



Module 1 – The Health Record - From Paper to Electronic

In this first Unit participant are introduced to the health record, the forms within the record, documentation and content of a good health record, as well as the uses of and responsibility for a patient's health record.

Participants are reminded of the importance of health records in patient care and are encouraged to develop an acute awareness of all the essential requirements of an accurate, and complete health record, including electronic health records (EHRs), interoperability, and patient-centered digital tools.

I. Objectives:

At the conclusion of this unit the participant should be able to:

- Define what is meant by a "health record".
- Explain in detail the reasons for developing and keeping health records.
- State five general principles of good forms design.
- List and describe the four component parts of a problem-oriented health record.
- Describe the benefits of a structured health record.
- State the value and uses of the health record together with the requirements for a good health record.
- State the purposes of a health record.
- Describe the development of a health record from admission to the discharge of a patient in a hospital.
- Design health record forms for use in a hospital or primary health care center.
- Identify the purpose of health record forms and describe what information should be included on each form.
- Identify who is responsible for the health records in hospitals or health centers and explain this responsibility.

- Describe the activities of a health record committee and state who should be included on such a committee.
- Identify the basic concepts and challenges of the electronic health record.
- Explain the principles of interoperability and data standards (e.g., HL7 FHIR, SNOMED CT, ICD-10/11).
- Identify ethical and legal considerations in electronic health records, including privacy, security, and consent management.
- Discuss patient-centered approaches such as patient portals, personal health records, and mobile health applications integrated with EHRs.
- Evaluate challenges and opportunities of artificial intelligence, big data, and predictive analytics in EHRs.

II. The Health Record

A health record is a written collection of information about a patient. It is derived from the patient's first encounter or treatment at a hospital, clinic, or other primary health care center. The health record is thus a record of all the procedures carried out on that patient, whilst he is in hospital or under treatment at a clinic or center. It should contain the past medical history of the patient, including opinions, investigations, and other details relevant to the health of the patient.

Traditionally, the health record consisted of sheets of paper or cards placed in a cover or envelope. In more advanced systems, the information may be recorded digitally in a computer; the sheets of paper scanned onto optical media, or the actual sheets microfilmed.

Huffman (1994) defines a health record as "a compilation of pertinent facts of a patient's life and health history, including past and present illness(es) and treatment(s), written by the health professionals contributing to that patient's care. The health record must be compiled in a timely manner and contain sufficient data to identify the patient, support the diagnosis, justify the treatment, and accurately document the results.

The World Health Organization (2021) defines an electronic health record (EHR) as "a secure, digital, longitudinal record of a patient's health information, accessible across multiple health care settings." Unlike traditional paper-based records, EHRs enable clinical decision support, real-time monitoring, AI analytics, and patient engagement through digital tools.

The actual physical record or digital health record should be of an acceptable size and standardized on suitable forms, as far as possible, to enable interchange of information across institutions. The record must contain sufficient forms to cover the needs of the facility without unnecessary duplication. Forms should be standardized, and digital systems should use structured data, coding standards, and metadata for interoperability.

III. Purpose of the Health Record

As indicated above, a good complete health record should encompass all information about a patient's health, illness and treatment over a period and be readily accessible.

Health records are kept for:

- Communication purposes
- Continuity of patient care
- Evaluation of patient care
- Medico-legal purposes
- Statistical purposes
- Research and education
- Historical purposes
- Population health management and precision health
- Patient empowerment and engagement (e.g., patient portals, mobile apps, wearable data)
- Public health emergencies and global surveillance (e.g., covid-19, vaccination monitoring)
- Digital care optimization, including ai-driven predictive analytics and workflow alerts

Key Updates:

- Patient-centered access via portals and apps
- Integration with telehealth and remote monitoring
- Population-level data aggregation for precision health
- Real-time analytics and dashboards for administrators

A. Communication Purposes

Health records are kept initially for communication between people responsible for the care of the patient for present and future needs. Many health professionals often see patients. In a hospital, the registration staff collects identification information and finds out the patient's financial status. While under care, others who may be involved in looking after a patient and who contribute to the health record include:

- All medical staff including consultants, physicians, surgeons, obstetricians, etc
- Nurses
- Physical therapists
- Occupational therapists
- Medical social workers
- Laboratory technicians
- Dieticians
- Medical students
- Radiologists, etc

All the data collected about a patient must be recorded and coordinated. The findings of each professional must be available for others to perform their function intelligently, especially the doctor responsible for the patient who must make the final diagnosis and order treatment on the basis of all the documented findings.

This first use of the record is a personal one and is in the interest of the patient for both present and future care.

B. Continuity of Patient Care

The patient may be readmitted to the same or another hospital or visit a clinic where all his past medical history should be available for assessment in the light of current symptoms. Communications based on the health record is essential between hospitals, clinics, and primary health workers in contact with the patient. It is vital that the primary health worker, who is responsible for the patient, should receive information about a patient's hospitalization as soon as possible after the patient is discharged from hospital.

Today, continuity of care increasingly relies on digital solutions such as integrated care platforms, shared-care plans, and mobile health apps,

enabling both patients and professionals to access longitudinal records seamlessly.

The main function of the health information management department in a hospital or clinic, in this context, is as a service area, that is, medical records should be available for patient care whenever needed. Also, discharge summaries and letters must be processed so that people outside the hospital may be informed of the patient's progress and their continued management after discharge.

C. Evaluation of Patient Care

In any setting in which an individual puts the responsibility for their health and well-being into the hands of others, there should be some mechanism that enables evaluation of the standard of care being given. In some countries, hospital medicine is evaluated by an 'accreditation' system. Surveys of each hospital are conducted and hospitals given 'accreditation' by a Board for a limited number of years, depending on the standard which they reach. Also, in some countries, the health information management of a hospital must meet predetermined standards. Accreditation by this Board leads to increased status and is necessary for acceptance of post-graduate trainees in many areas.

Other methods of evaluation of patient care in hospitals include:

- Patient care committees reviewing record samples- meets regularly and may review samples of records and evaluate the standard of care recorded.
- Peer review between doctors- Doctors of a service may evaluate the work of each other and the unit through the records.
- Hospital administrative committees assessing care standards- may evaluate the standard of care in a particular ward or by a particular physician or surgeon.
- Statistical analyses- derived from records may also be used in assessment of standards. This may be within the hospital, for example, evaluating the infection rate in a particular ward or for a particular operation or between clinics, hospitals, states or countries, in which case the statistics are used by Government

Departments such as the Department of Public Health, Bureaus of Census and Statistics or non-government organizations such as the World Health Organization. In most countries, the Department of Public Health also requires notification of communicable diseases, such as tuberculosis, cholera, hepatitis, etc.

Additionally, advanced analytics, artificial intelligence (AI), and dashboards are increasingly applied to health record data for real-time monitoring of care quality, patient safety, and performance benchmarking.

D. Medico-legal Purposes

Here, the main use of the record is as objective evidence of a patient's condition, history, and prognosis, assessed at a time when no litigation was anticipated. It is valuable both inside and outside of court for:

- assessing extent of injury in accident cases
- establishing negligence or otherwise of the health professional or hospital
- protecting the legal interests of the patient, hospital, and healthcare providers

With the rise of digital documentation, medico-legal use has expanded to include audit trails, access logs, and metadata that track who viewed or modified a patient's record.

E. Statistical Purposes

Statistics are collected in hospitals, clinics, and in primary health care centers. They may be used to:

- Tabulate numbers of diseases, surgical procedures, outcomes
- Assess demographic patterns of service utilization
- Contribute to public health planning and epidemiology.

Advanced health informatics systems now integrate hospital data with national registries and big data repositories to support predictive modeling, disease surveillance, and population health planning.

F. Research and Education

In the past, health records have been mainly used in medical research, but demographic and epidemiological information contained in the record is more often used today for administrative and other public health research.

Analyses of the types of people, together with studies of the types of diagnosed illnesses within the hospital, a particular ward or clinic, are essential for planning future services and equipment. The turnover rate of patients is an indication of the number of staff required in all departments. The workflow of the hospital or clinic can be analyzed once it is recorded in the medical record as it is added to by different health professionals involved in the patient's care. All this information shows the efficiency or otherwise of health planning and communication systems.

Moreover, de-identified EHR datasets now serve as key resources for clinical trials, AI model training, and health systems research. Integration with genomic, lifestyle, and social determinants of health (SDOH) data further supports precision medicine and learning health systems.

G. Historical Purposes

The record acts as a sample of the type of patient care and method of treatment used at a particular point in time.

Digital archiving and longitudinal EHRs now allow for historical trend analysis across decades, which is vital for assessing the evolution of medical practices, treatment protocols, and patient outcomes

H. Population Health Management and Precision Health

Electronic health records are essential tools for population health management. By aggregating individual patient data, health systems can identify high-risk groups, monitor chronic disease management, and

implement preventive strategies. Precision health expands this by tailoring interventions based on genetic, behavioral, and environmental factors, supported by EHR-integrated decision-support systems.

I. Patient Empowerment and Engagement

Contemporary health records also empower patients by providing access through patient portals, mobile applications, and wearable devices. Patients can actively engage in their care by tracking progress, scheduling appointments, accessing lab results, and sharing lifestyle data. Evidence shows that engaged patients experience better outcomes and greater satisfaction with care.

J. Public Health Emergencies and Global Surveillance

The COVID-19 pandemic highlighted the critical role of health records in monitoring vaccination uptake, tracking infection rates, and coordinating emergency response. Health information systems now support global surveillance for pandemics, antimicrobial resistance, and other emerging health threats, ensuring rapid decision-making at both national and international levels.

IV. Uses of the Health Record

The use of the health record can be divided into personal and impersonal use, depending on whether the user is viewing the patient as a 'person' or as a 'case'.

Personal uses are patient-oriented and require authorization from the patient to release information, unless legally obligated. The information compiled in the record is private and privileged, forming the foundation of trust between health professionals and patients. Unauthorized access violates ethical and legal obligations.

Impersonal uses focus on the case rather than the individual. These include statistical, research, and historical applications, where the patient's identity is usually anonymized. Even here, consideration must be given to patient rights, data protection laws, and ethical guidelines.

Key Uses Include:

- Integration with clinical decision support systems (CDSS): EHR data is now frequently used to support real-time decision-making, reducing medical errors, and optimizing treatment pathways.
- Quality improvement and AI analytics: Aggregated health records inform predictive models, population health interventions, and resource allocation.
- Patient-facing technologies: Health records feed mobile apps and patient portals to allow self-management, remote monitoring, and personalized care.
- Global health surveillance: Data extracted from records contributes to monitoring epidemics, vaccination coverage, and antimicrobial resistance.

V. Development of the Health Record

The health record typically begins at initial registration or admission and evolves throughout the patient's interaction with the healthcare system.

Key Steps in Developing an Electronic Health Record:

- Registration/Admission:
 - Collect essential demographic and identification data: full name, hospital/health record number, date of birth, gender, address, and insurance information.
 - Electronic systems automatically assign unique identifiers and link to national health registries for interoperability.
- Initial Diagnosis/Assessment:
 - Record provisional/admitting diagnosis and reason for care.
 - EHRs now include structured data fields for problem lists, allergies, medications, and comorbidities to ensure standardized documentation.
- Clinic/Emergency Room/Unit Documentation:
 - Doctors and nurses record medical history, examinations, lab/test requests, nursing care, and treatment plans.
 - Digital entries reduce transcription errors and allow real-time updates to be accessible across departments.

- Other professionals (therapists, dieticians, social workers) also record their findings in the shared EHR.
- Ongoing Monitoring and Updates:
 - Daily progress notes, test results, medication administration, and procedures are continuously added.
 - Integration with monitoring devices and wearables can automatically populate vital signs and other patient metrics.
- Discharge:
 - Doctors complete a discharge summary, document principal/secondary diagnoses, procedures, prognosis, and follow-up instructions.
 - Discharge data can be automatically shared with primary care providers via secure EHR interfaces, ensuring continuity of care.

Best Practices for EHRs:

- Use timestamps, author credentials, and version control.
- Apply coding standards (ICD-10/11, SNOMED CT, LOINC).
- Maintain audit logs for security and legal purposes.
- Integrate AI-based alerts for abnormal findings or care gaps.

VI. Value of the Health Record

A complete and accurate health record is essential for multiple stakeholders, including patients, healthcare facilities, professionals, and researchers. In advanced healthcare systems, its value is enhanced by electronic health record (EHR) systems, interoperability, AI analytics, and patient engagement tools.

- Patient Benefits:
 - Provides a longitudinal record for future care.
 - Informs patients about their treatment and allows self-monitoring through patient portals and mobile health apps.
 - Supports shared decision-making with healthcare providers.
 - Serves as a legal document for claims or malpractice.
- Healthcare Facility Benefits:
 - Evaluates standards of care and outcomes.
 - Supports accreditation and quality improvement programs.
 - Enables performance analytics and resource planning using aggregated EHR data.

- Improves workflow efficiency by enabling digital documentation, automated alerts, and AI-assisted decision support.
- Professional Benefits:
 - Provides relevant clinical and social information for all healthcare providers.
 - Supports peer review, audits, and evidence-based decision-making.
 - Facilitates precision medicine by integrating genetic, lifestyle, and clinical data.
 - Enables timely communication across multi-disciplinary teams through EHR notifications.
- Research, Education, and Analytics:
 - Source for clinical research, epidemiology, and teaching.
 - De-identified datasets support AI model development, predictive analytics, and health systems research.
 - Integration with genomic, lifestyle, and social determinants of health (SDOH) data supports precision health and learning health systems.
- Patient Billing and Administrative Value:
 - Justifies payment for services rendered.
 - Supports claims to insurance providers, government programs, and employers.
 - Digital health records streamline billing and coding processes, reducing errors and fraud.
 - Facilitates population health management, outbreak monitoring, and preventive care strategies.

VII. Content of the Health Record

As mentioned previously, a written health record should be maintained on every patient attending a hospital or clinic or seen in a primary health care setting. The patient may be an inpatient, an outpatient, an emergency patient, or a domiciliary patient.

The health record stores the information concerning a patient and the care given by health professionals associated with the hospital or clinic. To be complete and of use for future patient care, medico-legal purposes, research and teaching, the health record, whether paper-based or electronic, must contain sufficient information to:

- **IDENTIFY** the patient,

- **SUPPORT** the diagnosis,
- **JUSTIFY** the treatment, and
- **DOCUMENT** the results accurately and comprehensively.

For better patient care, only **one** health record per patient should be maintained, preferably digital, with structured, interoperable data.

Good medical care generally means a good health record is developed and maintained on each patient. An inadequate health record, that is, one that does not contain 'sufficient information to identify the patient, support the diagnosis and justify the treatment given, may reflect a poor standard of care given by the doctors, nurses or other health professionals within the clinic or hospital.

The actual forms and their content make up a health record, and in practice may also include electronic records and digital entries. The organization of data on each form, however, is determined by the needs of each individual health facility. Listed below are forms that are found in a health record.

A. Administrative Forms

- The admission or identification form should always be kept at the front of each admission or at the beginning of the outpatient or primary care record. This form contains space for identification and sociological data to positively identify a patient. The type of data recorded here is discussed in Unit 2.
- Consent forms are extremely important and should be part of every health record. The back of the admission form is generally used for consent and authorization of treatment data. The form usually carries a statement indicating that the patient agrees to basic treatment.

Separate sections of the forms relate to the consent for release of information. When signed by the patient, either physically or digitally, the health facility can release information from the medical record to health insurance, workers' compensation agencies, and private insurers.

The patient in the admission or reception office of the facility signs both these authorizations. The purpose of the forms, however, should be clearly explained to the patient by the staff collecting the identification and sociological data.

In the hospital situation, special consent forms are required for any non-routine diagnostic or therapeutic procedures performed on the patient. In digital systems, electronic signatures are now widely accepted as valid.

B. Clinical Forms

Clinical forms for inpatients constitute the bulk of a patient's health record, and include the following:

- i) **Medical history, presenting complaint and symptoms** - This is usually divided into several sections and includes space for data relating to:
 - Presenting signs and symptoms
 - Previous illnesses and operations
 - Family history
 - Occupation and social data
 - Current drug therapy and treatment.
 - Integration with EHR allows for structured, coded data entry for analytics and interoperability with other digital systems.
- ii) **Physical examination**, which is used for the collection of baseline data about a patient presenting care. The content of this form usually includes:
 - General survey and state of health of patient
 - System review - all systems checked
 - Vital signs, such as pulse, respiration, blood pressure, temperature
 - Provisional diagnosis.
 - Digital entry supports real-time alerts and decision support systems for abnormal findings
- iii) **Doctor's orders or plan for care**: Once the database has been established, the doctor records the findings and writes a course of action outlining the planned care and treatment for the patient. These orders should be dated and signed as should all entries in a health record.

Electronic entries must also include the author's credentials and timestamps. EHR systems can auto-flag conflicts in medication or

allergies and integrate telehealth follow-up instructions.

- iv) **Progress notes** - These notes indicate the condition of the patient and the response to treatment on a continuing basis throughout the admission. All health professionals should document the care they provide and the patient's response to treatment. Some hospitals use special forms for each specialty, which is not really necessary as an integrated progress note is more effective.

Progress notes should be recorded at least once a day and more often in cases of acutely ill and critically injured patients. Digital progress notes can be linked to problem lists, and AI can summarize trends for clinicians.

- v) **Pathology, radiology and other special investigations** - Appropriate forms should be used to record special investigations such as pathology, chemistry, and radiography. These forms are often mounted on a backing sheet or in hospitals with computerized system cumulative reports are generated on a daily basis. Integration with electronic health records (EHR) ensures immediate access to lab and imaging results. Whatever the method, it is important to make sure important findings are readily available in the record. Automated lab reporting with alerts for critical values improves patient safety.
- vi) **Nurse's notes and graphic charts** - Appropriate forms should be used for all nursing care including bedside notes, temperature, pulse and respiration charts, blood pressure charts, medication and treatment charts. Most of these forms are designed in a flow chart sequence. Digital dashboards allow remote monitoring and integration with wearable device data.
- vii) **Operative and anesthetic and recovery forms** - These forms are important for surgical patients and should contain consent for surgery, pre-anesthesia and post-anesthesia reports, the operation report, and other relevant data required. Electronic surgical and anesthesia records improve access, reduce transcription errors, and support medico-legal documentation.
- viii) **Discharge summary** - All health records should have a final summary of the patient's hospitalization, which is usually referred to as the discharge summary. It should contain a concise summary of the patient's course of treatment and significant findings with treatment on discharge and follow-up arrangements. Digital discharge summaries may also include patient educational materials and follow-up instructions electronically. Additionally, Patient portals can provide access to discharge summaries and educational materials, supporting continuity of care.

- ix) Other forms for special services such as **obstetrics, newborn and pediatrics, neurological, physiotherapy, occupational therapy, speech therapy, dental therapy, and short stay admissions**, should be available if required. Moreover, Digital templates allow easy adaptation for specialty care and interoperability across departments.

C. Outpatient and Ambulatory Care Forms:

- i) Patient history and general findings like the inpatient form usually completed at first attendance - Digital intake forms allow pre-visit patient entry and integration with telehealth visits.
- ii) Clinical observations and progress notes - EHRs allow trend visualization and automatic reminders for follow-up care.
- iii) Pathology, radiology and other test reports for inpatients - Laboratory and imaging systems can be integrated with EHRs for instant access and analytics.
- iv) Special forms for individual specialties caring for ambulatory patients. These would include special diabetic forms, growth charts, home care plan for treatment, etc - Mobile apps and remote monitoring devices can feed data directly into specialty forms.
- v) Digital platforms allow data aggregation, alerts, and patient portal access - AI-driven alerts for abnormal test results and telehealth integration to improve outpatient monitoring.

These are only a few of the forms used in health care facilities. Their production should be based on their needs and the needs of the health professional caring for the patients. This need will vary from large metropolitan hospitals to isolated primary health care units. Both are important and simple forms should be available for use to meet the needs of the situation.

VIII. Documentation and Record Structure

A. Documentation

The documentation of care given to patients during their stay in the hospital is an essential part of the provision of that care. The patient's medical record is now increasingly digital, but still serves the WHO, WHAT,

WHY, WHERE, and HOW of patient care. To be complete, the medical record must contain:

- Sufficient information to clearly identify an individual patient.
 - Unique patient identifiers support national health registries and interoperability.
- A comprehensive medical history, including:
 - Chief complaint
 - History of present illness
 - Family medical history
 - Physical examination
 - Structured data entry enables analytics, decision support, and research applications.
- Detailed progress notes showing the course of the patient's illness, treatment and end results of that treatment.
 - EHR-linked progress notes can generate automatic summaries for multi-disciplinary teams.
- A discharge summary displaying comprehensive data to justify the treatment, support the diagnosis and record the end results.
 - Digital discharge summaries allow patient access, audit trails, and integration with post-discharge monitoring.

B. Content

The content of a health record is developed as a result of the interaction of the members of the health care team who use it as a communication tool. Documentation may be organized according to the source of the data, by patient problems, or in advanced systems, by electronic modules.

Advanced EHRs support hybrid structures, combining source-oriented and problem-oriented data, and allow automated indexing and search for easy retrieval.

C. Format

There are two basic formats that a paper-based health record may take: Source Oriented and Problem Oriented, though hybrid EHR systems now combine both formats.

i) Source Oriented Medical Record

In a source oriented medical record, the information about a patient's care and illness(es) is organized according to the "source" of the information within the record, that is, if it is recorded by the physician, the nurse, or data collected from an x-ray or laboratory test, usually in chronological order.

How effective is an average health record as a communication tool? Information goes in, but is it easy and readily retrievable? In many cases it is not, because the documentation is often unstructured and scattered in admission notes, medical histories, progress notes, nurses' notes, or in X-ray and laboratory reports, often without reference to the condition or problem to which it refers.

Many experts consider that the answer to this problem is to develop a health record that is structured and facilitates easy access to information relating to care given to a patient during hospitalization and enables integration into electronic systems.

Structure refers to a form, which has been planned so that the language and layout are uniform. That is, all persons using the form follow the same format, and yet the structure of the record is adaptable to all situations. An example of a structured form appears in Appendix 2.

Structured records are more easily automated, and with the present increase in the use of computers in health care, a change from a manual to an automated record system is easier if a structured record format was already in use.

A disadvantage of a fully structured health record, however, is that there is less room for individual description, and health workers find it too restricting.

Digital source-oriented modules allow linking of lab results, imaging, and physician notes, improving accessibility, and enabling alerts for abnormal values.

ii) Problem Oriented Medical Record (POMR)

One form of structured health record developed to meet these criteria is the problem oriented medical record or the "POMR."

First designed by Dr. Lawrence Weed in the late 1950s, this concept requires the doctor to approach all the problems of a patient, treating

each problem individually, in its proper context within the total number of problems and the inter-relationship of the problems.

The decision pathway used by the doctor in defining and handling each problem is clear and can be evaluated on the basis of all the facts available.

The problem oriented medical record has four parts:

- DATABASE: Collection of data
- PROBLEM LIST: Formulation of problems
- INITIAL PLAN: Development of a care plan
- PROGRESS NOTES: Numbered and titled

EHR-based POMRs allow automated coding of problems (ICD, SNOMED CT), linking progress notes, labs, imaging, and care plans to each problem for analytics and continuity of care.

a) Data Base

The first step in the establishment of a problem-oriented health record is a comprehensive database. As with the traditional source-oriented health record, the data base should include the chief complaint as expressed by the patient; a patient profile including history of the present illness, past medical history, family medical history, a systems review and results of a physical examination. In EHRs, this data can be structured in coded fields for easier retrieval and analytics.

b) Problem List

Once the database has been collected, an assessment of the information is made, and a problem list is developed. The PROBLEM LIST is kept in front of the record and can be likened to a table of contents in a book. That is, the problem number and name are equivalent to chapter number and title. The most conceptual difference between a source-oriented and problem-oriented health record is this PROBLEM LIST. Another conceptual characteristic of the POMR is that problems are expressed at the level of the writer's understanding and do not include diagnostic impressions which are considered as part of the treatment plan.

Before progressing further, we should clarify the term “Problem.” A problem is anything requiring management or diagnostic workup; that is, a problem is anything that interferes with the health, well-being and quality of life of an individual, and may be medical, surgical, obstetric, social or psychiatric.

When constructing a problem list, each problem should be dated, numbered, and titled with problem status clearly defined as active, inactive, or resolved. The function of a problem list is to:

- Register all problems.
- Maintain efficiency, thoroughness, and reliability in treating the 'whole' patient.
- Communicating with peers, patients, other health professionals and with oneself
- Indicate the status of problems, whether active, inactive or resolved
- Serve as a guide for patient care.

Digital problem lists can auto-update based on lab results, clinician notes, or AI suggestions.

c) Initial Plan

The development of the initial plan for the management of a patient's problems, as defined in the problem list, is the third step in planning patient care using a problem-oriented health record.

The initial plan should be considered in 3 parts:

- Diagnostic (Dx) - that is plans for collecting more information
- Therapeutic (Rx) - plans for treatment and,
- Patient Education - plans to inform the patient as to what is to be done.

EHRs allow care plans to include telehealth follow-ups, alerts, and integration with patient portals for education.

d) Progress Notes

The fourth step in the formation of a POMR is the problem-oriented PROGRESS NOTES.

These should indicate:

- What has happened to the patient?
- What is planned for the patient?
- How the patient responds to therapy?

Progress notes should contain four component parts:

- **S**ubjective part - written in the patient's own words.
- **O**bjective part - the doctor's observation and test results
- **A**ssessment of progress and
- **P**lan for continued treatment.

The progress note must be problem oriented. That is, since each problem must be dealt with individually; each must clearly denote the problem by number and name and be divided into the four components or **SOAP** parts.

This structured type of progress note increases the doctor's ability to deal with each problem clearly and to show the logic of his thought process and decision pathways. If correctly written, both the current level of understanding of each problem and the management of each problem will be clear to everyone involved with the care of the patient, and in evaluating the quality of that care. In EHRs, these notes can be linked to problem numbers and previous data and AI-assisted summaries for easy tracking and continuity of care.

Some additional items may supplement the progress notes:

i. Flow Sheet

When dealing with multiple, fast-moving problems, the doctor may want to supplement the progress notes with the use of a flow sheet. Flow sheets provide the most appropriate method of monitoring a patient's progress and are also used with source-oriented health records.

Steps to be taken when designing a flow sheet include:

- define the clinical setting within which the flow sheet will be used.
- define the clinical status of the patient to be monitored.
- define the frequency of data collection required to give maximum care.

This is usually specified across the top of the page. The clinical situation in which the flow sheet will be used will usually dictate the monitoring frequency. Digital flow sheets allow automatic capture of vital signs from bedside monitors and wearable devices, with trend visualization.

Flow sheets are a special form of progress note and may be added to the record if warranted, but do not necessarily need to be put into every problem oriented or source-oriented medical record.

ii. Discharge Summary

The final step in completing any medical record is the preparation of a discharge summary. In the problem-oriented medical record, this task is made a lot easier.

When dictating a problem-oriented discharge summary, the doctor can briefly summarize the therapeutic outcomes, which resulted in the resolution of a patient's specific problems. They can emphasize the problems NOT resolved at discharge and outline a diagnostic, therapeutic, and educational plan for future care.

The logical display system used in the structured problem-oriented health record starts with the database to collect information, followed by a problem list, which helps the doctor decide what is wrong with the patient. This information is placed at the front of the record, so everyone caring for the patient is aware of all problems. From the database and problem list, the initial plan for treatment and diagnostic work-up is developed. That is, the doctor caring for the patient decides what to do. The next step is to follow through

on the decision by recording problem-oriented progress notes using the SOAP method for each individual problem. Progress notes may be narrative or in the form of a flow sheet.

The problem-oriented health record is a useful communication tool because it encourages a clear display of medical data and communication between doctors and other health professionals. Appendix 3 illustrates samples of a POMR.

As mentioned previously, a structured health record enhances the application of computers in health record systems, clinical research, and teaching. It also improves information retrieval for patient care evaluation and helps elevate the quality of patient care by treating the 'whole' patient and not just isolated incidents or episodes.

The use of a structured POMR, however, is not widespread, particularly in large busy hospitals. It is more widely used in small hospitals, clinics, and primary health care centers.

No matter whether a record is source oriented or problem oriented the health information manager should assist medical staff and other health professionals by preparing well-structured forms to enhance data collection and easy access to information relating to patient care at all levels. Digital summaries can be sent to patient portals, primary care providers, and include structured follow-up plans.

Benefits of structured POMR in digital systems:

Clear display of medical data and communication across care teams

Integration with AI and decision support systems

Enhanced quality monitoring, research, and teaching

IX. Responsibility for Health Records

A. Medical and Other Health Professional Staff

The primary function of a hospital, clinic, or other health care facility is to provide high quality patient care to all patients, whether inpatients, emergencies or outpatients. The governing body of the facility, through the administrator, is legally and morally responsible for the quality of care rendered to patients. This responsibility is in turn delegated to medical, nursing, and other health professional staff.

As the information within a health record reflects the care given to patients, it is important that the health information management professional understands the responsibilities within the clinic or hospital to assist the doctor and other professionals to maintain a complete, accurate and available health record.

Poorly documented clinical information is of little use to a patient during treatment, for future care or for evaluation of the care rendered. Alternatively, a complete well-written health record provides a clear picture of the patient's illness and course of treatment, and may facilitate digital integration for research, analytics, and quality monitoring. In EHR systems, digital signatures, audit trails, and access controls support accountability.

All health professionals, including doctors and nurses, can exercise their responsibility to ensure good quality health records through the Health Record Committee.

B. Health Record Committee

Doctors, nurses, and other health professionals are responsible for the documentation of medical/health information that meets the required standards for accuracy, completeness and clinical pertinence. The Health Record Committee ensures that the hospital or clinic maintains high standards for paper and electronic health records (EHRs). The Health Record Committee is responsible for the following:

- Review of health records for timely completion, clinical pertinence, accuracy and adequacy of patient care, teaching, evaluation, research, and medico-legal issues.
- Determination of the format of the complete health record, the forms used, and any problems relating to storage and retrieval.

i) Membership of the committee should include:

- The hospital administrator
- Representatives from medical and surgical service
- A representative from the nursing service
- Representatives from X-ray, Pathology, and
- A health information management professional.
- IT/EHR specialists may be included to support digital template standardization, interoperability, and data security.

ii) Activities of the committee may include the following:

- The committee should meet at least once every three months and more frequently if required.
- The committee should establish and/or recommend policies regarding health record documentation.
- Members should study random samples of health records to monitor the quality of recording.
- Members are able to study the trend of clinical work in the hospital using statistics compiled by staff of the health record department.
- Members of the health record committee may wish to conduct retrospective studies or set up some prospective research.
- The health record committee should review all medical record forms, thus eliminate unnecessary duplication of information and attain uniformity of content, appearance, and size.
- In EHR systems, the committee should also review digital templates, automated workflows, access permissions, and interoperability features.

C. Health Information Management Professionals

The health record is the property of the hospital or clinic and serves as a medico-legal document for the benefit of the patient, the doctor, and the hospital or clinic. The health record should contain sufficient information to

enable another doctor to take over the care of the patient if required, and for a consultant to give a satisfactory opinion when requested.

The responsibility for the accuracy and completeness of a health record rests with the attending doctor. Moreover, they are responsible for maintaining EHR interoperability, audit trails, data security, AI-assisted decision support, patient access compliance, and integration with wearable and remote monitoring devices for real-time data capture.

X. Health Record Forms

Let us now look at the design of the forms contained in the record.

Good forms of design are essential in any office to assist in the efficient gathering of data and dissemination of information. Not only can it reduce the cost and time taken in processing forms, but it can also lessen the possibility of errors or misunderstandings by staff or the public. In practice, forms should be designed for both paper-based and electronic health record (EHR) systems, with options for digital validation, automated alerts, and integration with clinical decision support systems (CDSS).

Workers in the health information management field should be aware of the variety of record forms, duplication, and lack of uniformity to be found in many hospitals, clinics and primary health service settings. There is a strong need for forms control, including standardization across digital templates and interoperability between hospital, clinic, and patient portal systems.

Whether one works at the administrative or technical level, one should be aware of the essential and recurrent task of correct forms design so that, as far as possible, they can ensure that all forms are neat, simple, easy to understand, interpretable, digitally compatible, and suitable for integration with AI-assisted analytics.

A. Definition of a Form

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B. Forms Design

i) When preparing to design a form one must consider the:

- Need
- Purpose
- Design

Standards must be established so that consistency is maintained among the forms. There should be fixed responsibility for forms of design, so that individuals and departments cannot start their own forms in isolation.

ii) The term forms layout refers to several issues and can be summarized as follows:

- How is the information displayed on the form?
- How material is presented, provided it is consistent with efficiency and economy; attractive presentation is an important secondary purpose.

- The order in which data will be requested, must also be considered along with the logical connections between data requested, the space between entries, whether columns, boxes, or highlighting will be used, the size and type of print, and the need to allow adequate space for entries. For digital forms, layout should ensure ease of navigation, minimize scrolling, and be responsive to different devices, including tablets and touchscreens.

A well-designed form is appropriate to the work in which it is used, permits ease of entry, conveys information or instructions clearly, and is efficient to use. A form should be set out in an orderly way of thinking, for example, bracketing all the information of the same sort in one area as a well-structured form points out your thoughts in the direction of the information required.

Some forms summarize events or record data compiled from other forms, for example, a summary fluid balance form.

iii) Questions to ask before designing a new form include:

- What is the general purpose of the form?
- Is the form really necessary?
- What benefits will be derived from the introduction of a new form?
- What information is to be provided, and what is its general purpose and need?
- What are the operations, through which the form will pass, for example, entry of data, sorting of data?
- How is the form going to be filed? Where will it be attached - side or top?
- Who will the users be? When is the form used?
- Where will the form be used and what will the associated working conditions be?
- Are there any other special features which need to be considered?
- If a signature is required, is it also necessary to ask for the name to be printed?

- Does the form state what to do with it when it has been filled in?
- iv) To summarize, the general principles to be considered when designing a form include:
- All health record forms used in the clinic or hospital should be of standard size. They should also be readable, useful, and allow for the standardization of information. The kind and size of typeface, margins, ink, and paper colour and weight should be standard within a hospital, clinic or primary health centre. Digital versions should follow UI/UX best practices and support accessibility standards.
 - All forms should have a **standard format** at the top to include the name of the patient, hospital number, ward, and name of the attending doctor. In EHRs, these fields should be mandatory and auto filled when possible.
 - The correct paper for the task of each form should be chosen with the aim of paper and printing economy.
 - The people who are required to use the form should understand the language used on the form.
 - Each form should have a descriptive **title**, e.g. nurse's bedside notes, laboratory reports.
 - All forms should have simply printed **instructions** for use to ensure uniformity in the collection of information. If these instructions are detailed, they could be printed on the reverse side or in a separate instruction sheet.
 - Captions should clearly indicate the data to be entered, for example, just name is not sufficient, usually one wants "full name of patient, family name last". The use of boxes is also very good and saves time, for example, male and female categories may be set up in a boxed arrangement as follows:
 - **M** ☐ **F** ☐
- and the clerk then just must add an "X" or a check mark. For digital forms, radio buttons or drop-down selections serve the same function.

- Forms should be functional, and spacing should allow sufficient room to record the data being requested. If data are to be filled in with the use of a typewriter, this should be taken into consideration when planning the form.
- If one piece of data depends on another, put the dependent data after the other in the order to be filled in, for example, date of birth - age; previous admission date. That is, group items into order of action and be logically consistent with related forms so that data are easily used after entry on the form.
- If an automated or other type of embossed imprinting plate addressograph system is to be used, spacing on the form should be provided for the imprinting of patient identification.
- The use of color is effective but remember that different colored paper and ink will affect photocopying, microfilming, and scanning in different ways. Color strips along the outside edge are most effective and help with identification of the form but may be expensive.
- For forms of management, each form should have a reference or form number for identification and ordering purposes and carry a notation as to date designed or date printed and name of printer.
- For filing requirements, clinical forms should be pre-punched for inclusion in the health record, and adequate space (margin) should be planned to allow for binding at top or side.
- Instructions in conjunction with explicit headings must be carefully prepared so that the person filling in the form knows in advance what is required. General instructions may be required for the completion of certain forms, for example, patient identification forms.
- If the form is to be put in an envelope, make sure it is the right size or that it will fit when folded. Suggest arrows on the form as to where to fold.
- If photocopying is done, the quality of the copy will decrease each time it is copied. Best to keep the original and copy that each time.
- A 'Forms Committee' should be set up (a subcommittee of the health record committee) to assume responsibility for forms design

and production. The health information management professional should be a member of the Forms Committee, and strict control should be maintained over the production of health record forms. The criteria should be established to analyze the need, purpose, use, and arrangement of each form. The committee should also oversee digital templates and EHR interfaces. This includes AI-assisted form validation, seamless integration with patient portals, and optimized digital workflow efficiency.

v) Specific Technicalities

a) Spacing

- Printers allow 1/4" (5 mm) before they start printing, so leave 1/4" (5 mm) for the printer and design the form within that limit.
- Allow a 7/8" (20 mm) margin if holes are to be punched, or the form is to be bound. Recommended margins:
 - At top 3/8" or 8 mm
 - Other sides 1/4" or 5 mm
 - Except filing margin 7/8" or 20mm
- Spacing for handwriting - in general, 8 handwritten characters to the 1" or 2.5 CMS. However, it is important to remember that too much space seems to encourage bad handwriting.
- For digital forms, spacing and alignment should allow for touch input and automatic scaling on tablets or screens.

b) Line Spacing

Relate the form to the characteristics of any machine used to fill in the form so that the design is suitable to handwriting and machine entries, especially if it will be typewritten:

For handwriting use 6 mm or 7 mm line spacing

For typewriting it will depend on the size of the typeface and line spacing should conform to the **THROW** of the typewriter (i.e. The distance covered by a turn of the roller). The form should also be designed to allow for the use of the typewriter **TABS**.

Also, determine the **PITCH** or **FONT SIZE** (or width of each character) of the typewriter or golf balls used, usually 10 or 12 pitch preferred.

Allow 1 space on each side of a vertical line, i.e. leave 1 space between entries and the vertical line.

Extra space may be required to allow for typing near the very top or bottom, for example, a disease index card with tear off strip. In digital formats, ensure adequate field spacing for autofill, dropdown selections, and form validation indicators.

c) Ballot Box Style

For use with computerized data entry. Be consistent with either left or right boxes on the form. Provide clear instructions to see if it should be checked off or crossed off. The format should make it very clear which box belongs to which question. Checkboxes, radio buttons, and toggle switches in EHR systems should mimic this principle for clarity and ease of use.

d) Identification

Remember, all forms should carry:

- An identifying title
- An identifying number of the form
- The name of institution
- The date of the last design review, particularly for forms used in data collections, may change some data items each year.
- May include the date of the last print run, to facilitate storage and assist with ordering and identification.

The identifying type should be punchy, explicit, tactful, boldly printed, with identifying numbers placed in a relatively

inconspicuous part of the form. Digital forms should include metadata fields for version control, last update, and digital signature verification.

e) Ink

Traditionally, almost all forms are printed in black, however, the use of some colored inks helps to distinguish forms but often photocopies poorly. A strong color contrast stands out. Consider the cost, but color can be used effectively to group similar forms - for example anesthetic, operation and consent forms with the same color but different patterned borders. In digital systems, color-coding and icons can serve the same purpose without printing limitations.

f) Ruling

Thin lines are best used for column or caption break-ups and very thin lines for writing guides.

When designing new forms or reviewing existing forms remember to consult:

- Those responsible for the form and its content
- Those who will be entering data on the form.
- Those who do not enter data, but who refer to it to gain information from the data.

Another important point to keep in mind is that successful implementation of a new or revised form is just as important as the analysis and design of the form. Often a form, which is badly implemented and introduced to the users, is worse than keeping an old form. Therefore, evaluation and testing are an important part of forms of design. You may ask the question "How can forms be tested?" To start with, they should be tested in a realistic environment and secondly, the end users should test them. Digital forms can also be piloted in EHR sandboxes to identify interface issues and user errors.

XI. Medico-Legal Aspects

Health records should be kept for the benefit of the patient, the doctor, and other health professionals, the hospital or clinic for patient care, medical- legal purposes, research, statistics, teaching, and EHR auditing. As a legal document, the record should have sufficient information to:

- Identify the patient,
- Support the diagnosis,
- Justify the treatment, and
- Accurately document the results

As discussed previously, the health record is the property of the hospital or clinic as the information it contains is an integral part of a person's life and may not be used without the patient's written consent. Patient consent is not always necessary; however, when the record is being used for statistics, research, or teaching, when the patient's identity is not known or sought.

Remember, the health record is a confidential document, and the patient's right to privacy must be considered at all times. The information contained within the health record is confidential communication between the doctor or other health professional and the patient. The patient should have access to the information which should be explained to him, if necessary, by the doctor or health professional responsible for his/her care. Patients may request access, which should be explained, and digital health records should comply with access logs and audit trails.

If a request is made for the release of information, the authorization should contain the following:

- Full name of patient, address and date of birth
- Name of person/persons or institution to receive information
- Purpose or need for information
- Extent or nature of information to be released, including treatment dates
- Signature of patient or authorized representative
- Date of patient's or authorized representative's signature.

A letter from the patient which can be verified, directing the hospital to release certain information to a specified person or institution (eg. health insurance) is often accepted as proper authorization as long as it is, or can be, verified. In general, it is best to have written policies relating to the release of information and ensure that all staff are familiar with these policies. Digital systems should log access and releases for medico-legal compliance. EHR systems must ensure encryption, audit trails, and compliance with HIPAA, GDPR, or other local regulations.

XII. Summary

In this unit we have looked at the medical record, the forms within the record, content of the forms, uses and value of the medical record, medico-legal requirements, and responsibilities, and the need to have a well-structured, orderly, available medical record, regardless of whether in a hospital, clinic, community health center, or other primary health care situation. We have also emphasized digital integration, EHR compliance, interoperability, and secure patient access as digital requirements.

XIII. Review Questions

1. In your own words, explain the uses, purposes, and value of a health record.
2. List and describe the four component parts of a problem-oriented health record.
3. What is meant by a "structured" health record?
4. Describe the development of an inpatient's health record from admission to discharge.
5. Who is responsible for the documentation, completeness, and accuracy of a health record?
6. Who should be on a Health Record Committee? What activities would a Health Record Committee undertake?
7. Outline five general principles of good forms of design/screen design.
8. Why are confidentiality and privacy important issues in health record administration?

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