CANCER PEDIA

CORE SERVICES / INFRASTRUCTURE

HEALTH RECORDS

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CHAPTER

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HEALTH RECORDS

Published October 2018

A. INTRODUCTION

Patient health records capture the systematic documentation of a patient's health history and care over time. Various types of clinical and demographic information are captured in the health record, including the patient's health history, assessments and diagnoses, interventions, and tests and results. As a comprehensive, dynamic collection of information about a patient's health and treatment, health records support current and continuing care, including future admissions and encounters. Health records are also used in the planning of services, in research and in the production of healthcare statistics.[1]

Accurate health records contribute to quality care for cancer patients by enabling informed treatment decisions, supporting the co-ordination of team-based and multidisciplinary/ interprofessional care, and optimizing the use of healthcare resources.[2]

B. OVERVIEW

1. PURPOSE

Supporting Patient Care

Health records are critical to the delivery of high-quality, safe patient care. Good health records provide an accurate and complete picture of the patient's care and include documentation of a patient's health history, clinical findings, diagnostic test results, pre-treatment care, treatment (e.g., operative notes, clinic notes, chemotherapy records), post-treatment care, progress and medications.[3] By providing a detailed description of the patient's health status and a rationale for specific treatment decisions, the health record contributes to consistency and quality in patient care over time.[2]

Health records also create a means of communication between healthcare providers about the patient's health status, preventive health services, treatment decisions and care delivery instructions. The health record tells the story of the patient's interactions with the various clinicians and organizations that provide care. In this way, health records promote patient safety and continuity across care settings, including when patients are transferred (e.g., through clinical handover or a transfer between hospitals). The health record can also be used to support communication with statutory and regulatory bodies.[4]

Clinician decision-making is supported at the point of care by the data found in health records. By leveraging data from health records in real time, cancer centres can ensure that care aligns with established best practices, informing clinicians when care decisions divert from evidence-based standards, and enabling quality and outcomes improvement. This clinical decision support can take the form of alerts and reminders, as well as built-in safeguards to reduce the risk of adverse events and harmful pharmaceutical interactions.[5] See the *Cancerpedia: Clinical Management* chapter for more information about clinical decision-making.

Enabling Planning and Management

Apart from the use of health records to support and enhance the quality of care, health records are useful in planning and managing cancer centres and health systems.

The rich clinical data found in health records can be analyzed to uncover trends in utilization for different patient populations (e.g., pharmacy, medical imaging, and laboratory services). By understanding variations, including between physicians and facilities, administrators and clinicians can develop improvement projects designed to increase adherence to evidence-based care and established clinical best practices.[6] Retrospective analysis of health records data, when combined with patient outcomes data, can be used to evaluate the quality of care provided. This, in turn, can identify both gaps in care and measure the use of care pathways.

Health records data may support operational and strategic planning by informing budget development, staffing models and new models of care. A useful input to longer-term strategic planning, data from health records describes the types of patients the organization is currently serving and can be used to forecast future demand.

Data found in health records also often form the basis of reporting and submissions to governments at both the subnational and national level, for the purposes of funding, accountability and adherence to new policy initiatives.

Research

The health record is an important data source for both clinical and epidemiologic research. Data in health records is often longitudinal in nature, allowing researchers to understand the impact of interventions and care decisions over time. There are various types of research that data from health records can support, including:[7]

Clinical trials: Data found in patient health records are often used to determine which organizations have sufficient volumes of a specific patient type to participate in clinical trials.

Effectiveness studies: Both prospective and retrospective effectiveness studies of new treatments and interventions often leverage health records data.8

Health registries: Health records data can also be submitted to patient registries, at the facility, subnational or national level. Subnational or national population-based cancer registries pull together data from numerous organizations within a certain jurisdiction. These registries allow researchers to analyze larger patient populations than exist at their own institutions. See the Cancerpedia: Population-Based Cancer Registries and Risk Factor Surveillance chapter for more information.

Public health: The incidence of both communicable and chronic diseases can be monitored and analyzed using data from health records.

Population health: This type of research adopts a broader perspective to explore the determinants of health, and often integrates data from multiple sources. Health records data is typically a key clinical component, which can be combined with other datasets that track variables such as income, education and housing status.

Health policy and health services research: Data from health records can support research into policy development at the subnational and national level. It can also be used to determine funding allocations between organizations, and to help prioritize the development of new programs. For countries with multiple jurisdictions that fund, plan and administer their own health systems (e.g., Canada), a common thread of health services research is the comparison of factors such as policies, expenditure, utilization and patient outcomes across jurisdictions.

2. TYPES

While most organizations are moving towards electronic health records, many still use paper-based health records or blended electronic and paper-based systems.

Paper-Based Health Records

Paper-based health records are the traditional form of health records. Each patient has a physical paper folder, in which hard copies of relevant documents (e.g., health histories, test results, medical orders, progress notes, discharges summaries) are stored. As the patient moves through different areas of the hospital (e.g., from emergency care to the operating room, or from an inpatient unit to medical imaging), their paper health record is transported along with them.

There are numerous limitations to paper-based documentation and record keeping, including the need for large storage areas, difficulties in the retrieval of records, the potential for lost and misplaced records, etc.[3]

Electronic Health Records

Electronic health records are a digital version of the patient health record that – in addition to performing all of the functions of paper-based health records – offer various benefits, including:[9]

- Reduced physical space requirements for storage, as compared to paper records
- Support for the provision of higher-quality care and the reduction of clinical errors
- Improved clinical efficiency and productivity (i.e., patient information available at the point of care)
- Easier access and secure sharing between members of the healthcare team, and patients themselves
- Improved accuracy and data quality (i.e., the ability to electronically identify missing documentation)

Blended Systems

Many organizations currently use a hybrid system of both paper-based and electronic health records. This is common when organizations are gradually adopting electronic systems over time, and progressively phasing out paper-based systems.

3. CONTENTS

There are four main sections of the health record:[1]

- The administrative record, which includes the demographic details of the patient (e.g., name, sex, date of birth, address, medical record number, name and contact information of the closest relative or caregiver, referring physician contact information, etc.)
- The clinical record, which captures all relevant clinical information about the patient's care
- The legal record, which includes any consent forms that the patient has signed, as well as forms authorizing the release of personal health information
- The financial record, which includes details about the patient's insurance coverage or means of payment

Whether paper-based or electronic, the patient's health record must be laid out in a logical way that supports the efficient delivery of care. Clinicians and administrators should work with information technology experts and other key stakeholders to develop an appropriate structure that will be adhered to.

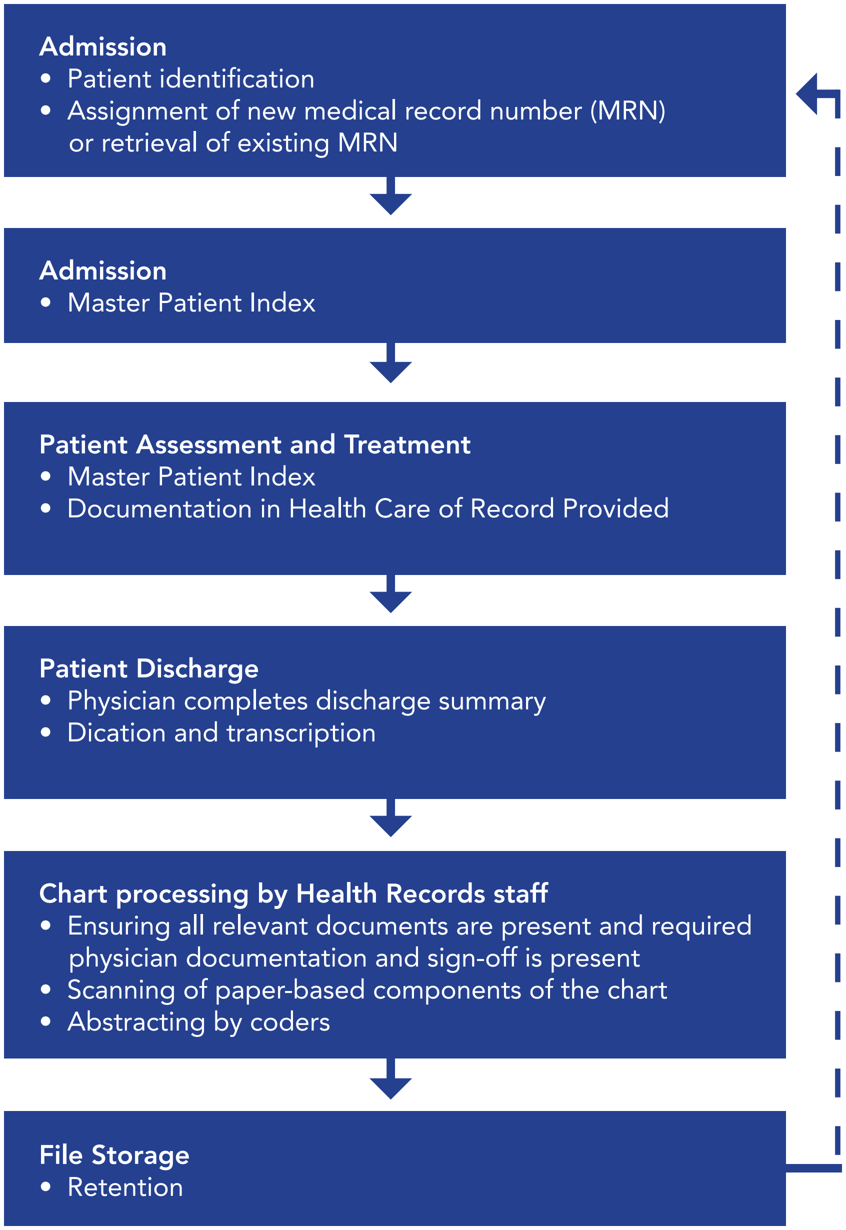
Each health record should contain basic information relating to the patient, such as:[1]

- A front sheet that identifies the patient and his or her relevant diagnoses, interventions and most responsible physician/provider (MRP)
- Consent forms, usually completed at time of an admission or visit
- Admission notes, including the patient's family history, past medical history, presenting symptoms, the results of initial physical examinations, provisional diagnoses, proposed tests, etc.
- Clinical progress notes, including the patient's treatment and their reaction to treatment, as noted by the attending physician or other healthcare providers
- Nurses' notes, including vital signs (e.g., temperature, pulse, respiration, blood pressure, etc.)
- Notes from other health professionals, including respiratory therapists, dieticians, etc.
- Operative notes, or procedure notes
- Laboratory and diagnostics reports (e.g., EEG, EKG, laboratory results, medical imaging reports, etc.)
- Orders for treatments and medications, and medication administration records
- Discharge summaries
- Any correspondence/external reports received (e.g., referrals)

4. PATHWAY

Figure 1 illustrates how the health record is created and moves with the patient during an episode of care.

Figure 1: The Health Records Pathway



Admission
- Patient identification
- Assignment of new medical record number (MRN) or retrieval of existing MRN

Admission
- Master Patient Index

Patient Assessment and Treatment
- Master Patient Index
- Documentation in Health Care of Record Provided

Patient Discharge
- Physician completes discharge summary
- Dication and transcription

Chart processing by Health Records staff
- Ensuring all relevant documents are present and required physician documentation and sign-off is present
- Scanning of paper-based components of the chart
- Abstracting by coders

File Storage
- Retention

The cycle may begin again if the patient has new encounters with the hospital (outpatient Emergency Department visits, inpatient admissions).

5. FACILITIES AND EQUIPMENT

Workspaces

Cancer centres should provide sufficient space for clinicians to complete documentation during the patient's stay. On units, nursing documentation stations are often positioned in various places. Care should be taken when designing workspaces for charting to minimize the impact of outside sound and the risks of disruption (e.g., avoid placing a charting workspace for nurses next to a reception desk with frequent visitors and telephone calls).

Dedicated space for charting should also be provided in other areas where patients receive care, such as outpatient clinics and the operating room.

Dictation

Individual organizations develop their own processes for verbal dictation, often using telephone-based systems. Physicians can access the system by entering an identification number, the health record number of the patient in question and a code to determine the type of document that is to be dictated (e.g., discharge summary, clinic note). The physician can dictate using various modalities, including a telephone, hand-held microphone, or a microphone embedded within a computer.

Transcription

Trained typist transcriptionists provide transcription services in many hospitals, especially where voice recognition systems are not available. The recommended transcription system is voice recognition technology, where the system is trained to understand the voice of the individual physician. Human involvement is only required to review the content prepared by the system and to correct any potential grammatical errors or erroneous text.

Back-end voice technology refers to systems where all transcription occurs behind the scenes. Dictated reports are provided to transcriptionists, who then check for the accuracy of the voice engine. On the other hand, front-end voice technology provides the physician with the ability to review and edit the transcribed text in real time, as they're dictating.[10]

Regardless of the system, it is important to keep statistics on various process-oriented elements associated with dictation and transcription services, including the volume of dictation requests, the productivity of staff and the number of errors corrected. A scorecard can be established to monitor key performance indicators in comparison to established benchmarks and targets.

Storage

For organizations with paper-based records, dedicated storage spaces are required to house health records. Considerations when planning for long-term storage of paper-based health records include an estimate of both current and future space requirements and physical proximity to the cancer centre. Many organizations store health records off-site due to lack of space at the institution. In this situation, the time required to retrieve a past patient health record, should they return to the cancer centre, must be factored into decision-making on potential storage venues. From a security perspective, access to areas where files are kept must be controlled. Steps must also be taken to minimize the risk of fire and flooding.[2]

For organizations with electronic health records, technical considerations for controlling access to stored records include user authentication, advanced password protection, strong encryption and firewalls. Appropriate back-up protocols and recovery arrangements that meet legislative requirements and industry best practices should be implemented. Backup data should be stored off-site in a physically secure setting. Hospitals should keep abreast of evolving standards for information security and access, and take steps to minimize the associated risks.

6. HUMAN RESOURCES

Apart from ***transcriptionists***, whose function is described above, there are two other key types of staff essential to the health records service.

Clerical staff is responsible for the basic administrative duties associated with the maintenance of health records, including file management, scanning documents, filing charts, processing requests for release of information, etc.

Coding/abstracting staff, commonly referred to as coders, translate the vast amount of data contained in a patient's health record into a more concise summary, called an abstract. An abstract contains a minimum set of critical information about the patient's stay in hospital (e.g., main diagnosis, MRP, interventions, discharge disposition). In some jurisdictions, coders require certification to work in hospitals (e.g. the Certified Health Information Management – or CHIM – professional designation in Canada).

Coders assign codes using standardized classification systems. Jurisdictions have specific coding standards in place to dictate what must be captured and at what level of detail. *The International Classification of Diseases* (ICD) is the global standard for the coding of diagnoses and is endorsed by the World Health Organization.[11] The ICD standardizes a common language for diseases, disorders, injuries and other health conditions, and is reviewed and updated regularly. It is used by all member countries in the United Nations and has been translated into 43 languages. A key part of the education and training for a coder is to learn the ICD methodology. For coders working in a cancer centre, specific attention should be devoted to the oncology section.

Most countries have unique coding methodologies for diagnostic and therapeutic interventions. For example, the Canadian Institute for Health Information maintains the *Canadian Classification of Health Interventions* (CCI).[12] CCI codes allow for the classification of clinical interventions and procedures, including inpatient and day surgeries, diagnostic imaging, and biopsies.

D. MANAGEMENT

7. LEADERSHIP

The health records service is typically led by a manager or a director who has significant experience in relevant key areas, such as coding/abstracting, chart management, and the release of information. As the manager/director also supervises the team of coders and clerical staff, leadership competencies are required, including communication, team-building and human resources management.

Other responsibilities of the manager/director include:

- Collaborating with hospital administrators, physicians and other clinicians to improve the quality of documentation
- Liaising with other clinical and administrative leaders on issues pertaining to health records and health information management
- Ensuring that established business practices are followed and targeted processing times are met
- Promoting continuous education for coders to enable them to keep abreast of evolving clinical practices, terminology, and standards of care

Cancer centres should establish a ***medical records committee*** to develop and review policies pertaining to the documentation, coding, storage and access of information. The committee should have members from all relevant stakeholder departments that interact with the health record. Key responsibilities of the committee include:

- Reviewing policies and procedures governing health records at the organization, including a chart completeness policy
- Ensuring physicians complete documentation and implement strategies to minimize the incidence of chart deficiency
- Approving the addition, alteration or removal of standard forms in the health record

Enterprise Master Patient Index

An Enterprise Master Patient Index (EMPI) is a corporate database that contains demographic and medical data for patients. Each patient is assigned a unique patient identification number at the time of his or her first interaction with the organization. The primary purpose of an EMPI is to guarantee that patient records are not duplicated or represented more than once across the organization and its services.

Various data elements are contained within the EMPI, including the patient's:

- Legal name
- Gender
- Date of birth
- Ethnicity
- Address and contact information
- Insurance details

Once a patient is assigned a unique identifying number, often referred to as a medical record number (MRN), this number is used for every clinical and non-clinical interaction the patient has with the organization, including emergency department visits, outpatient visits and inpatient admissions. To differentiate between individual episodes of care (e.g., a series of inpatient admissions for a patient over a two-year period), each patient is assigned a unique encounter number for each interaction. While the patient's MRN remains constant over time, each admission will generate a new encounter number.[10]

Chart Management

Clerical staff co-ordinate different processes to ensure that charts are complete, scanned (for organizations using paper-based charts) and filed properly. Various software tools exist to help the health records service identify deficient charts based on established criteria. Common reasons for a chart to be deemed deficient include missing mandatory reports (e.g., consent form, operating room report, discharge summary) or missing signatures.

For organizations using paper-based systems, identifying and addressing deficient charts can be very time-consuming. With electronic health records, this process can be automated and the incidence of errors can be reduced by using electronic notifications to clinicians to complete certain tasks.[10]

Scanning

Many organizations with paper-based or blended health records systems scan paper documents and add them to the electronic health record. In this situation, specific policies and processes should be in place to address exactly what patient information is to be scanned and when. Audit and quality assurance processes should be established to ensure that the quality of the scanned document meets standards. Workflow processes should also be reviewed regularly to ensure that scanning does not delay the processing of the health record, including coding and abstracting.[13]

Requirements for Storage

The most effective way to file paper-based health records is by terminal digit order, a method for filing documents in which the last digits of a file number are used to determine where a file will be stored. For example, to find file number 15432, you would first go to section 32 and then to the area that corresponds with 54.[14] Numbers are also colour-coded. This approach makes better use of storage space and allows for easier identification of mislabelled files.

It is also recommended that a sticker be added to the outside of each patient chart, indicating the year of the patient's most recent visit. This facilitates both the movement of charts to off-site storage facilities, as appropriate, and the scanning of older charts for integration with electronic systems.

Policies are required to govern both the archiving and destruction of old patient charts. Retention policies and procedures should be routinely reviewed to ensure they are meeting both jurisdictional legislative requirements and evolving industry best practices.[15]

Release of Information

Cancer centres need to establish dedicated policies and procedures to govern the release of information associated with patient health records. The relevant privacy and personal health information legislation of the jurisdiction will have various requirements and limitations associated with the release of data from health records.

Formal processes for people and organizations requesting information should be established and reviewed over time, to ensure they meet both legislative requirements and evolving best practices.

Patient Access

There is growing consensus that the information contained in health records belongs to the patient, and that patients have the right to review their records. In the United States, this concept was a key part of the *Health Insurance Privacy and Portability Act*.[16] In Canada, it is a key part of the *Personal Health Information Protection Act*.[17] Patients may request a copy of their health record in order to better understand their medical condition or to enable the transfer of their care to another provider. Hospitals should have policies and procedures in place to govern this form of information release to the patient.[18,19]

E. QUALITY

Chart Completeness and Deficiencies

Coders run audits to check for missing documentation, data quality errors and other oversights in health records. Hospitals should monitor chart completeness by healthcare provider and develop processes to ensure incomplete charts, or those with identified deficiencies, are corrected in a timely manner. A chart completeness policy should be created by the medical records committee.

Some hospitals have implemented ***concurrent coding***, a system by which coders assign diagnosis and intervention codes throughout the patient's stay, as opposed to after the patient has been discharged. In some instances, coders round with healthcare providers and engage with other clinicians to get real time information about the patient's course of treatment. While this type of coding may result in higher-quality documentation, it can be more expensive from a staffing perspective and challenging to implement.

Clinical Documentation Improvement

Clinical documentation improvement refers to the process of improving the comprehensiveness, accuracy and specificity of healthcare provider documentation so as to produce higher-quality coded data. The benefits of improved documentation and improved coded data include:

- A more accurate understanding of the care provided to patients, which can support more evidence-informed decision-making
- Improved funding in jurisdictions with fee-for-service or other patient-based funding models

Common approaches to clinical documentation improvement include:

- Targeted education strategies to ensure healthcare providers understand the importance of high-quality documentation
- Ongoing education for coders, and feedback loops to promote continuous improvement
- The establishment of a query process, where coders can ask questions of healthcare providers about specific aspects of the documentation (e.g., clarification of a diagnosis or test result)
- Chart audits and quality assurance checks to uncover potential documentation issues or coding oversights
- Cross-referencing data initiatives to compare information in the health record to other data sources (e.g., comparing a list of patients from medical imaging who received MRIs with the abstracts for those patients, to ensure that their procedures were properly coded)

Clinical documentation improvement professionals serve as intermediaries between clinicians and coders, and often have clinical backgrounds. They help educate healthcare providers about the importance of high-quality documentation and support coders by providing clarification and other clinical insights.

See the Association of Clinical Documentation Improvement Specialists[20] and the American Health Information Management Association[21] for more information about clinical documentation.

F. THE FUTURE

Several trends are transforming the nature and use of health records for both healthcare providers and patients. These include the following.

Integrated Health Records

Currently, the patient health record consists of a centralized record containing core demographic and medical information as well as service-specific records that capture and house information from individual care areas, such as medical imaging, laboratory medicine and pathology, and pharmacy. This collection of records is linked through the patient’s unique identification number.

Increasingly, organizations are exploring solutions for integrating information through centralized, electronic and fully-searchable systems that bridge demographic, service-specific and cross-institutional boundaries. Integrated health records have the potential to greatly improve the flow, safety and quality of patient care.

Computer-Assisted Coding

Computer-assisted coding systems use software to analyze the documentation in a patient’s electronic health record and – based on the presence of certain words, phrases and terms – assign appropriate diagnosis and intervention codes. The emergence of natural language processing technology has enabled the development of these innovative coding systems.

Hospitals that implement computer-assisted coding systems often start with a hybrid model, in which the software does the majority of the coding and then a coder reviews the health record to fill in any gaps. The advantages of computer-assisted coding systems are improved efficiency and coder productivity. Barriers can include both the cost and the potential the risk of errors associated with the emerging field of natural language processing.[22] Much of the information currently contained in health records is scanned and lacks searchability.

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