14 Interprofessional Structured Data: Supporting the Primary and Secondary Use of Patient Documentation

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Learning Objectives

This chapter aims to do the following:

- Describe important milestones in electronic records and interdisciplinary documentation.
- Illustrate the importance of structuring records.
- Discuss the opportunities and challenges of secondary use of data in clinical practice.
- Highlight the importance of continuity of care.
- Explain the changing roles of patients and professionals in a digital care environment.

Key Terms

- Coordination
- Continuity of care
- Digitalization
- Documentation
- Electronic health records
- Interdisciplinary
- Interprofessional
- Nursing discharge summary
- Standardized nursing terminology

Introduction

This chapter focuses on the electronic documentation of patient care, especially from an information processing and knowledge sharing point of view. In the early days of electronic patient records, the focus was on delivering information about symptoms and tests to be able to diagnose patients. It was also vital that the structure of screens followed the paper-based forms to have timely patient data [1]. Since those days, along with the development of health information technology (HIT), the importance is now on ways to easily find existing data on complex health problems of multimorbidity patients for decision-making. Further, electronic health records (EHR) are not designed for a single group of professionals, but more often, records are developed in interdisciplinary teams for interprofessional use in health care practice including financial administration [2, 3]. As EHRs, also health care service systems where they are operating are complex. Many changes are occurring due to limited resources in health care as well as

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advances in science and medical practice. The role of patient participation in care processes is also changing since more care is provided virtually or online. This affects documentation as patients are also data providers, and patient-generated data is used in decision-making.

One important goal in present and future EHRs is to enable data integration and aggregation from various sources not only inside one service provider but also nationally—and even internationally. The need for timely health data is global as proved by the COVID-19 pandemic. Having a variety of secure standards to guarantee the interoperability of information systems globally is a huge challenge [3]. Interoperability has been considered a fundamental hindrance for nursing documentation although nurses and other health professionals have been active in developing tools to support continuity of care or data reuse. In practice, professionals need to agree on the codes and semantics of how to document patient care to ensure interdisciplinary communication based on interprofessional documentation [2]. This will support continuity of care, and most importantly, secondary use of patient data for quality control and administrative purposes. However, previous studies [3, 4] have highlighted the lack of functionalities of electronic records to be able support and follow the process of care due to poor system design. Most often, this follows multiple recording on various views by multiple professionals, which risks patient safety and continuity of care when timely data is not found and readily available.

Electronic Health Records for Interprofessional Use

Interprofessional health records comprise information that is especially needed in care transfer where timely data is crucial to guarantee continuity of care whether inside an organization or outside. Interprofessional data has also proved to be essential in emergency care, traumatology, nutrition, or cancer care, not to mention pediatrics or elderly care where patients may have multiple health problems. Thus, both structure and content of EHRs should assist clinical communication and decision-making as well as have elements to summarize care episodes. One challenge for interdisciplinary documentation is both the differences and similarities of headings used in EHRs. In many records, or, more broadly, in information systems in health care, the views (meaning the various components) are designed based on specialties (e.g., surgical, internal medicine, psychiatric) for various professionals (e.g., physicians, nurses, physiotherapists, social workers, dietitians) or services (e.g., laboratory, radiology, rehabilitation) Further, health information systems may include components of administrative data such as visits and referrals, registers, or indicators (e.g., cancer, infections) as well as reports and certificates.

The model proposed by Donabedian (1992), which focuses on the structure, process, and outcome measures, has been used for quality assurance in health care for decades [5]. Broadly defined, structure measures refer to physical and organizational characteristics, whereas health care measures focus on the care delivered to patients (e.g., services, diagnostics, or treatments). Outcome measures refer to the effect of health care on the status of patients and populations [6]. In terms of data production in patient care, the model by Donabedian can be applied for structuring electronic records to classify the content into structure, process, and outcomes data. In many countries, data repositories have been created for patient data, achieving secured access based on the patient's consent for care providers or pharmacists at a regional or national level. These repositories are important for data sharing and secondary use of data (Fig. 14.1).

In many countries, like in Finland, patient records are continuous, starting from birth, and the key to personal data is a social security code unique to each citizen. Each professional should also have a smart card with an identifier to be able to use health information systems and national data archives in the national data repository named KANTA. Physicians use their cards to check previous notes and care episodes, to designate pharmacists to deliver medication, and to allow nurses to check orders and nursing discharge summaries. Patients use their own security codes to access the national data archives to

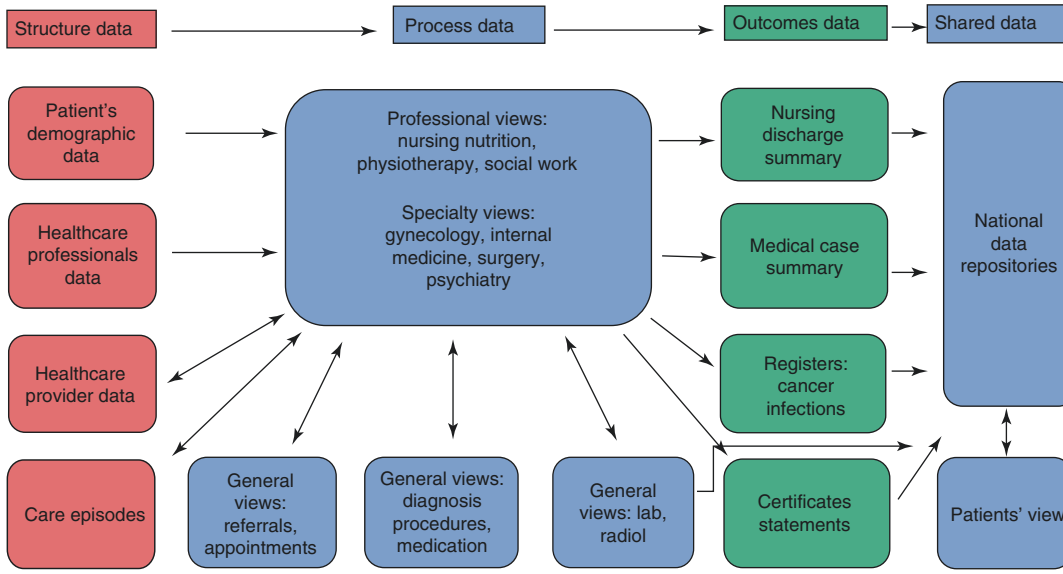

Fig. 14.1 Data elements for interprofessional electronic patient records

check their prescriptions, to read the summaries of care episodes, or to follow orders after a visit or hospital stay [7]. Many hospitals and health centers also provide online information through public or secured portals to provide digital health services. These have been especially useful in the COVID-19 pandemic.

Interdisciplinary health care demands unified documentation that follows this care process: assessment, diagnosis, goal setting, planning, intervention, and outcome assessment known by professionals and patients. This documentation requires defined data elements, classifications or terminologies, and standards to have high-quality data for multiple purposes. Most importantly, these should benefit patient participation in the care process.

Importance of Achieving Unified Documentation by Standardized Terminologies

Standardized nursing terminologies (SNT) have been under development and an object of interest for decades, beginning in the 1970s [e.g., 8, 9]. SNTs are content standards that include the terms or concepts that represent a focus on health concerning diagnoses, interventions, and outcomes consistent with the scope of practice for nursing. In literature, several terms such as "data set," "terminology," "language," "nomenclature," "classification," "vocabulary," and "taxonomy" have been used to describe the structures of nursing concepts in order to document and communicate practice [10]. According to Technology Informatics Guiding Education Reform (TIGER) recommendations [11] of nurses' health informatics competencies, nursing documentation including terminologies is one of the core competencies for clinical nursing, quality management, coordination of interprofessional care, nursing management, and information technology (IT) management in nursing. Thus, unified, uniform, and common language, SNT, is a prerequisite for interprofessional nursing practice and patient/disease-specific working groups.

The American Nurses Association (ANA) has worked since 1989 developing a process for recognizing nursing languages, vocabularies, and terminologies. The ANA has recognized two minimum data sets, two reference terminologies, and eight interface terminologies for facilitating standardized nursing documentation and interoperability of nursing data between different IT systems [9] (Table 14.1).

Unified documentation is a requirement for comprehensible content of nursing documenta-

Table 14.1 ANA recognized SNTs [9]

Interface Terminologies	Minimum Data Sets
Clinical Care Classification (CCC) System	Nursing Minimum Data Set (NMDS)
International Classification for Nursing Practice (ICNP)	Nursing Management Minimum Data Set (NMMDS)
North American Nursing Diagnosis Association International (NANDA-I)	
Nursing Interventions Classification System (NIC)	**Reference Terminologies**
Nursing Outcomes Classification (NOC)	Logical Observation Identifiers Names and Codes (LOINC)
Omaha System	SNOMED Clinical Terms (SNOMED CT)
Perioperative Nursing Data Set (PNDS)	
ABC Codes	

tion for all nurses and nursing administration. The need for developing a unified SNT in order to enhance comparability of nursing data is well recognized [8, 12]. Cross-mapping and coordination across classifications render it possible to evaluate the equivalence of the content and concepts used and to promote shared use of the various nursing classifications and data generated while avoiding redundancy in the information saved [13, 14].

The utility of the terminology in practice alongside the reliability and validity of the terminology must be evidenced through research [10]. In addition, patient care must be evidence-based, which refers to the best available evidence from scientific research. "Evidence based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients" [15]. A recent study [16] shows that terminologies in use must also be evidence-based. Vice versa, by using terminologies in nursing care documentation, we can make nursing visible and evidence the best possible patient care [10].

As an example from Finland, the national Finnish nursing documentation model is based on a defined nursing core data (nursing minimum data set, NMDS), a standardized nursing terminology: Finnish Care Classification (FinCC), which is originally based on CCC terminology, and a nursing process model in decision-making. The nationally agreed key structured data elements, the core data in nursing includes nursing diagnoses, nursing interventions, nursing outcomes, nursing intensity, and nursing discharge summary. In the enhancement and updating of the FinCC, the aim was to ensure that the FinCC system is more thoroughly founded on evidence-based data. To achieve this, the expert group searched for evidence, including Current Care Guidelines and other guidelines for care; familiarized themselves with the legislation, relevant guidebooks by the Finnish Institute for Health and Welfare, instructions, and various models; and searched scientific publications. The new FinCC 4.0 was published in December 2019 [17] (Fig. 14.2).

The FinCC consists of the Finnish classification of nursing diagnoses (FiCND), the Finnish classification of nursing interventions (FiCNI), and the Finnish classification of nursing outcomes (FiCNO). Both the FiCND and the FiCNI include 17 components, which is the highest and the most abstract level of documentation (e.g., Skin Integrity, Nutrition, Coping and Fluid Balance). The main and subcategory levels are the concrete levels of documentation. Nursing outcomes can be evaluated by means of the three qualifiers of the FiCNO: improved, stabilized, and deteriorated. Besides the evidence-based data, end-users have had a big role in the development of the FinCC. The content of the FinCC is a result of a cultural validation in 2001, and it has been revised by utilizing the user feedback in 2004, 2007, 2010, and 2019. The Finnish nursing documentation model is widely used today in different health care settings [17, 18].

Secondary Use of Nursing Data

Patient care data from the EHR systems are increasingly in demand for reuse in administration and resource planning. Nursing documentation along with coded concepts is expected to produce more reliable data and fulfill requirements for reuse better. It has been proven that

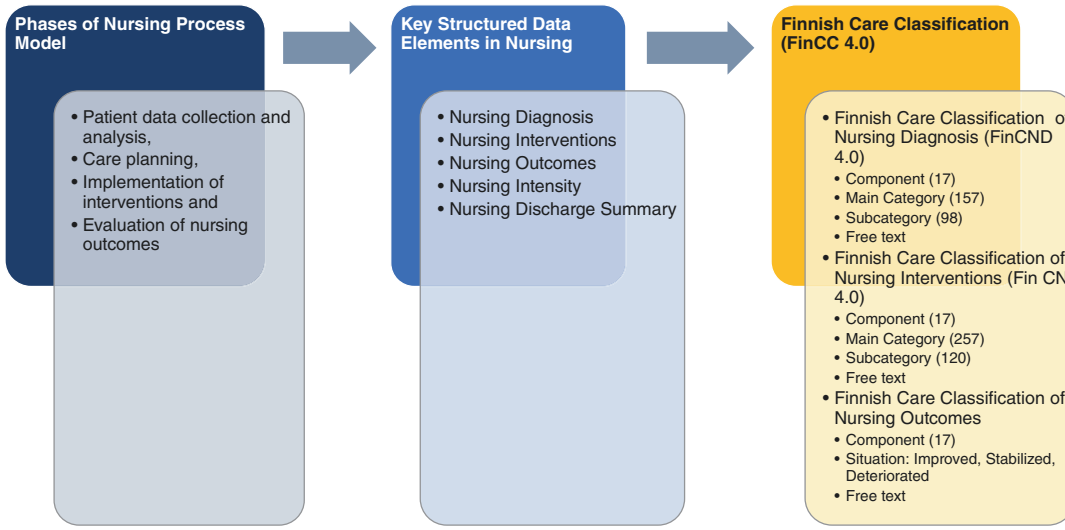

Fig. 14.2 The national Finnish nursing documentation model including the FinCC 4.0. (see [17] for more information)

structured documentation can produce more complete and reliable patient records, better fulfilling the requirements of data quality for the purposes of secondary use. The different standards for representing, communicating, exchanging, managing, and reporting data, information, and knowledge in the EHRs have been developed in order to support nursing practice and to ensure the validity of the data. The most important standards for nursing are content, messaging, confidentiality, and security standards. Structured or coded concepts allow the performance of evaluation of the nursing process, the key structure for care plans and documentation, and the provision of valid electronically documented nursing clinical data shareable across HIT and EHR systems. The coded concepts also permit the measurement of nursing outcomes and effectiveness, providing evidence for decision-making [10].

Clinical documentation supports patient care, improves clinical outcomes, and enhances interprofessional communication. When nursing entries are made in the same consistent way everywhere using agreed-upon terminology, the documentation is comparable among different care units and organizations. The greatest benefit of structured data is that it enables the reuse of recorded information because it can be identified [8, 10].

The rapidly changing environment of health care creates challenges for health care managers not only to have up-to-date information for daily management but also to have trends and scenarios of what is and will be happening in the future. Decision-making requires proper, accurate, and timely information that can be quickly and easily obtained. Reliable information on the reality of care is needed to support the monitoring of quality, safety, and costs of care as well as to plan development activities, to guarantee professionals' competences, and to benchmark research [19]. Clinical information systems contain large amounts of data on patient care, but little use is made of the accumulated data resources.

In health care, the primary use of patient data is to secure patient care. Structured data can be processed electronically, facilitating, for example, the access, retrieval, linking, and tracking of patient data. According to previous studies with nurses, using structured data enhanced the daily care processes, usability and quality of data, and secondary data use [6, 8, 19]. In health care organizations, managers and administrators are expected to benefit from structured patient data

when already-stored data can be used in organizations for purposes other than patients' direct care. The secondary use of health care data means that data generated in health care activities is used for a purpose other than for which they were originally stored. The data is therefore used in non-therapeutic situations when the data is filtered and combined in different ways [20, 21], for example:

- Operational planning and information management.
- Development and innovation.
- Research, statistics, and teaching.
- Regulatory guidance and control.

In Finland, the secondary use of data is regulated by legislation, which harmonizes the use of health care customer data and other personal data related to health and well-being. The secondary use of EHR data imposes different requirements on the data stored and utilized in the patient record. Five dimensions have been defined for the quality of data entered into patient record systems: completeness, correctness, concordance, plausibility, and currency. Completeness of the data describes the reality of the patient's care. The data is accurate, high-quality, relevant, consistent, and reliable. The correctness of the data describes, for example, the accuracy of the data. Further, data correspondence describes the accuracy of data elements describing the same issue to each other. Plausibility where the data corresponds to the general medical and health scientific understanding is accuracy, validity, and believability. Currency means that the data has been stored up-to-date, meaning it has been updated [19, 22].

The reliability of the recorded data can be guaranteed by initially storing the data correctly. In order to use the accumulated data resources for secondary use, the information must be of consistent and comparable to draw reliable conclusions from it. The quality of the health care data must be good and easily accessible [21, 23]. Because of the usability of patient data, it is essential that the quality of the data is as high as possible because incomplete, inaccurate, or erroneous recording makes the data unreliable. Clear, reliable, and accurate communication in health care between professionals is an essential part of patient safety and effective action [19, 23].

The structured nursing documentation makes it possible to easily assess the quality of recording. A nursing record audit is a prerequisite to having high-quality and valid data for secondary use [1, 19, 24]. Documentation in accordance with the nursing process has demonstrated the accuracy of documentation and the connection to legal requirements. In addition, patient orientation and the logical whole of documentation are key aspects of documentation evaluation [12]. Nursing documentation assessment models have primarily been developed for local or regional purposes, and a lack of international cooperation to assess the nursing record has been identified [25, 26]. The use of FinCC in nursing documentation can be assessed by an audit model developed for national use. In one university hospital in Finland, there is evidence from many years of systematic audits of nursing records, improving the quality and accuracy of records [27].

In many countries, where public health care is guaranteed for citizens, health care costs are referred with huge amounts of expenditure. From these figures/amounts, it is virtually impossible to find out nursing costs. One example of secondary use of nursing data is differentiating nursing care as part of a patient's billing. Everyday nurses document nursing diagnoses, nursing interventions, and nursing outcomes on each patient's EHR. By combining this data with other data required, one can determine the nursing input. Thus, in this way, we can understand the impact and effectiveness of nursing care.

The secondary use of data would not be possible without EHR functionalities. Most importantly, these should support nursing documentation during the caring process. An issue that should never be overlooked or underestimated is the alignment between the functionality of the new EHR system and users' requirements. In the case study at the end of our chapter, the use of structured nursing data for secondary purposes is described form nursing management point of view.

Securing the Continuity of Patient Care by Means of Electronic Nursing Discharge Summary

The nursing process model is a guiding structure of nursing discharge summary, which is a compact summary of the Nursing Minimum Data Set of the care period—in other words, a summary of nursing diagnoses, nursing interventions, nursing intensity, and nursing outcomes. Continuity of patient care (COC) often depends on the flow of information, preparation and sharing of patient records, and receiving of electronic nursing discharge summaries (ENDS). At the end of the patient's care period, a short, concise, and evaluative ENDS of the patient's care is prepared for the patient and for the follow-up care site. A medical case summary and ENDS include summary information about patient care and are separate documents. The ENDS is one part of an electronic patient record and is compiled from key issues in nursing records during the patient's care period (Fig. 14.4). The ENDS serves as care feedback and as referral in the patient transfer phase when a patient is transferred for follow-up care from one health care service to another and to the home. It should include all the necessary information required for patient care [28].

The purpose of the ENDS is to secure and improve the COC by excluding overlapping in documentation when each professional group documents their interventions and responsibilities. The ENDS should include the reason for hospital admission, how the patient has felt and how the condition has changed, what the patient's care consisted of, and whether the care will continue, and if so, how. The ENDS is a way to make nursing care visible [28]. It is essential that the information contained in the ENDS includes instructions for further care and allows the patient to continue self-care at home, in another place of care, or in subsequent care periods in the same unit if he or she re-enters care. In the patient's follow-up care setting, nurses can use the ENDS to develop a nursing care plan in addition to the medical case summary. For example, a specialist nurse in secondary care may provide instructions to primary care nurses on appropriate stoma care aids after bowel surgery in the ENDS.

The ENDS should be recorded according to the nursing process, stored using a pre-agreed structure, and supplemented with patient-specific free-form text. Once the information is structured, it can be reused. Day-to-day nursing documentation, previously recorded with FinCC classification, can be compacted and reused in the compiling of ENDS. Standards for compiling the ENDS are rare [29], but they are often asked to support the ability to share comparable information with other health care organizations and settings [29–32]. The ENDS, adapted by standardized national definition work, have been used in Finland since 2005. It is compulsory to save the ENDS into the National Patient Data Repository in Finland.

The content of the ENDS consists of *personal data* (e.g., identification of the patient), *socio-demographic data* (e.g., information on the social life of patient), and *administrative* (e.g., identification of the care provider) and *clinical information* on a care period for purposes of follow-up care (e.g., functional ability, nutrition, digestion, medication, psychological regulation). Figure 14.3 shows that the process of compiling the content in ENDS consists of four nursing process model stages.

- *Patient admission* covers assessment for need of patient care, for example, the reason for hospital admission and background information such as the patient's housing conditions and functional ability.
- *Care planning* includes the most relevant nursing diagnosis defined according to the general health of the patient.
- *Implementation of intervention* covers the main interventions taken by the nurses. The responsibility of the nurse is to record in the ENDS medication administration-related matters, the effect of medication-related matters, medication taken on transfer day, as well as the medication to be given as needed, such as painkillers.
- *Evaluation of nursing outcomes* refers to major ratings at discharge and includes

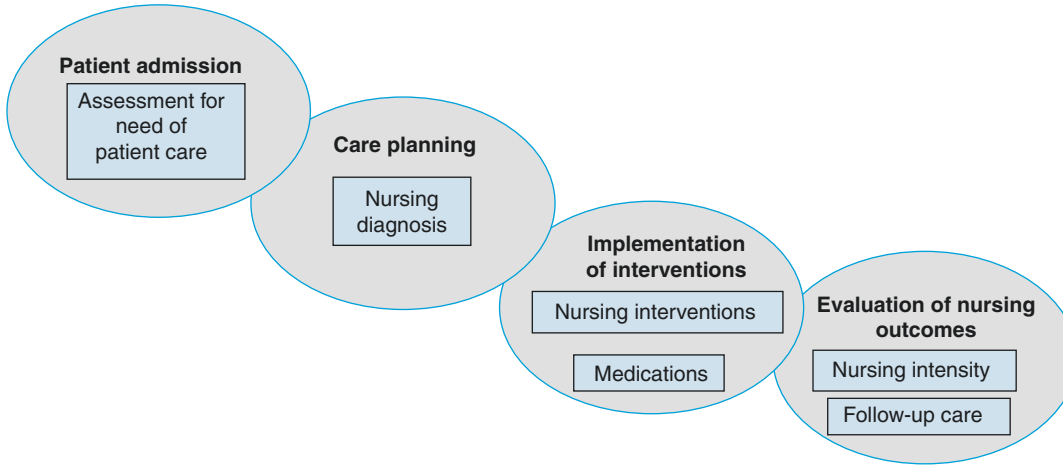

Fig. 14.3 National Electronic Nursing Discharge Summary titles in the Phases of Nursing Process Model in Finland

nursing intensity and issues related to follow-up care, for example, patient education, control visits, or suture removals, if not clear from the medical case summary.

In order to evaluate how continuity of care is achieved when using ENDS, the concept of COC needs to be defined. It is obvious that there is a need to determine explicitly what informational, management, and cross-border continuity of care mean. *Informational continuity of care* refers to data tool (e.g., paper or electronic nursing discharge summary), data content (e.g., medication), data structures (e.g., standards-compliant interoperability), or information quality (e.g., accuracy or adequacy of information) and related processes. *Management continuity of care* refers to information flow (e.g., timeliness or reliability), cooperation (e.g., understanding each other's work), coordination (e.g., care plan), and interprofessional (e.g., interprofessional documentation) or management (e.g., knowledge management) processes [33]. *Cross-border continuity of care* means that people receive the most appropriate treatment whenever they need it and wherever they are, and health care professionals have access to their patient data.

Based on the study findings, nursing staff in primary care evaluated the ENDS as a positive tool. Recipients assessed the flow of information to be more reliable and faster and collaboration to be smoother and more responsive to the patient's situation than those who had not received them. The most important issue from the aspect of the receiving nurse is the patient's condition and well-being at discharge. There were some duplications and contradictions concerning the content of patient care in medical case summaries and in nursing summaries, especially concerning medication [34]. Further, a discharge checklist can be used to ensure that the information necessary for the safe COC generated during the patient's care period is recorded in the ENDS and is available for follow-up.

Recently, a structured electronic interdisciplinary discharge checklist was implemented into nursing documentation systems to support the safe discharge of the elderly from the beginning of care period. The content of the proposed document is based on FinCC and includes type of accommodation, toilet functions, dressing, and eating as well as aids and accessories. The checklist can be of practical use to health care professionals worldwide. For example, nurses responsible for the nursing discharge can utilize it to verify that all information relevant to follow-up is included when designing ENDS. Most importantly, timely information relevant to patient care is available where the care continues, and the checklist is interdisciplinary [35].

The ENDS deduce the patient's responsibility for data transmission because the patient can see

the ENDS in My Kanta Pages, which is a citizens' online service used in Finland that displays information recorded by health care professionals about patients and their medications [7]. Studies have shown that patients have not always understood the follow-up instructions recorded in the medical case summaries or the medical terminology they contain and have not asked for clarification. In other words, they have lacked important information, and the need for a plain language medical case summary has been raised [32, 36]. The ENDS provide the patient with an individual follow-up plan and care instructions in an easy-to-read format. Interdisciplinary usage possibilities can be seen as a benefit of the ENDS. Written practically, the ENDS avoid medical terms not only by the patient but also by the staff of the home health service [37]. Currently, the ENDS are produced by nursing professionals. The aim is that in the future, the information produced by the patient such as well-being information or living wills could be integrated into the ENDS.

The Changing Role of Patients and Professionals in a Digital Care Environment

For decades, patients and citizens have been experienced in using the Internet to search for health-related information. Although patients trust their physicians, due to their expertise and experience, they prefer the Internet because it provides easy access to information [38]. In the beginning, patient portals were standalone websites with no connection to health care delivery contexts or providers. Currently, patient portals are promising instruments to improve patient-centered care, as they provide patients with information and tools that can help them better manage their health. The implementation of portals in both the inpatient and outpatient settings gives health care providers opportunities to support patients both during hospitalization and after discharge.

Patient portals for chronic disease management have shown some promising results regarding patient outcomes [39]. A typical electronic patient portal allows patients to see their visit history, current medication list and allergies, recent laboratory results, and other medical data captured in their health care providers' electronic health records [40]. Self-Treatment and Digital Value Services and Virtual Hospital 2.0 projects have led to the development of digital services for citizens and health care professionals in Finland [41, 42]. These services have enabled service and treatment chains to merge in new ways in different specialized fields in both primary and specialized medical care service networks. Digital services allow better cooperation between those working in social welfare and health care service organizations. In addition, patients can store information about their well-being using different applications. A well-being application for example, may be an application on a mobile phone, an online service used via the browser on a computer, or a measuring device such as a blood sugar monitor or an activity tracker. In Finland, the My Kanta Personal Health Record stores citizens' health and well-being data conveniently and securely in one place [7]. It can store data collected by a patient's heart rate monitor or activity bracelet in the digital health service (Virtual Hospital/Health Village), allowing the patient to view the data in My Kanta Pages. The illustration of digital health services in the care process provides insight into the extent of the change when transforming traditional services to digital services.

Studies have been demonstrated in a review that socio-demographic characteristics and medical conditions of patients were predictors of portal use. Some patients wanted unlimited access to their electronic health records, personalized health education, and nonclinical information. In addition, patients were eager to use portals for communicating with their health care teams. Although some studies found that patient portals improved patient engagement, some patients perceived certain portal functions as inadequate. Patients and staff thought portals could improve patient care but could cause anxiety in some patients. However, portals improved patient safety, adherence to medications, and

patient-provider communication but had no impact on objective health outcomes. Furthermore, preliminary results of a systematic review of patient portals did not reveal clear evidence of substantial and consistent positive effects of patient portals on patient empowerment and health-related outcomes.

Digital services have increased customer satisfaction and the impact of services offered to patients or customers while continually gathering data for service development. The projects achieved their goals. Digital services integrated with care paths enhance the efficiency of treatments and preventive health care, allow customers to access care at the right time, reduce the number of outpatient visits, and increase the efficiency of working time. Using a modern big data analytics methodology, the use and impact of digital services should be monitored. Service paths and structures should be continuously developed based on customers' behavior and the impact of services. Providing patients access to their health records has been linked to theorized benefits in four major domains of health care quality: patient-centeredness, effectiveness, safety, and efficiency. In addition, secure access to medical and nursing records improves patient satisfaction and enhances patient–provider communication.

Patient portals can be difficult to navigate, and patients may struggle to understand their medical information. According to studies, patients want their providers to encourage them and explain how to use the portal as well as provide multiple opportunities for training [43]. Low health literacy has been associated with a decreased use of preventive services, increased risk of developing a chronic disease, poorer treatment adherence, and poorer health outcomes [38]. In addition, health literacy also influences patient–provider communication. Individuals with low health literacy are less likely to engage in shared decision-making with their health care providers and are less likely to ask questions. McAlearney and colleagues' (2019) survey proved that patients identified viewing their health information, managing their schedules, and communicating with providers as notable activities [44]. Convenience, access to information, and better engagement in care were indicated as benefits. Conversely, concerns were related to technology issues, privacy, and security risks.

Clinicians often cite inadequate visit time as a barrier to developing a relationship and communication with patients. Also, creating EHRs during patient interviews has diminished clinicians' ability to connect with patients, leading to clinicians' dissatisfaction with clinical practice [45]. When patients were able to input agendas into electronic health record notes before visiting a health care provider, both patients and clinicians felt that communication during the visit was improved and that time was optimized. They expressed interest in future patient-written agendas. The preliminary results of the Digital Health Village® patient portal [42] surveys revealed that patients were motivated to monitor their wellness with electronic health care services based on their experiences with such services, and the patients were confident about the effectiveness of such services. While the project manager, team, organizational structure, culture, and atmosphere are still regarded as key components in enabling a project's success, it was important to recognize all the factors influencing success. It has been proved that leadership was the most important project success factor. Finally, investing in the leadership and project management skills of project participants could improve the success of future projects.

Case Study

FinCC Supporting Nurse Managers in Decision-Making

Utilization of structured data for nursing care supports the development of nursing practices and the will to utilize nursing information in nursing management to ensure the best patient care. The produced data also helps to support decision-making for health care managers. The aim is to utilize statistics in nursing development founded on evidence-based care and day-to-day management. This case study aims to describe the possibilities structured documentation with a

standardized terminology offers to daily nursing management. First, the process of data gathering is described, following the data analysis, and implications to practice.

The FinCC was implemented in 2007 into nursing records of a hospital district's wide EHR system. A systematic in-service training was created to support the daily use of the FinCC. Further, to guarantee the quality of the documentation a nursing audit system and a mentoring system were launched to support the maintenance of nursing documentation quality. The daily use in nursing documentation since the beginning has created a huge database to analyze trends, changes, and forecast challenges in patient care. Nurse managers can access this database through the EHR. The system includes a reporting tool based on the structured data, data retrieval, and its compilation according to the defined conditions, for example, component, main, and subcategory levels according to the FinCC. The IT department has created tools for data analytics, for example, for patient profiles by wards and units, relations between nursing diagnosis and interventions, and further to nursing outcomes.

In the following figure (Fig. 14.4), the use of the 17 components of the Finnish classification of nursing diagnoses (FiCND) of two different wards, the gastrosurgical ward and the cardiac care unit, demonstrates the differences between patient needs. Nursing diagnoses in the gastrosurgical ward focus on sensory and neurological functions (including acute pain), coordination of care, elimination, coping, and nutrition. The cardiac care unit focuses on sensory and neurological functions (including chest pain), cardiac functions, respiration, skin integrity, and coping.

The use of the FinCC highlights how patients' care needs (diagnoses) and the content of nursing practice and interventions are different on various wards. The care unit profiles become more visible, which can help in the allocation of nursing resources, education, research, and teaching. By linking these statistics with other structured data, they can be used to describe the allocation of resources used as well as the quality and

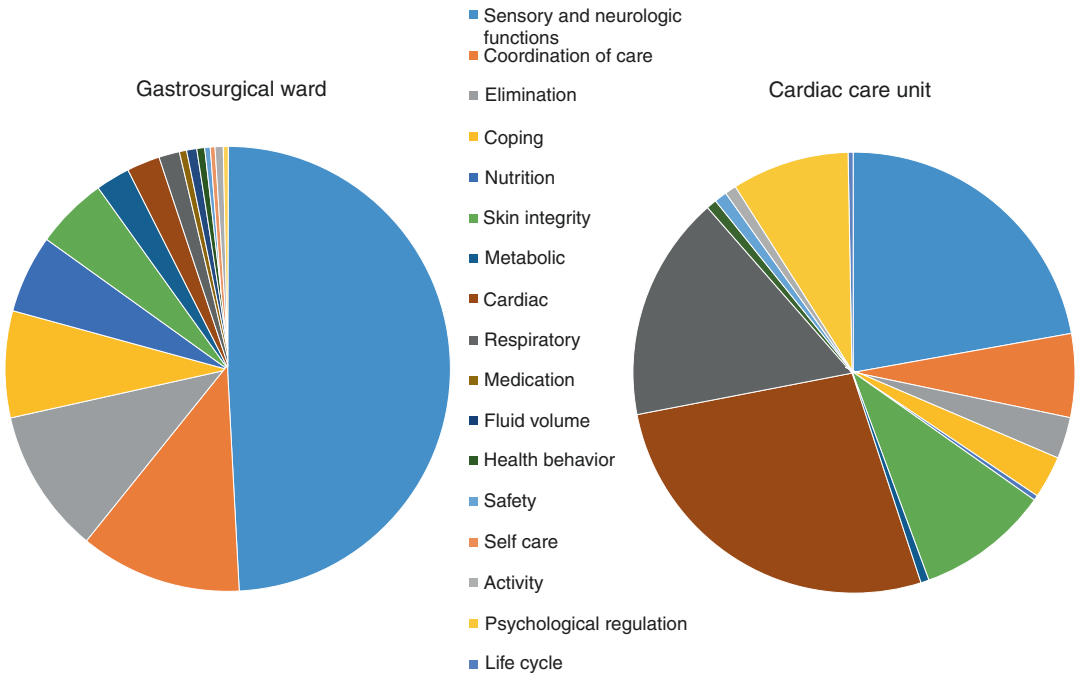

Fig. 14.4 Distribution of used components of nursing diagnoses (FiCND) on two different wards from January through May 2020

outcomes of treatment. We have to bear in mind that patients are individuals regardless of the same medical diagnosis and treatment processes. For example, patients may respond differently to anesthesia, or the patient may experience postoperative pain in very different ways. And thus, nursing needs and interventions in the patient treatment process can be very different despite the same medical diagnosis or procedure.

The use of the FinCC has many implications to both nursing and interprofessional practice. With the help of structured documentation, nursing care data can be retrieved from large amounts of patient data and, among other things, the above-mentioned differences in patient care processes can be found. By combining nursing diagnoses and interventions with, for example, medical diagnoses and procedures, it is possible to further develop interprofessional patient care from common care processes toward more and more individualized patient care. In addition, the data will influence the associated side diagnosis of the main medical diagnosis, for example, diabetes, changes in nursing diagnoses or interventions, extended care times, or increased costs. The use of the FinCC has also given a new language to discuss more in-depth about the nursing care and possibilities to share ideas for developments. The results produced by analytics and tools are discussed at ward level and at interdisciplinary meetings.

Summary

Although interdisciplinary documentation involves many challenges, it often has huge possibilities to improve data quality, data aggregation and transfer, and information flow. Interdisciplinary documentation is essential for professionals responsible for care, and it is meaningful for patients who often participate actively in decision-making in the care context. The role of technologies (e.g., patient records or health information systems) is evident, but the implementation and adoption processes still need continuous attention despite the past years of existence in practice.

The transition from a paper-based system to electronic and structured records has been more feasible than changing from an electronic to a new structured system. This indicates that health professionals have high expectations toward new systems. Still, it is not clear whether this is based on poor functionality in the system design or lack of training, which is an important feature in the implementation process. Incomplete functionality causes frustration among users when, for example, the same information must be recorded multiple times or search tools are totally lacking in the system. Additionally, this harms patient safety. Functionalities also concern patients since already in many health information systems, patients can have their own dashboard to record their information (e.g., social determinants, symptoms, or measures to be linked by professionals to the system).

Besides the system requirements, the structure of the record needs standards and common terminologies for successful use. Developing unified and evidence-based terminologies for recording patient care has been widely recognized and is of high importance. Several standardized nursing terminologies are in use globally. Further, the mapping of various terminologies has revealed that they have common elements to describe nursing care. Thus, whatever terminology is used, the content of patient care remains the same based on patients' signs and symptoms, and the visibility of evidence-based care is guaranteed. In many nursing faculties, curricula updates and developments are needed for nursing informatics competencies concerning documentation. The lack of skills and competencies as well as not understanding the value of standardized documentation is a risk for nursing practice, management, and patient safety.

In spite of great advancements, challenges still exist in interprofessional documentation and interdisciplinary data content if the EHR does not support standardized patient care documentation. Opportunities have been shown in informational, management, and cross-border continuity of care by means of shared data. However, the shared data is not useful unless the essential data content

for patient care has not been recorded or if the recorded data is not unified, good quality, and up-to-date. As for continuity of care, there are challenges in duplication and diversity of data content between nursing discharge summaries and medical case summaries.

Patient portals have increased powerfully during the COVID-19 pandemic. A typical electronic patient portal allows patients to see their visit history, current medication list and allergies, recent laboratory results, and other medical data captured in their health care providers' electronic health records. The development of digital services for citizens and health care professionals has enabled service and treatment chains to merge in new ways in different specialized fields in both primary and specialized medical care service networks. In addition, digital health care services allow better cooperation among those working in health care service organizations. The illustration of digital health services in the care process provides insight into the extent of the change when transforming traditional services to digital services.

Conclusions and Outlook

A common understanding of the importance of accurate and timely documentation in interprofessional collaboration is important. Structured data recorded by nurses and other health professionals can be used many times for various purposes—first as the basis of patient care in many phases or settings, and then reused for summary and administrative purposes. Often, data is utilized for secondary purposes to evidence care quality, resource allocation, and the need for changes in treatment processes through research and development activities. In the future, patients will be more involved in and better responsible for data sharing in interdisciplinary teams in health care.

Useful Resources

1. Kanta Services in Finland. https://www.kanta.fi/en/
2. Digital Health Village in Finland. https://www.digitalhealthvillage.com/en/home
3. Omaolo services https://www.omaolo.fi/

Review Questions

1. What opportunities does interdisciplinary documentation have?
   (a) Standardized EHR structure
   (b) Agreed headings
   (c) Improved information flow
2. Why must nursing terminologies be evidence-based?
   (a) In order to show evidence-based patient care
   (b) In order to develop terminologies based on evidence-based practices
   (c) So that the end users can refer to evidence-based research
3. FinCC is an acronym of:
   (a) Final Clinical Cooperation
   (b) Finnish Care Classification
   (c) Finnish Clinical Classification
4. Electronic Nursing Discharge Summary includes:
   (a) Nursing diagnosis
   (b) Nursing interventions
   (c) Nursing outcomes
   (d) Nursing intensity
5. What does secondary use of data mean?
   (a) Clinical data is used a second time.
   (b) Clinical data is copied to another location in the her.
   (c) Clinical data is used for a purpose other than that for which it was originally stored.
6. How does the digitalization of health care affect interprofessional collaboration or interdisciplinary documentation?
   (a) Because of digitalization, no interprofessional collaboration is needed in the future.
   (b) Only health professionals will continue to collaborate.
   (c) The role of the patient is strengthened, and patients participate, becoming increasingly involved in and responsible for data sharing.
   (d) Digitalization does not change anything.
7. What kind of services digitalization (digital transformation) allow?
   (a) Better cooperation among professionals in social welfare and healthcare service organizations.

(b) Patient can store information on his well-being using different applications.
(c) Digital services give instruments to improve patient-centered care.
(d) Digital services have enabled service and treatment chains to merge in new in different fields in medical care service networks.

Appendix: Answers to Review Questions

1. What opportunities do interdisciplinary documentation have?
   (a) Standardized EHR structure
   (b) Agreed headings
   (c) Improved information flow

Explanation: Interdisciplinary documentation is based on a standardized structure, which has agreed headings used in the EHR. When the multidisciplinary team is committed to use a structured EHR, information flow will improve between the team members.

2. Why must nursing terminologies be evidence-based?
   (a) In order to show evidence-based patient care
   (b) In order to develop terminologies based on evidence-based practices
   (c) So that the end users can refer to evidence-based research

Explanation: Terminologies in use must be evidence-based, and by using terminologies in nursing care documentation, we can make nursing visible and evidence the best possible patient care.

3. FinCC is an acronym of?
   (a) Final Clinical Cooperation
   (b) Finnish Care Classification
   (c) Finnish Clinical Classification

Explanation: FinCC is an acronym of Finnish Care Classification.

4. Electronic Nursing Discharge Summary includes:
   (a) Nursing diagnosis
   (b) Nursing interventions
   (c) Nursing outcomes
   (d) Nursing intensity

Explanation: ENDS is a compact summary of the Nursing Minimum Data Set of the care period, i.e., a summary of nursing diagnoses, nursing interventions, nursing intensity, and nursing outcomes.

5. What does secondary use of data mean?
   (a) Clinical data is used a second time.
   (b) Clinical data is copied to another location in the her.
   (c) Clinical data is used for a purpose other than that for which it was originally stored.

Explanation: Secondary use of health care data means that data generated in health care activities are used for a purpose other than that for which they were originally stored. The primary patient data in EHR is filtered and combined in different ways for secondary use purposes like operational planning and information management and health care development and innovation. Patient data can be utilized in research, statistics and teaching, and regulatory guidance and control.

6. How does the digitalization of health care affect interprofessional collaboration or interdisciplinary documentation?
   (a) Because of digitalization, no interprofessional collaboration is needed in the future.
   (b) Only health professionals will continue to collaborate.
   (c) The role of the patient is strengthened, and patients participate, becoming increasingly involved in and responsible for data sharing.
   (d) Digitalization does not change anything.

Explanation: The development of different kinds of digital services for citizens and health care professionals has enabled service and treatment

chains to merge in new ways in different specialized fields in both primary and specialized medical care service networks. Digital health care services allow better cooperation among those working in health care service organizations. Patients will be able to view and produce their own health information as new digital tools and transactional portals are developed. Information systems and electronic identification enable secure patient participation.

7. What kind of services digitalization (digital transformation) allow?
   (a) Better cooperation among professionals in social welfare and healthcare service organizations.
   (b) Patient can store information on his well-being using different applications.
   (c) Digital services give instruments to improve patient-centered care.
   (d) Digital services have enabled service and treatment chains to merge in new in different fields in medical care service networks.

Explanation: Digital services have increased customer satisfaction and the impact of services offered to patients or customers while continually gathering data for service development. Digital services allow better cooperation between those working in social welfare and healthcare service organizations. In addition, patient can store information on his wellbeing using different applications. These services have enabled service and treatment chains to merge in new ways in different specialized fields in both primary and specialized medical care service networks.

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