projects would not have seen the Light of the Day.

Pacemaker Bank

Heart Beat International, a voluntary organisation in USA, has set up a pacemaker bank in National Heart Institute in collaboration with the Amroha Rotary club. The organisation has thus far donated about 180 pacemakers and 13 I.C.D, out of which 170 pacemakers and 2 I.C.D have been implanted for the benefit of poor patients. Implantation is done at the National Heart Institute, free of cost to all poor and financially impoverished patients. An artificial cardiac pacemaker is a life saving device. It is implanted in patients with very slow heart rates which interfere with day-to-day living. A pacemaker clinic is regularly run at the hospital for check-up of patients with implanted pacemakers and for trouble shooting malfunctioning pacemakers.

INTRODUCTION (PROJECT)

What Are Patient Medical Records?

Medical records are a combination of both self-reported patient information and a physician's notes on diagnoses, care, and treatments. These histories involve a variety of information about a patient's health history and personal habits, including:

Significant illnesses and medical conditions, including documentation on lab findings, diagnoses, and treatment plans.

Biographical data including any history of alcohol use, drug abuse, and smoking, in addition to physical exams, allergies, medications, and any adverse reactions.

Preventive therapies such as immunizations and screenings.

Paperwork to document services performed by medical professionals including dates, times, attending medical personnel, admittance and discharge reports, prescriptions, and any other related medical and lab reports.

Until recently, all of this data was paper-driven. This low-tech format made medical records more prone to error, omission, and loss. Thankfully, medical records have entered the digital age. Technological advances have given rise to more thorough databases that can be searched for patient information instantaneously while reducing the human error quotient.

Why Are Medical Records Important?

How can you know where you're going if you don't know where you've been? This question is particularly apt for the topic of medical records. As digital medical records databases continue to grow, healthcare will become more cost-effective and result in improved patient outcomes. Medical professionals using data-driven medical records will be on the cutting edge of providing patient care; using these tools, they will be able to catch human error, track therapies, monitor effectiveness of treatments, and make predictions about outcomes. Shadow doctors delivering twins! throughout the entire course of a patient's lifetime. With respect to the profession of medicine and malpractice, using digital medical records in your office allows for increased oversight and lowered liability. While medicine will always be an art that relies on personalization and the human touch, technological advances will allow you to take your practice to the next level of safety and effectiveness.

Remember, as a medical professional, it is your responsibility to not only provide care to patients, but also to keep thorough, methodical records of their symptoms, diagnoses, and treatments. Without this follow-through, any physician who subsequently treats your patients will not be able to provide the best care possible, and you'll find yourself ethically comprised. Take full advantage of the usefulness of your patients' medical records. Too often, their lives depend on it. —

Recent improvements patient healthcare are the result of many factors: scientific breakthroughs, medical innovation, and technological advances. Medical records fall into the last category; they are a portal through which a physician and other medical staff can step into the history of a patient to learn about prior care, understand current diagnosis and status, and subsequently create a treatment plan. Medical records have long been vital tools in patient care, and current technologies are bringing medical records into the 21st century through innovative software and hardware computer programs. As a healthcare professional, you should understand that the basics of medical records remain the same and its purpose is unchanged, regardless of the platform in which you interact with a patient's healthcare history.

Departmental policies and procedures

Policy: Statutory Requirements

Scope: MRD

Distribution list: MRD

Policy: The hospital defines a policy wherein all the statutory requirements of the MRD department shall be complied with.

Statutory requirements:

1. Hospital Medical Records can be documentary evidence as per the Indian Evidence Act, 1872, as amended up to August 1, 1952, 1961 and, Medical Records are generally subpoenaed to court in the following types of cases:
 - a. Personal Injury Suits (Accident etc.,)
 - b. Criminal Cases (Assault, Murder etc.,)
 - c. Worker's Compensation Act (Factory Accident, Disabilities etc.,)
 - d. L.I.C cases (Death claims/ injury /accident)
 - e. Malpractice Suits (An action for malpractice may be brought against the hospital and its employees in a civil or criminal court.)
 - f. Patient Will Cases (A Patient may have made a will during his hospital stay)
 - g. Authorization for Operation(An operation, or even a medical examination carried out without consent expressed or implied of the person concerned, will usually amount to actionable assault.)

h. Death Claims (Family pension, insurance claims etc.)

2. The Income Tax Act:

Under the Section 38 (5) of the Income Tax Act 1922 no Prior Permission from the Patent is necessary to Show the records to the IT Department.

3. The body of the Dead in M.L.C cases need to be handed over to the Police only and not the relatives

4. Patient Left the Hospital against Medical Advice:

If Patient is being L.A.M.A. the signature of patient or relative should be obtained in a prescribed L.A.M.A form

5. Reporting to Health Authorities

This is the responsibility of the department to submit the following Diagnostic Reports to Health Agencies like D.H.S, CMO and other departments under the ambit of Health & Family welfare department, Government of Delhi

- Daily / Weekly / Monthly Malaria and Dengue Fever cases to the Chief Medical Officer.
- All Communicable Diseases to the D.H.S
- Notifiable diseases are reported immediately to control room of Chief Medical Officer
- Monthly Leprosy Cases to the D.H.S
- Morbidity / Mortality Statistics to the D.H.S., on yearly basis or as and when required by the Directorate of Health services, Delhi Government

Policy: Medical records storage

Scope: MRD

Policy: The hospital has a policy of storing all the medical records

Procedure:

1. All physical records shall be maintained and stored by the MRD.
2. The files shall be arranged and stored in medical records room. The R. No. shall reflect on the file.
3. Only authorized users can view / retrieve the medical records.
4. The Authorized user are : -

- MRD technician
 - Representative from Quality Department for various Quality Audits.
 - Consultants
- All Case files are filed in individual folders. The files are stored in the racks.
 - The racks are labelled with R NO.
 - All MLC cases are stored under lock and key. This prevents the case file from wear / tear and keeps the case file neat and tidy.

Policy: Retention period of medical records.

Scope: MRD

Policy: The hospital has a policy of storing the medical records in consonance with the requirements of law, confidentiality and security.

Procedure:

The department is responsible for consolidation of all forms belonging to the patient which are sent for storage in a manner with the help of R.No, which is assigned at the time of admission.

1. All medico legal patient records will be retained permanently.
2. All the death records shall be maintained for 10 years.
3. Out- patient record will be maintained for 3 years
4. In-patient records will be retained for 5 years.
5. The other records and registers, detailed below, are retained for the period mentioned against each:
 - a. Death register -
Permanent
 - b. Wound/injury certificate file -
Permanent
 - c. Statistics files -
Permanent
 - d. Important circulars file and miscellaneous circular file -
Permanent
 - e. Dispatch register of death reports to the registrar's office- Ten years
 - f. Death report file

Policy: Notification of notifiable diseases

Policy type: Global

Scope: Hospital wide

Policy: The hospital has a policy of reporting the notifiable diseases to the local health authorities.

Procedure:

1. MRD staff shall enter required information and take a printout on the hospital letterhead and dispatch to Health Authority, duplicate copy will be maintained in MRD.
2. Notifiable Disease Dispatch Register shall be maintained in MRD (with receiver's signature and the seal of the Health Authority). If the information is sent to health authorities through courier, the proof of dispatch is maintained in the MRD.
3. Frequency of dispatching the information: once a month.
4. The flow of information will be from the clinicians and microbiologists, to the Medical Record Technician from where information is reported on a specific format to the Municipal Health Officer (MHO).

Notifiable Diseases: Notifiable diseases shall vary from state to state. Yet following are some of the most common notifiable diseases

1. Cholera
2. Smallpox
3. Plague
4. Chickenpox
5. Tuberculosis
6. Leprosy
7. Enteric fever
8. Meningitis
9. Diphtheria
10. Dengue haemorrhagic fever
11. Acute flaccid paralysis
12. HIV
13. Hepatitis B/C

Policy: Departmental Safety

Scope: MRD

Policy: The hospital has a policy of defining appropriate method to safeguard the medical records from damage or theft

Procedure:

1. The MRD Technician / Support Staff shall report defective equipment, unsafe conditions and safety hazards to the Maintenance or Housekeeping Department

2. All equipment and supplies must be properly stored.
3. Scissors, knives, pins, razor blades and other sharp instruments must be safely stored and used.
4. Smoking is prohibited in the hospital
5. Do not permit rubbish to accumulate
6. All sort of seepage or leakage shall be immediately notified to the Maintenance department
7. Minor spills, i.e., water, will be cleaned by the employee who discovers the spill. This will be done immediately.
8. Evenly distribute files to prevent the rack / shelf from being unbalanced and tipping over.
9. Frequently inspect cords, plugs, switches, for damage. Report any defects such as frayed cords, broken plugs, etc., immediately
10. Periodic pest control shall be conducted to avoid damage to the records from insects and rodents

Policy: Registration of Deaths

Policy type: Global

Scope: Hospital wide

Policy: The hospital has defined a policy for registering deaths and defines the person responsible for the process

1. Death certificate: To be issued in case of death in Wards / ER / ICCU

- a. A provisional death certificate shall be issued to the patient's attendant
- b. MRD Staff shall fill the death information form, put the hospital seal and signature, and shall send the form to the Registrar.
- c. In case a Patient does not collect the death certificate from the hospital, it shall be retained in the MRD in the patient's file. The MRD staff will hand over the death certificate to the attendants during their next visit to the hospital.
- d. Death Information Dispatch Register shall be maintained in MRD
- f. The Attendant is responsible for collecting the death certificate from the MCD.

2. Brought in dead certificate

- a. No R No. shall be allocated for the brought in dead patient.
- b. All the Brought in Dead cases are considered as Medico Legal Cases and the police will be informed.

c. Hospital Death Certificate with required information shall be filled by the EMO (Emergency Medical Officer) and the “brought dead” seal will be placed on all the copies. The cause of death will not be mentioned as it is not known in most of the cases, however in case the patient is an old case discharged from the hospital a few days back this can be done based on diagnosis.

d. MRD Staff shall fill the Death Information form. “Brought in dead” seal with signature and seal of the Medical Records Officer will be placed where required and sent to the Registrar of births and deaths.

e. MRD Staff shall be responsible for sending the Death information form to Municipal Corporation of Delhi.

f. Brought in Dead Dispatch Register shall be maintained in MRD (with receiver’s signature and seal of the registrar of births and deaths on the book).

g. The Attendant is responsible for collecting the Death Certificate from the Municipal Corporation of Delhi.

Daily Deaths Cases shall be maintained in the register with the following entries:--

- Serial Number
- Date
- Admission Number
- Name of the Patient
- Age / Sex
- Date of Admission
- Type of Death (Institutional Death - occurring more than 48 hrs. & Non Institutional Death – occurring less than 48 hrs.

Policy: Destruction of medical records

Scope: MRD

Distribution list: MRD

Policy: The hospital has a policy for destruction of the medical records after a designated time

Procedure:

1. Destruction of medical records will be carried out in accordance with the retention policy of the hospital
2. The CEO/ VCEO/DO/HOD- (Quality) authorize the destruction of medical records
3. A proper record of all medical records destroyed will be maintained.
4. At the end of Calendar year, a list of R. No. is taken based on the Admission date before 7 years (for Non MLC) and before 10 years (MLC case). The list contains Patient name and date of Discharge.

5. This list is sent to CEO/ VCEO for Verification and Signature of consent for disposal
6. After receiving the consent all the case files should be first shredded by MRD
7. The shredded pieces should then be burnt by Housekeeping department
8. Both these activities at Sal. Nos. 6 & 7 above must take place in the presence of a Condemnation Board constituted for the purpose & must be verified by it.

Policy: Modification of patient information in medical record

Policy type: Global

Scope: MRD

Policy: The hospital has a policy for making any changes or modifications in the medical records

Procedure:

1. Any modifications to the patient's medical records will be done only in the MRD.
2. Any request for modification of patient information will be recorded in the Register available in MRD duly signed by the patient or an authorized representative.
3. Patient / an authorized representative should be physically present for any such requests. No requests will be entertained over the phone.
4. Patient's / authorized representative's signature is required in the form before the request is processed.
5. For all such requests a valid proof of identification (passport, affidavit, ration card etc) should be produced in original with one photocopy to the medical records department.
6. The original document will be returned to the patient on completion of verification.
7. Any modification required in case of death, will be processed and the MRD Staff shall send the details to the Department of Births and Deaths, Municipal Corporation, Delhi through the patient / attendant. Name correction details to be printed on the Hospital's Letter head with Seal & Signature of the MRO.

Policy: Audits on medical records

Scope: MRD

Policy: The hospital has a policy for conducting periodic medical audits

Procedures

1. Audit of all medical records of discharged inpatients will be carried out by the MRD staff within 24 hrs. of receipt.

2. A quarterly audit of medical records will be carried out by a multidisciplinary team constituted for this purpose by the CEO/ VCEO.
3. Results of the audit will be shared with the medical and nursing staff with a view to improve quality of the records.

Policy: Medico legal cases

Policy type: Global

Scope: Hospital wide

Policy: The hospital has a policy for managing medical records in case of medico legal cases

1. Cases to be considered medico legal are:

- Accidents
- Attrempted suicides
- Homicides
- Death occurring under suspicious conditions
- Rape
- Assault
- Burns
- Snake bites
- BID

2. Intimation to the police is done.

3. All investigation reports and evidential materials are to be preserved.

4. Details of the MLC will be documented by the Casualty medical officer.

5. Brought in dead cases are medico legal and intimation to the police is done.

6. MLC on admission, discharge to home, transfer to another hospital or death will be documented and the police will be intimated.

7. Police is intimated by the CMO through telephone

8. Police intimation papers are sent to the police station in whose area of jurisdiction the MLC has occurred.

Policy: Certificates issued from medical records

Scope: MRD

Policy: The hospital has a policy to control the issue of certificates from the medical records department

Procedure:

1. The following records are generally provided by the medical records department to the patients.

a. Police intimation for Medico Legal Cases

- One copy of the Police Intimation form should be handed over to the police and the other copy should be retained by the MRD.
- Police intimation forms with required information shall be filled by the Emergency department Doctor and signed.
- Police intimation forms will be taken to Police station by the authorized personnel i.e., security personnel.
- The Form will be signed by the police and the station seal should be placed in the required place, as a token of receipt & it must be stored in a file in the MRD. A photocopy of this may be handed over to the patient/authorized representative.

b. Wound/injury Certificate

i. Police will bring the Request letter to MRD for Wound/injury Certificate.

ii. Wound Certificate shall be processed as under:

- MRD Staff shall inform the MLC consultant who will fill and sign the Wound/injury certificate.
- MRD Staff shall affix the Hospital Seal in the required Place.
- MRD Staff shall inform the Police Station to collect the Wound/injury certificate.
- MRD Staff shall hand over the Wound/injury Certificate to Police after obtaining their
- Signature.
- A copy shall be kept in the MRD.

c. Life Insurance Claims

- Patient's Attendant shall bring the Claim form and hand over to the MRD.
- MRD staff will make a photocopy of the form, and fill the patient's demographic information.
- Original and Photocopy of the form will be handed over to the concerned doctor who will fill the photocopy. Once the doctor fills the required details in the Photocopy and ensures its correctness, the original copy will be filled.
- The document is signed by the concerned doctor and witnessed by another doctor.
- The hospital seal will be placed and the document will be scanned.
- The Original copy will be handed over to the Patient's attendant after obtaining the signature of the attendant on a Photocopy of the completed document.
- Photocopy of the claim form will be maintained in MRD

Note: These records are generated based on the patient's case history /and other documents received from various wings and department of the hospital

Policy: Security, Confidentiality and Integrity of Information

Scope: MRD

Policy: The hospital has a policy to define confidential patient information, which includes verbal, written, information, and to provide guidelines for preserving confidentiality.

Responsibilities:

1. Maintain patient confidentiality when using Patient Information in any form, including, but not limited to
 - a. Verbal communications;
 - b. Hard copy records (charts);
 - c. Printouts pertaining to the patient;
 - d. Notes maintained by staff or faculty providing care to the patient;
 - e. Patient sign-in sheets;
 - f. Inquiries or information from payers;
 - g. Faxed patient information, and;
 - h. Diagnostic testing/results.
2. Restrict the amount of information released in response to calls about current inpatients.
3. Adhere to and incorporate into its policies and procedures existing laws that require a specific degree of confidentiality for specialized patient information, including mental health, and drug/alcohol-related records regarding diagnosis and treatment.
4. Provide training on privacy and security policies and practices to all members of the workforce.
5. All staff transporting medical records must ensure the privacy of patient-identifiable information during the transport process.
6. Records are to be maintained in the patient care areas in locations that are not accessible by unauthorized individuals.
7. The original medical record shall not be removed from the hospital premises except upon receipt of court order.
8. Shall comply with all applicable facility policies, administrative directives or memorandums.

Functions- Section wise

Admission and Discharge Analysis

- Receives Record from assembling Desk along with Daily Admission and Discharge Register after tallying the Admissions and Discharges.
- To work out Admissions Sex wise / Specialty wise / Consultant wise
- To work out Discharges / Deaths Sex wise / Specialty wise / Consultant wise
- To make entry in the Register for developing Hospital Performance Statistics :
 - Daily
 - Monthly
 - Annually.

Record Completion

- On receipt of record, the MRD Check list is attached with the Incomplete Record.
- Get the Medical Record of Discharge / Death Cases completed by the Doctors while sending Written Requests or on Phone.

Disease Coding / Indexing

- Coding of Diagnosis on Medical Records using International Classification of Diseases, the latest Revision (I.C.D 10) published by World Health Organization (W.H.O.) on Computer, as well as Manually.

Storing Records

- To keep medical records in folders by using suitable i.e. Serial Numbering System and Store them vertically in the File Shelves for quick Retrieval.

Processes

Identification of Medical Records

A unique numeric number (R. No) is allotted to each patient.

OPD file is generated at OPD registration counter; On the Admission Request of the Consultant, Indoor patient Admission record is prepared. Personal data for following particulars are provided at OPD registration and Admission counter by the Patient / Relatives.

- Name of Patient
- Father's / Husband's Name
- Age & Sex
- Occupation
- Permanent / Emergency Address.
- Telephone / Mobile Numbers
- Nationality
- Religion
- Medico Legal Case if any.

These details are fed in the HIS manually and a unique R No. is generated which is given to the patient.

Completeness of Medical Records

- An inpatient's medical record is complete when the following criteria are met:
 - Its contents reflect the patient's condition on arrival, diagnosis, test results, therapy, condition and in-hospital progress and condition at discharge; and

- Its contents, including any required discharge summary or final progress notes, are assembled and authenticated; and
- Every medical record is timed and dated
- Author of the medical record can be identified
- Entry of Medical record: The medical records can be entered by
 - Treating consultant and Cross referred consultant
 - Resident Medical Officer and Duty Medical Officers
 - Physiotherapist
 - Dietician
 - Nurse (only in nursing records)
 - The physical examination should reflect a comprehensive current physical assessment.
 - The recorded history and physical examination must be authenticated by a practitioner privileged to do so.
 - When a patient is readmitted within 30 days for the same or related problem, an interval history and physical examination reflecting any subsequent changes may be used in the medical record provided the original information is readily available.

Documentation for inpatients

- **History and Physical Examination**
 - A complete history and physical examination shall be documented and filed on the patient's medical record immediately on admission and prior to the performance of any surgery.
 - In the case of an emergency a preoperative note is recorded prior to the surgery/invasive procedure. In addition, the preoperative diagnosis & indicated diagnostic tests are completed and recorded in the patient's medical record before surgery/invasive procedure.
 - The history should include the following:
 - Chief complaint
 - Present illness
 - Relevant past, family, and social histories, appropriate for age
 - Inventory of body systems
 - Evaluation of patient's developmental age
 - Consideration of education needs and daily activities
 - Family and/or guardian's expectation for and involvement in, the assessment, treatment, and continuous care of the patient
 - The physical examination should reflect a comprehensive current physical assessment.
 - The record history and physical examination must be authenticated by a practitioner privileged to do so.
 - When a patient is readmitted within 30 days for the same or related problem, an interval history and physical examination reflecting any subsequent changes may be used in the medical records provided the original information is readily available.
 -

- Documentation of periodic review of the planned course of action, as appropriate .The treatment-planning process is completely individualized, based on current patient needs and clinical status. The treatment plan is updated when the patient's needs and response to treatment change. Document good daily progress notes with appropriate annotation of the parent's response to changes in the patient's progress.
- **Post-Operative Documentation includes:**
 - Vital signs;
 - Level of consciousness;
 - Medications (including intravenous fluids);
 - Blood and blood components;
 - Any unusual events or post-operative complications and management of such events;
 - Patient's discharge from the Post sedation or post anaesthesia care area by the responsible licensed independent practitioner or according to discharge criteria;
 - If discharge criteria are used, they are approved by the medical staff .Compliance with discharge criteria is documented, and If the patient is discharged by a licensed independent practitioner, the practitioner's name is recorded in the post-operative documentation.
- **Progress Notes**
 - The admission progress notes should summarize the present illness, pertinent past history, the pertinent physical and laboratory findings, the initial impressions of the physician and the initial diagnostic and therapeutic plan.
 - Progress notes (reassessments) should give a pertinent chronological report of the patient's course in the hospital and should reflect any change in condition, the result of treatment and plans for future care. Whenever possible, each of the clinical problems shall be clearly identified and correlated with specific orders as well as results of tests and treatment.
 - An authenticated legible progress note is required daily to document medical necessity and acute level of care.
 - Progress notes must reflect the involvement of the attending physician in the patient's care.
 - All progress notes must be signed and dated with time.
- **Consultations**
 - Consultation reports shall be a part of the patient's medical record and shall show evidence of a review of the patient's record by the consultant, pertinent findings on examination of the patient, the consultant's opinion, the consultant's recommendations and the signature of the consultant.
 - A request for a review by another consultant shall be noted in the physician's orders. The consultation request form shall be completed and placed on the patient's medical record.
 - Emergency or 'stat' consultations should be requested only when there is an emergency or urgent need for the consultation. The consultation form will remain on the chart.
- **Informed Consent:**

Informed consent must be obtained by a physician prior to any invasive and/or operative procedure from each patient or the patient's legally authorized representative. Informed consent implies that the patient has been informed of the procedure to be performed, the risks involved, any alternative procedures and the intended outcome .Informed consent is documented by making

- 1) Appropriate progress notes in the patient's medical record and
- 2) By obtaining the signature of the patient or his/her legal representative on the approved consent form.

The progress notes should reflect the content of the discussion with the patient and the physician's evaluation of the patient's understanding and response to the information provided. All notes should show the date and time of the discussion.

- **Operative Reports**

- A brief legible comprehensive operative progress notes shall be entered in to the medical record immediately after surgery to provide pertinent information for use by any practitioner who is required to attend the patient. A complete operative report should also be dictated immediately after surgery and should include the following:
 - Name of the surgeon and any assistants
 - Procedure(s) performed
 - Description of the procedure
 - Findings
 - Estimated blood loss
 - Specimens removed
 - Postoperative diagnosis
- The surgeon must authenticate the completed operative report as soon as possible following surgery.

- **Pre and Post Anaesthesia Evaluation**

- There must be a pre-anaesthesia note in the patient's medical record prior to administering anaesthesia that is reasonably expected to result in loss of protective reflexes. The note shall specifically include:
 - Provisional diagnoses,
 - A history and physical exam,
 - Any abnormal lab. report
 - Brief description of the planned procedure(s),
 - Planned anaesthesia type, including risks ,benefits and alternatives,
 - Patient's previous drug history,
 - Other anaesthetic experiences,
 - Any potential anaesthetic problems
- A documented post anaesthesia visit shall note any intra- operative or post-operative anaesthesia complications.

- **Discharge Summary**

- The discharge summary should be completed at the time of inpatient discharge from the facility and should follow the following approved format:
 - Patient Name:
 - R .Number:
 - Hospital Service:
 - Attending Physician:
 - Referring Physician
 - Admission Date:
 - Discharge Date:
 - Date of Surgery (if any)
 - Discharge Diagnosis (documented without the use of abbreviations or

- symbols):
- Reason for Hospitalization:
 - Significant Findings (physical and laboratory):
 - Procedures performed and care, treatment and services provided:
 - Condition on discharge (measurable comparison with condition on admission-able to swallow with minimum difficulty; afebrile and ambulating with crutch, no signs of infection, etc.):
 - Information provided to the patient and family (i.e., diet, medication ,activity and follow-up, other discharge instructions):
- In the case of death, the discharge summary is replaced by a death summary stating essentially the same information, plus a summary of events immediately prior to death, including the cause of death as well as the date and time of death.
 - In the case of a patient“ Leaving Against Medical Advice” (LAMA),the summary or progress notes should include the same information,
 - In case of transfer of patients it should have the date of transfer, time of transfer, reason for transfer and name of the receiving hospitals
 - All discharge summaries shall be authenticated by the Consultant.

Assembly of medical records

1. Patient files will be assembled in the prescribed standard order:-
 - Admission face sheet
 - Reference slip
 - History sheet
 - Plan of care
 - Pain scale form
 - Nursing Initial Assessment
 - Nutrition Assessment form
 - Progress Record
 - Diabetic Chart
 - Investigation Record
 - Observation Chart
 - Physiotherapy notes
 - Lab reports
 - Blood transfusion monitoring chart
 - Consent form
 - OT notes
 - Anaesthesia Record
 - Patient Briefing form
 - Discharge Summary
2. Deficiency checklist is kept in each file.
3. Keep incomplete records separately (according to treating consultant) pending follow up and completion

ICD classification

1. The 43rd World Health Assembly in 1990 approved the 10th revision of the International Classification of Diseases (WHA 43.24) and endorsed the recommendation of the international conference for the 10th revision of the ICD held in Geneva from 26th September to 2nd October 1989.
2. All the inpatient files (diagnosis) shall be coded according to the international Classification of diseases using 11th edition.
3. The records shall be verified to ensure that the codes have been entered.

Procedure during Discharge of inpatients

- As soon as Discharge summary/Death Summary is written by the doctor, the sister in charge of the ward forwards the manual written discharge summary to EDP room.
- All the investigation reports, X ray films etc. will be handed over to the patient. They are handed over in original in case of cash patients & a photocopy in case of credit patients. In case of MLC, the Films of the first x ray, Ultrasound procedure done on the patient will be retained by the Hospital and is attached to the patient's case file.
- The Discharge summary/Death Summary is typed and one copy is handed over to patient when he leaves the hospital and other copy is attached to the patient's case file. In case of TPA / CREDIT patients a third copy is also retained for forwarding along with original bills to the TPA / EMPANELLED ORGANISATION.
- In case of death of the patient, based on the case file Death report are typed and sent to Municipal authorities.
- All case files are annexed with Discharge/Death Summary, Films (in case of MLC), Nursing notes, Operating Room Records. Case files are verified for above annexure.
- All files are completed and handed over to the MRD within 72 hour of discharge.

Flow of Medical Record from Admission to Post Discharge

The Medical Record Department ensures a smooth flow of Medical Record of the patient from the day of his admission to the day of his discharge and onward maintenance till the retention period.

- i. Admission request form is filled by the treating doctor of the patient. Formalities for admission of the patient are carried in the registration counter. The general inpatient case sheet for patients is prepared at the time of admission in the respective inpatient admission counters.
- ii. All data pertaining to the patients stay in the hospital and care provided are preserved in the patients case file which is maintained by the nursing staff of the concerned ward where the patient is admitted, all entries are recorded in a chronological manner and authenticated by the designated author of the particular entry clearly mentioning the time and date of the entry. After getting the orders of discharge of the patients from the treating Consultant, the Nursing Staff, on duty get the discharge summary prepared from the Consultant / Resident Medical officer, the slip is sent to the Billing Department for necessary payment (for patient staying in Deluxe room, Semi Deluxe

room, Single room, Double room, Economy room). Necessary payment done at Billing Department and receipt is given to patient relative. Nursing staff discharges the patient after getting clearance slip from billing department. Patient file is sent to medical record room.

- iii. In case the patient is transferred or referred to another hospital the medical record contains information regarding reasons for transfer, name of the hospital where the patient is being transferred

Receiving of Case file in the Medical Records Department (MRD)

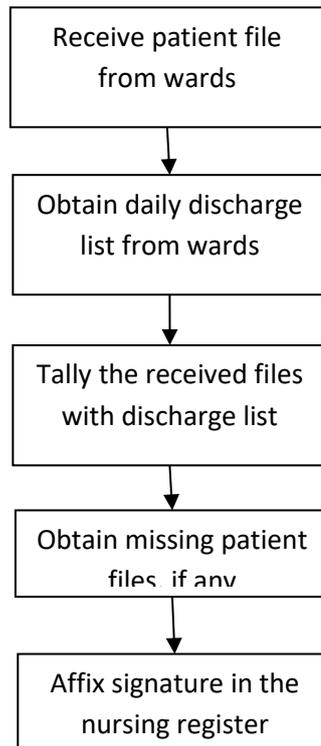
- All the Cash Patient Case files must reach MRD within 72 hours of discharge.
- The staff must verify the dates of discharges for previous 3 days to confirm all case files have reached the MRD
- The case files are verified.
- The details of the case files should be entered in a Log Book maintained by MRD. The Log Book should contain Patient's name, IP no, and Date of Discharge/death. The details of Expired and Alive cases are also mentioned
- Details of all MLC files are entered in a separate Logbook

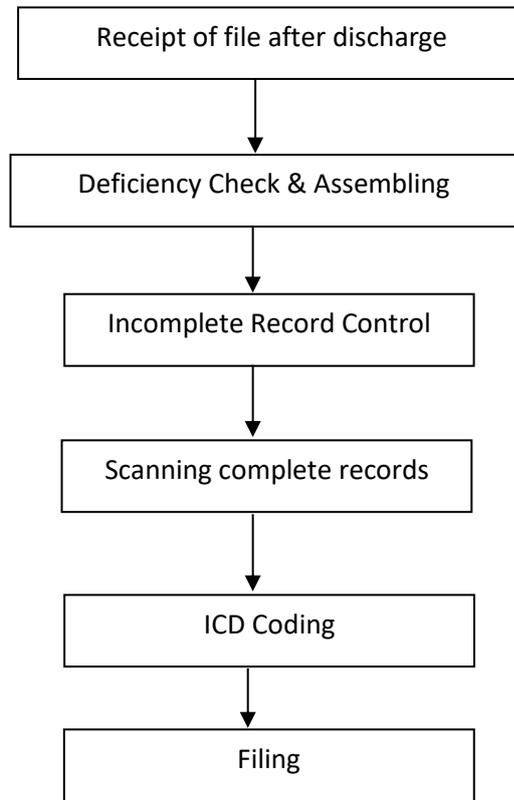
Retrieval of Medical Records

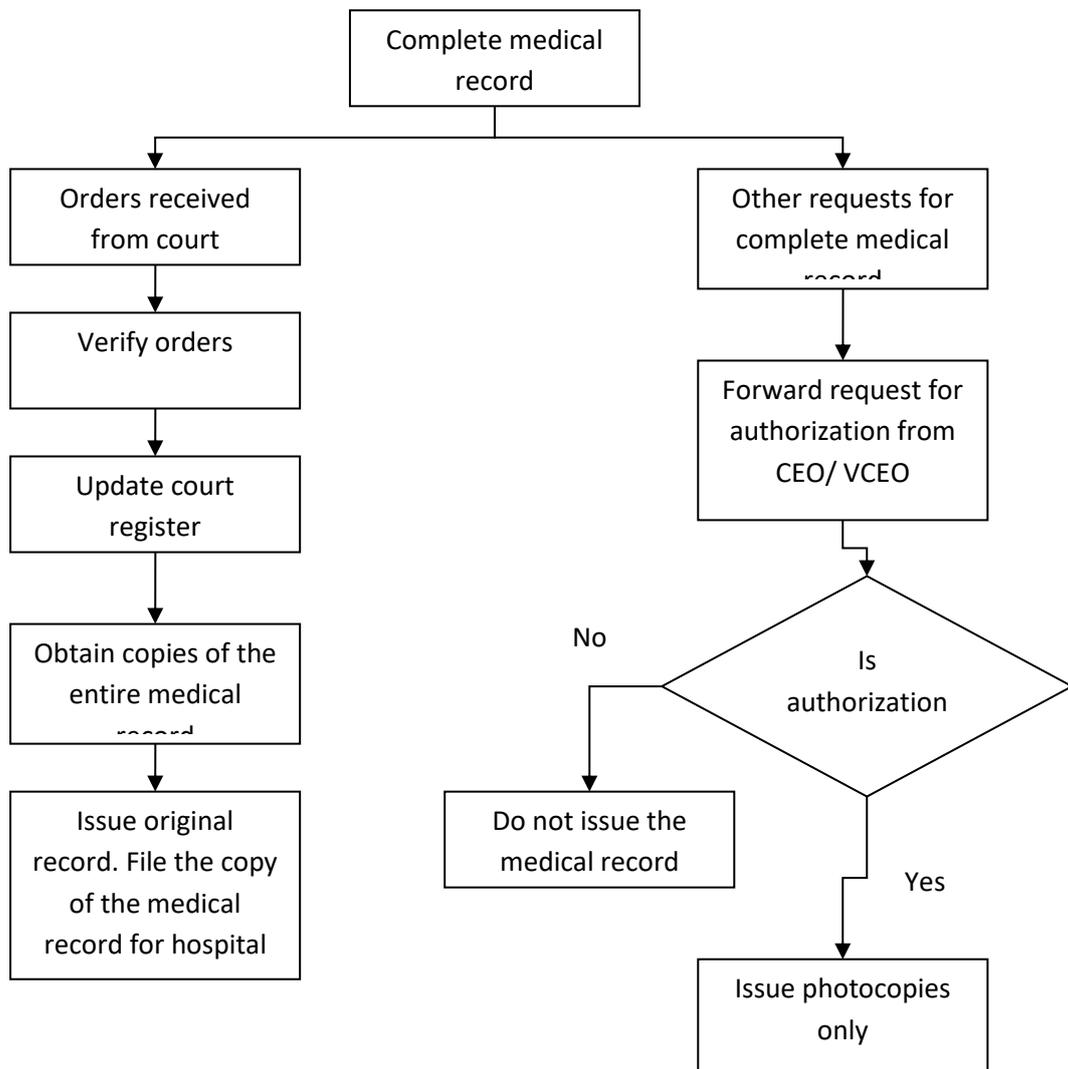
- Request for Retrieval of the case file can be from following quarters:
 - Request for retrieval of MLC Case files from the Office of CEO/ VCEO
 - Request from the Consultants for study purpose
 - Request from Billing Department
 - Request from Patients/relatives after being duly approved by the treating consultant.
 - Request from any other individual/organization by order of Court
 - Request from quality department for medical/ prescription audit.
 - Request from reception in case of re-admission.
- Process of Request
 - Requests from internal sources-CEO, VCEO, Consultants, etc. requires no verification.
 - Patients requesting for Case files must forward a written request to the CEO/ VCEO, mentioning the R. No. The patient/attendant should produce a copy of Discharge Summary.
 - In other cases an authorization letter should be submitted
- Process of Retrieval for patients/others
 - Only a photocopy of Case files should be handed over to the patients and others
 - A Log book is maintained for containing the following details
 - Name and R. No. of the Patients
 - Date and time of issue of photocopy
 - Signature of receiving authority
 - Signature of issuing authority (CEO/VCEO)
 - Signature of MRD staff
- Process of Retrieval of case file for submission to court
 - Take out the photocopy of the case file before issuing the original Case file.
 - Maintain a log book containing following information

- Name and R. no of the patients
- Year of admission
- Name of the requesting authority with request letter number/ court order number and date
- Date and time of issue
- Signature of the requesting/receiving authority
- Signature of MRD staff while issuing the case file
- Billing Section and Consultants
 - Case files issued to DO, CEO, VCEO, Billing department and Consultants should be entered in separate internal issue Log book containing following details
 - Name and R. No. of the patients
 - Year of admission
 - Name of the requesting authority Date and time of issue
 - Signature of the requesting authority
 - Signature of MRD staff while issuing the case file
 - Due date of return
 - Actual Date of return
 - Signature of MRD staff while receiving the case file back
- Request for Duplicate Investigation Reports (responsibility of Diagnostic department)
- Duplicate Investigation Reports should be issued to patients/relatives based on following requests:
 - Outpatient should produce a copy of Cash Bill
 - Discharged inpatients should produce a copy of discharge summary
 - No formal documentation is required
 - Request from reception in case of re-admission.
- During office hours (9 am – 6 pm)
 - Admission details duly signed by In-charge Doctor ICCU-1.
 - The slip is sent to MRD and then the file is retrieved by the MRD technician.
- During non-office hours (6 pm-9 am)
 - Admission details duly signed by In-charge Doctor ICCU-1.
- The GDA from reception shall retrieve the file MRD & shall make an entry in the register

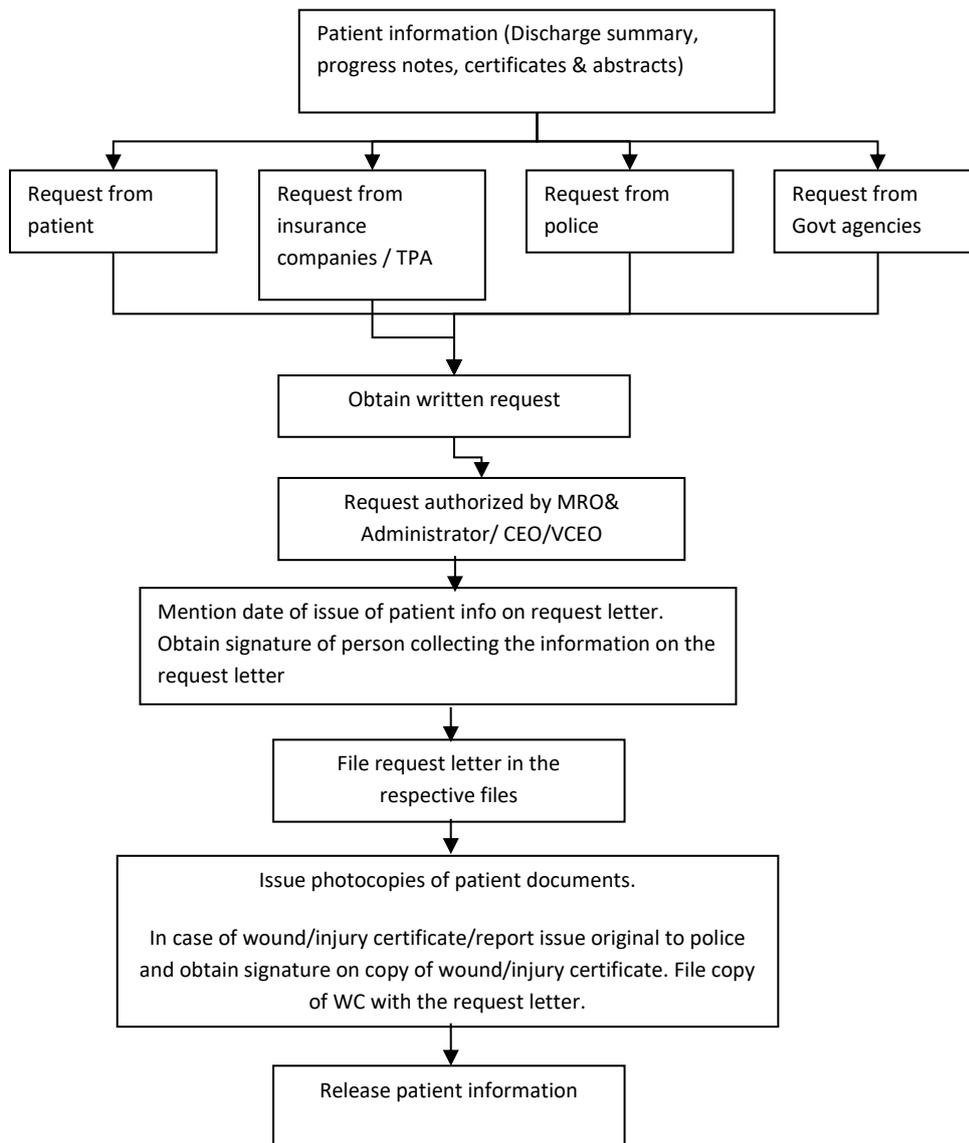
Receiving Discharge records







Release of patient records



Reports

Monthly Census

Ward Census Reports from each ward is generated by nursing staff at duty and sent to the MRD. The MRD technician compiles the same for preparing the census report. The census report is submitted to the CEO/ VCEO/ Administrator of the hospital on a regular basis by the medical record Technician.

Development of Hospital Performance Statistics

Statistical and epidemiological Data are needed to implement and manage medical care planning and to obtain Health Indicators to monitor and evaluate their effectiveness for Hospital Management as follows:

Hospital / Health Statistics and Method of Collection

The following are the different types of Health / Hospital Care Statistical Information

- Administrative Statistical Information
- Financial Statistical Information.
- Hospital Performance Statistical Information

Uses of hospital statistics

This information is useful to **Hospital Administrator for**

- Establishing administrative Control over the functional activities.
- Planning of
 - Hospital growth
 - Staff in different Departments
 - Equipment required.
 - Training Program
 - Operating Budget
 - Increasing the quality of Care rendered to the Patients
 - Medical Audit.
 - Additional facilities.

Census Officials and Demographers

- Establishing mortality of Population.
- Predicting Population growth etc. of the Country

Public Safety Officials

- Developing Preventive measures
- Launching Educational Safety Campaigns by the Country and local Body's in receipt of Information from the Hospital.

Research Workers

- Planning and conducting research in Medical fields for the advancement in Medical Science by having morbid events from the hospital level.

National & International Health Agencies

- Planning of better Health Services in the Country.
- Taking suitable measures for control and prevention of Diseases.

Financial Statistical Information

The information is useful to calculate

- The average cost of bed per day, per patient.
- The average cost of Diet per day per patient.
- Control over Hospital Budget and spending the same for useful purposes.

Hospital Performance Statistical Information

The above Information can be obtained from the following Services

Out Patient Services

The following information is obtained

- Number with detail of outpatient Department and special clinics functioning in a hospital.
- Total Number of New Cases
- Total Number of Repeat Cases
- Total number of New & Repeat Cases.
- Specialty and Consultant wise Distribution of outpatients both New & Repeat Cases.

In Patient Services

Bed Complements

- Total No. of Beds
- Specialty wise breakup of beds.

Admissions & Discharges

- Total No. of Admissions
- Total No. of Discharges
- Sex-wise, Admissions & Discharges
- Specialty / Consultant wise Distribution of ADMISSIONS AND DISCHARGES.
- Hospital Days.

The above information is obtained through Manual Admission & discharge register, maintained at admission office.

Deaths

- Specialty – wise / Consultant wise, Sex wise DEATHS through Manual Register of Admission & Discharge Register.
- Death is classified as follows:--.
- Institution Deaths (Deaths occurring over 48 hrs.)
- Non Institution Deaths (Deaths occurring under 48 hrs.)

Patient Movements

- Number of patients at the beginning of the day.
- Number of patients admitted during the day.
- Number of patients discharged and died during the day.
- Number of patients transferred in and transferred from one ward to the other.

The report is on the basis of Daily Census Report of the Hospital.

Operations / Operative Procedures

On the basis of Operation Theatre register and annually compiled Monthly Report.

- Total Number of Operations performed
- Distribution of Major and Minor operations
- Specialty / Consultant wise Operations performed.

Laboratory Investigations / Test

- Total number of investigations / test conducted.
- Types of investigations done.
- Total number of investigations conducted in the Departments of
 - Pathology
 - Haematology
 - Microbiology
 - Biochemistry

Information is manually compiled through Registers

Imaging Department

- Total Number of X-Ray examination
- Total Number of Ultra Sounds

The above information is compiled manually through Registers maintained in the Departments and through computer.

Department Of Nuclear Medicine

- Total Number of MUGA Tests conducted.
- Total Number of THALIUM Tests conducted.
- Total Number of Nuclear Scans done and its types.
- Total Number of IN-VITRO Test conducted.

Above information is compiled manually through Registers maintained in the Registers in the Department

Blood Bank Services

- Blood donation done
- Blood transfusion given
- Blood grouping done
- Other related Blood Bank services done

Above information is compiled manually and maintained in the registers of the department

Department Of Physiotherapy

- Total Number of Physiotherapy done of different types.

Information is compiled manually & maintained in the Register of the Department

Department Of Emergency

- Total Number of cases attended in the department.
- Total Number of Medico Legal Cases Registered.
- Total Number of Deaths.
- Total Number of BID

Above information is compiled manually and maintained in the Register of the Department

Department of Invasive Cardiac Lab

- Total Number of Coronary Angiographies.
- Total Number of Angioplasties (PTCA).
- Total Number of Cauterizations.
- Total Number of E.P.S.
- Total Number of A.R.F
- Total Number of Temporary Pacemaker Implantation (T.P.I.)
- Total Number of Permanent Pacemaker Implantation (P.P.I.)
- Other Procedures.

Department of C.T.V.S

- Total Number of C.A.B.G.
- Total Number of CABG with MVR.
- Total Number of CABG with DVR.
- Total Number of CABG with DMV
- Total Number of Mitral Valve Repair / Aortic Valve Repair.
- Other Cardiac Surgeries
- Total Number of Thoracic Surgeries
- Total Number of Vascular Surgeries.

Hospital Morbidity

Hospital Morbidity covers only the patient treated. Consequently it is selective and biased. The bias arises in that the relative Importance of the diseases in the community may not be the same as in the disease treated, in the Hospital. Non with standing, the Morbidity treated in a Hospital gives rough idea of its trend in the Community. In fact in many developing Countries, Hospital Morbidity is the only source of Morbidity Statistics in the country.

Medical Audits

The medical records shall be reviewed and audited periodically and used as a tool for quality improvement of clinical services. A medical audit committee is composed for this who shall audit the records on half yearly basis.

- Appropriate sample of the medical records shall be selected for audit. The sample should be based on statistical principles and representative of all records. Adequate mix of active and discharge cases shall be kept in sample.
- The medical audit findings shall be kept confidential and circulated only to the care providers.
- Patients and staff anonymity shall be maintained in medical audits
- Based on the findings in medical audit, Medical Audit Committee shall take appropriate corrective and preventive actions.

Purpose

- To retrospectively evaluate clinician's conformance to the norms and standards of the modern medical practice.
- To aid in improving quality of clinical care by highlighting opportunities for improvement.

Scope

This procedure covers medical files of IPD patients of all specialties mentioned in scope of services of the hospital

Process Details: Description of the Process

| S. No. | Activity |
|--------|---|
| 1. | To conduct the medical audit once a six months |
| 2. | To decide the number of files to be audited (Sample size) based upon following statistical process <ul style="list-style-type: none"> • Population size = Total patient treated or are being treated as in-patients in last one months • Sample size = 5 % of the population size (at least one file from each specialty shall be included) • Systematic random selection: Selection on basis of R.Numbers |
| 3. | Sample selection and stratification <ul style="list-style-type: none"> • Files of all the cases with death discharges (Not to be included in sample size) • Files of all cases who underwent an adverse clinical event during the stay (Not be included in sample size) • 25% - Active files, 75% - Discharged files • At least 1 file from every specialty shall be included |
| 4. | No. of files in sample size is to be randomly selected and retrieved from MRD, and from inpatient areas in case of active files |
| 5. | The files selected for audit shall be equally distributed to members of the committee or other consultants. Decision for distribution shall lie with Head of Medical Audit Committee. No auditors are allowed to audit their own cases. |
| 6. | The audit checklist shall be distributed amongst members who have to audit the records |
| 7. | Composition of audit team may be altered at the discretion of the Head of Medical Audit Committee to allow fair representation to all consultants |
| 8. | The files to be audited as per the checklist and as per their own understanding of the case and medical practice |
| 9. | Following points shall also be checked during review <ul style="list-style-type: none"> • Completion of various components of medical files, i.e. |

| | |
|-----|---|
| | <p>whether all entries are made and all necessary forms are attached in the records</p> <ul style="list-style-type: none"> • Proper endorsement of name, date, time and sign of the person who made entries • Legibility of the entries • Adequacy and fulfilment of minimum requirements of assessment notes as per the subjective, objective, assessment and plan (SOAP) note methodology. |
| 10. | Complete the medical audit checklist and write your remarks. Be elaborative while writing the audit observation. Justified and adequacy of treatment should be focused while auditing. |
| 11. | Call the meeting of MAC, to discuss the findings of audit and corrective/preventive measures. |
| 12. | <p>Each member shall present his/her audit findings in committee meetings. Based on this committee shall discuss and decide preventive actions or quality improvement actions</p> <p>Anonymity of the clinicians shall be maintained while presenting the audit findings.</p> |
| 13. | If all audit presentation cannot be completed, call for a second meeting. Do not compromise the functioning for time shortage |
| 14. | Major findings of the audits of each case, brief description of the discussions and decision taken shall be recorded in minutes of meeting format |
| 15. | The minutes of meeting shall be reviewed and approved by the Head of Medical Audit Committee before circulation |
| 16. | Minutes shall be circulated to all the consultants and to members. The minutes shall be kept confidential and should not be revealed to any other person. |
| 17. | Completed checklist and a copy of the minute shall be kept in Medical Audit Committee file as record |
| 18. | A repeat meeting shall be called to monitor and to discuss the action taken on decisions. |

The hospital shall hold medical audit meeting quarterly review the patient care services carried out by the hospital. The main objective of this meeting shall be:

- To review the overall work carried out in the departments including outpatient department, inpatient department and also emergency department
- To discuss the institutional deaths of the previous month

The members of the medical audit committee shall be:

- VCEO
- Representative Clinical (Surgery)
- Representative Clinical (Medical)
- Nursing Head
- Senior Executive Quality Assurance
- Medical Record Technician.

Followed by initiation of any corrective or preventive action, by the Medical Audit Committee

Parameters for Medical Audit are as follows:

Part -I

Identification data for inpatient to which this case sheet pertains:

1. Date of Audit
2. Patients Name
3. CR/R No.
4. Ward/ Bed Number
5. Diagnosis on admission
6. Final diagnosis
7. No. of days in hospital
8. Discharge/Expired/LAMA/
Transferred/ Absconding

Part- II

Particulars of Clinician treating the case

1. Dr.
2. Specialty

PROBLEM STATEMENT:-

To determine flaws in the patient record files done by physicians nurses and allied professionals.

OBJECTIVES:-

- ▶ To study the compliance level of medical records
- ▶ To ensure and improve the quality of medical records

LITERATURE REVIEW

Implementation of electronic medical records: theory-informed qualitative study

OBJECTIVE:

To apply the diffusion-of-innovations theory to the examination of factors that are perceived by family physicians as influencing the implementation of electronic medical records (EMRs).

DESIGN:

Qualitative study with 2 focus groups 18 months after EMR implementation; participants also took part in a concurrent quantitative study examining EMR implementation and preventive services.

PARTICIPANTS:

Twelve community-based family physicians.

METHODS:

We employed a semi structured interview guide. The interviews were audiotaped and transcribed verbatim; 2 researchers independently categorized and coded the transcripts and then met to compare and contrast their findings, category mapping, and interpretations. Findings were then mapped to an existing theoretical framework.

MAIN FINDINGS:

Multiple barriers to EMR implementation were described. These included lack of relative advantage for many processes, high complexity of the system, low compatibility with physician needs and past experiences, difficulty with adaptation of the EMR to the organization and adaptation of the organization to the EMR, and lack of organizational slack. Positive factors were the presence of a champion and relative advantages for some processes.

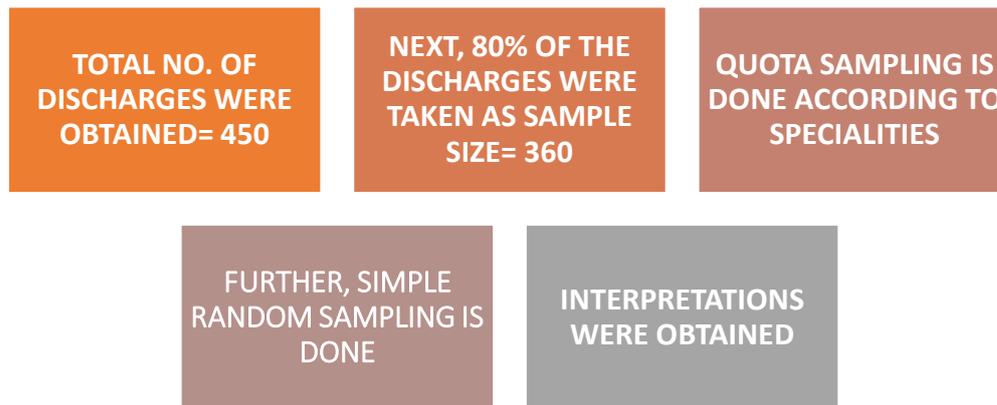
CONCLUSION:

Early EMR implementation experience is consistent with theoretical concepts associated with implementation of innovations. A problematic implementation process helps to explain, at least in part, the lack of improvement in preventive services in our quantitative results.

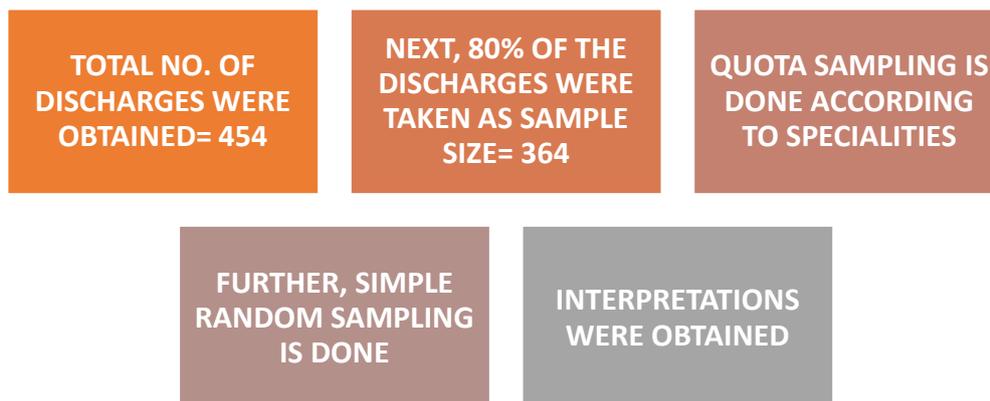
METHODOLOGY

- **Study Type:** Descriptive
- **Area of study:** National Heart Institute, Kailash Colony, New Delhi.
- **Data Collection Method:** Checklists of Medical Audit
- **Sources of Data:**-Primary data
- **Time Frame:-** Two months(1st February 2016-to 1st April 2016)
- **Sample Size:** - 80% of total discharges
- **Sampling technique:-**Quota sampling followed by simple random sampling.

In the month of **February**, **retrospective** study was conducted.



In the month of **March**, **retrospective** study was conducted.



DATA COLLECTION TOOLS:-

Following are the **parameters** on the basis of which the study was conducted-



Medical Audit Form

CR No : _____

Age _____

Location _____

DOD _____

| S.No | Check Points | Availability |
|-------------|--|---------------------|
| 1 | Face sheet with general consent | |
| 2 | Referral Form | |
| 3 | Registration Data | |
| 4 | General Consent for treatment during hospitalization | |
| 5 | Disease Coding (ICD) | |
| 6 | Admission Face Sheet (History Sheet) | |
| 7 | Plan of care with indication of admission | |
| 8 | Pain Scoring Form | |
| 9 | Nursing Initial Assessment | |
| 10 | Nutritional Assessment | |
| 11 | Progress Sheet | |
| 12 | Coronary Care Observation Chart | |
| 13 | Diabetic Chart | |

| | | |
|----|---|--|
| 14 | Investigation Chart | |
| 15 | Test Reports | |
| 16 | Blood and other Investigation Forms | |
| 17 | Consent Forms | |
| 18 | Surgical Consent Form | |
| | Anesthesia Consent Form | |
| | Blood Transfusion | |
| | HIV | |
| | Procedural Consent | |
| | Restraint Consent Form | |
| 19 | Pre - Anesthesia Check Up Form | |
| 20 | Pre- Operative Check List | |
| 21 | Operative Notes (Surgeon + Anesthesia) | |
| 22 | Post Cardiac Surgical Critical Sheet | |
| 23 | Discharge Criteria | |
| 24 | Discharge Summary | |
| 25 | MLC Case Paper / FIR | |
| 26 | Clinical Details on Admission | |

Name and signature of Auditor _____

Date

:

Name & Counter Sign of Members of Committee :

Doctor :

Nurse:

Quality:

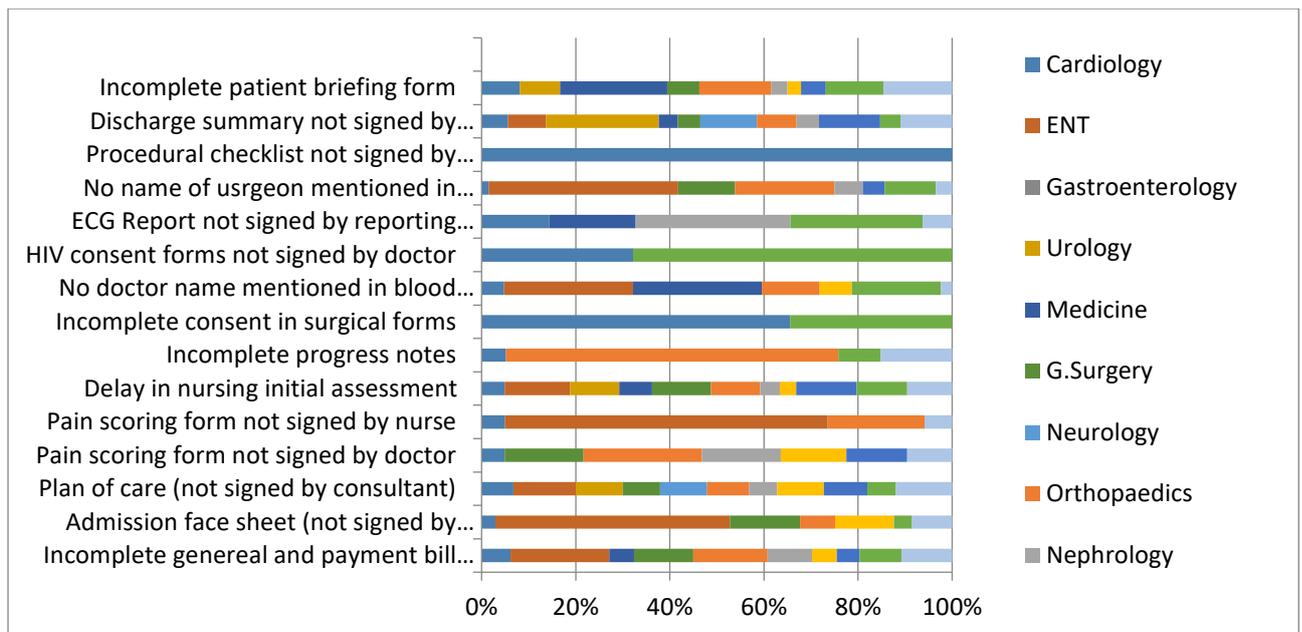
SAMPLING TECHNIQUE:-

DATA ANALYSIS:-

IN THE MONTH OF **FEBRUARY 2016**

| S.NO | SPECIALITIES | TOTAL NO. OF DISCHARGES | 80% OF THE DISCHARGES |
|--------------|---------------------|--------------------------------|------------------------------|
| 1 | Cardiac surgery | 47 | 39 |
| 2 | Cardiology | 243 | 205 |
| 3 | ENT | 3 | 3 |
| 4 | Gastroenterology | 2 | 1 |
| 5 | General surgery | 17 | 10 |
| 6 | Medicine | 7 | 6 |
| 7 | Nephrology | 13 | 10 |
| 8 | Neurology | 2 | 2 |
| 9 | Oncology | 17 | 12 |
| 10 | Orthopedics | 25 | 20 |
| 11 | Physician | 50 | 35 |
| 12 | Pulmonary medicine | 32 | 13 |
| 13 | Urology | 10 | 4 |
| Total | | 450 | 360 |

Data was analysed using **Microsoft excel.**



INTERPRETATION

The following conclusion has been drawn after conducting a proper data analysis:

- The problem of incomplete patient briefing form is prevalent majorly in the medicine speciality while it is least in the oncology speciality.
- The urology speciality is the main speciality suffering through the problem of discharge summary not being signed by the consultant.
- The medicine speciality is the only one where the flaw of the procedural checklist not signed by the in charge is existent.
- No name of surgeon mentioned in the surgical safety checklist is a highly frequent occurrence in the ENT department while it is non-existent in urology department, oncology department and the physician department.
- While being the least in the neurology department, ECG report not signed by reporting physician is a very crucial muddle in the departments of gastroenterology and general surgery.
- The problem of HIV consent forms not signed by doctors is extant in namely 2 departments- medicine and general surgery.
- In the departments of ENT and medicine, no name mentioned in blood transfusion form is a highly frequent occurrence.
- Incomplete progress notes are constantly found in orthopaedics department.
- All the departments are facing the problem of delay in nursing initial assessment.
- In the ENT department, pain scoring form is not being signed by the doctors while this flaw is non-existent in the departments of general surgery, nephrology and gastroenterology.
- Majorly in the departments of orthopaedics, general surgery and nephrology, the pain scoring form is not being signed by the nurses while the department of urology and ENT have witnessed no such issue.

- The Plan of Care is not being signed by the consultant is a crucial issue in all of the departments. The time and date was also not being mentioned.
- In the ENT department, the signing of the admission face sheet is constantly overlooked by the doctors while it is a rare occurrence in the general surgery speciality.
- Most of the general and payment bill consents are found to be incomplete in the departments of ENT, orthopaedics and general surgery.

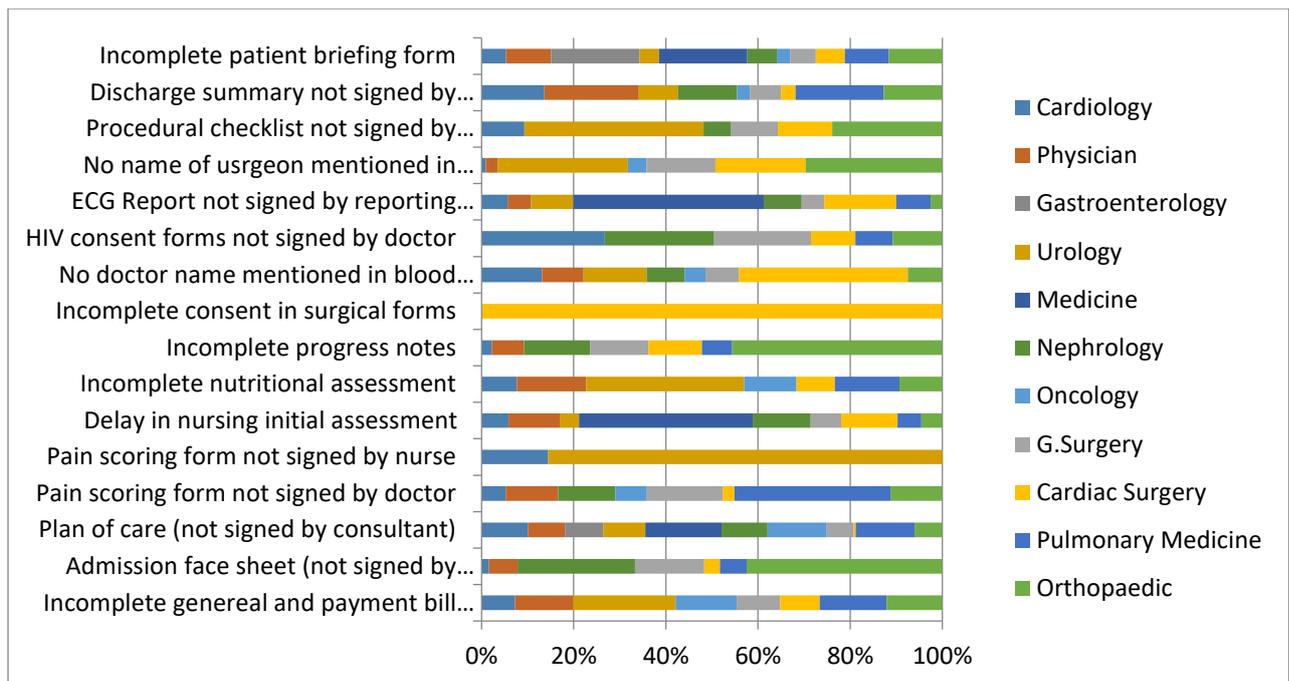
SAMPLING TECHNIQUE:-

DATA ANALYSIS:-

IN THE MONTH OF MARCH 2016

| S.NO | SPECIALITIES | TOTAL NO. OF DISCHARGES | 80% OF THE DISCHARGES |
|--------------|---------------------|--------------------------------|------------------------------|
| 1 | Cardiac surgery | 43 | 37 |
| 2 | Cardiology | 195 | 160 |
| 4 | Gastroenterology | 2 | 2 |
| 5 | General surgery | 22 | 17 |
| 6 | Medicine | 2 | 1 |
| 7 | Nephrology | 25 | 15 |
| 9 | Oncology | 32 | 27 |
| 10 | Orthopedics | 34 | 33 |
| 11 | Physician | 57 | 41 |
| 12 | Pulmonary medicine | 32 | 22 |
| 13 | Urology | 10 | 9 |
| Total | | 454 | 364 |

Data was analysed using Microsoft excel.



INTERPRETATIONS

The following conclusion has been drawn after conducting a proper data analysis:

- The problem of incomplete patient briefing form is prevalent majorly in the specialities of medicine and general surgery while it is least in the oncology speciality.
- The physician and medicine departments are the main departments suffering through the problem of discharge summary not being signed by the consultant, the least being in the cardiac surgery department and oncology department.
- The departments of urology and orthopaedics are the main departments where the flaw of the procedural checklist not signed by the in charge is majorly existent.
- No name of surgeon mentioned in the surgical safety checklist is a highly frequent occurrence in the urology and orthopaedics departments while it is non-existent in gastroenterology department, medicine department and the nephrology department.
- While being the least in the orthopaedics department, ECG report not signed by reporting physician is a very crucial muddle in the department of medicine.
- The problem of HIV consent forms not signed by doctors is extant in namely 2 departments- nephrology and cardiac surgery.
- In the departments of cardiac surgery and urology, no name mentioned in blood transfusion form is a highly frequent occurrence.
- Incomplete progress notes are constantly found in orthopaedics department.
- All the departments are facing the problem of delay in nursing initial assessment, most of all being the medicine department.

- In the pulmonary medicine department, pain scoring form is not being signed by the doctors while this flaw is noticed the least in the department of cardiac surgery.
- Majorly in the departments of urology and pulmonary medicine, the pain scoring form is not being signed by the nurses while the departments have witnessed no such issue.
- The Plan of Care is not being signed by the consultant is a crucial issue in all of the departments. The time and date was also not being mentioned.
- In the departments of orthopaedics and nephrology, the signing of the admission face sheet is constantly overlooked by the doctors while it is a rare occurrence in the cardiac surgery speciality and the pulmonary science department.
- Most of the general and payment bill consents are found to be incomplete in the departments of urology, physician and pulmonary.

SUGGESTIONS

- The below mentioned form can be incorporated as the earlier form was incomplete with respect to few details.

| Medical Audit Form | | |
|---------------------|--|--------------|
| Patient's Name..... | | R No: |
| DOA... | | DOD: |
| | | |
| S No. | Form | Yes/No |
| 1 | <u>Face sheet:(Guardian's signature, General Consent, Admitting staff signature, LAMA/DAMA)</u> | |
| 2 | <u>Registration data</u> | |
| 3 | <u>Disease Coding:</u> | |
| 4 | <u>Referral Form:</u> | |
| 5 | <u>Admission Face Sheet(History sheet)</u> | |
| 6 | <u>Plan of care</u> | |
| 7 | <u>Pain scoring form:</u> | |
| 8 | <u>Nursing initial Assessment form:</u> | |
| 9 | <u>Nutritional Assessment form:</u> | |
| 10 | <u>Doctor progress notes:(date,time,sign,numbering)</u> | |
| 11 | <u>Coronary Care Observation chart/chemotherapy chart</u> | |
| 12 | <u>Diabetic Chart:</u> | |
| 13 | <u>Investigation Chart:</u> | |
| 14 | <u>Test Reports:</u> | |
| 15 | <u>Blood and other investigation forms:</u> | |
| 16 | <u>Consents forms:</u> | |
| | Surgical Consent Form | |
| | Anaesthesia Consent Form | |
| | HIV Consent Form | |
| | Procedural Consent Form | |
| | Restraint Consent Form | |
| 17 | <u>Pre-Anaesthesia check -up form</u> | |
| 18 | <u>Pre-operative checklists</u> | |
| 19 | <u>Operative notes(Surgeons Anaesthetists)</u> | |
| 20 | <u>Post cardiac surgery critical sheet</u> | |
| 21 | <u>Physiotherapy Form</u> | |
| 22 | <u>Discharge Summary/Death Summary</u> | |
| 23 | <u>Discharge checklists:</u> | |
| 24 | <u>Surgical safety checklists</u> | |
| 25 | <u>Activity sheet:</u> | |
| 26 | <u>MLC Case paper/FIR</u> | |
| 27 | <u>Clinical details form:</u> | |

2. Strengthen the OPD registration data.
3. As there is a space constraint ,so hospital is planning for digitisation of medical records,
4. To conduct regular counselling of the consultants, nurses and allied professionals

BIBLIOGRAPHY

1. https://en.wikipedia.org/wiki/Main_Page
2. <http://www.nationalheartinstitute.com/>
3. <http://www.nationalheartinstitute.com/history-india.php>
4. NHI Library