

Register-Based Research of Adverse Events Revealing Incomplete Records Threatening Patient Safety

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Abstract. Inadequate, missing or incorrect patient information is usually related to poor documentation. It has several negative effects on patient care processes, and, thus to quality of care, care continuity, and patient safety. It is one of the causes of patient claims. The aim of this study was to analyze patient safety reports and to find out which documentation hazards are damaging to patient safety. Data consisted of the patient incident reports (n=82 353) from seven health and social care areas from 2007–2016 in Finland. A descriptive analysis was conducted to explore the type of service provider and incidents reporting risks in patient data management and documentation. Adverse events due to patient data management and documentation were unusual; however, 18 cases were documented where patients suffered serious harm. Nearly half of the reports resulted from inadequate, missing or incorrect information. Uniform structures, documentation, and service processes need to be developed.

Keywords: Documentation, safety management, patient harm.

1. Introduction

The transition from paper-based patient documentation systems to electronic systems has been widespread during the past years both internationally [1] and in Finland [2]. Some existing evidence shows that computerized patient data management systems [3–4] and electronic documentation systems [5] affect positively patient safety and quality of care. In addition, structuring electronic health records can have an impact, e.g., on decreasing medication errors, increasing documentation quality, and on care process efficiency, care guidelines conformation and decreasing of prescription errors [6]. However, in some cases, despite classifications [7] or electronic systems [8] in use, the quality of documentation is weak [3,4]. Thus, poor or missing documentation is among the most common causes for patient claims. Poor documentation hinders the visibility and evidence of health care professionals' competencies, compliance of standardized care procedure and clinical guidelines, quality of care, the assessment of the health care provider, and the defence against claims [9].

One of the aims of the Finnish Patient and Client Safety Strategy 2017–2021 published by the Ministry of Social Affairs and Health [10] is that by 2021, all electronic health service processes and procedures will be safe, and patients and clients protected from harmful incidents. This also includes patient data management and documentation where all the essential processes in information flow and documentation must be

actualized using the same formats and structures in every health and social care organization, and in information exchange between the organizations. In addition, professionals in health and social care will have access to information systems and patient or client information that support their work and their processes [11]. A large number of incidents related to information management consist of documentation errors. Inadequate, missing or incorrect information, e.g. wrong name or birthday, might stand for some specific information loss. This might have a very important role, e.g., in the continuity of care and more, in patient safety [12].

Common data structures and structured patient data benefit broadly and in various ways, both the patient, professionals, and organizations [6, 13]. The Finnish patient safety incident reporting system, HaiPro, [14] is widely used in national health and social care. The online reporting system allows reporting of incidents for professionals, but also patients and their families. The aim of this study is to analyze incident reports and especially concentrate on finding out which documentation hazards are most damaging to patient safety.

2. Methods

Data consisted of the incident reports (n=82 353) from seven health and social care areas from the years 2007–2016: three hospital districts, health and social care of two large cities, and two social and health care districts. Reports were retrieved from the Finnish Society for Patient Safety database, which collects reports from about 200 health and social care facilities. Reports include both structured and free-text descriptions of safety events.

A descriptive analysis was conducted to explore the type of service provider (primary, health and social care) and incidents reporting risks in category *Information flow and information management related*. HaiPro [14] system has 13 incident categories (Table 1). In addition, the reporter describes the incident by narrative text clarifying the type, context, and circumstances of the incident. The consequences for patients or service providers are also assessed. Reporting incidents is confidential, voluntary, and anonymous, highlighting learning from mistakes and blame-free actions. HaiPro system implementation began in hospitals in 2007, and the social service began implementing the HaiPro system just recently. Reports of inadequate, missing or incorrect information were by inpatient wards and outpatient departments.

Table 1. Categories of HaiPro system

Categories			
1	Medication or iv fluid care, blood transfusion, or contrast agent related	8	Devices or their use related
2	Information flow and information management related	9	Hygiene related/protection against infections
3	Diagnoses related	10	Injury
4	Surgical procedures related	11	Paramedical services related
5	Invasive procedures related	12	Violence
6	Other care related	13	Deviation in radiotherapy
7	Laboratory, imaging-related		

The analyzed adverse events consisted of reports of primary healthcare, special healthcare (hospitals) and social care (i.e., elderly service). Approval of the University

of Eastern Finland Committee on Research Ethics was required. SPSS 23 software was utilized for analyzing the structured data (Armonk, NY, IBM).

3. Results

Adverse events during *Information flow and information management* (n=12 294) comprised 41.2 % (n=5070) of incident reports concerning *Patient data management and documentation* (Table 2). Of those, more detailed description of the incident reports of *Patient data management and documentation* included 40.8 % (n=2066) were the reports of inadequate, missing or incorrect information. Analyses showed that the relative proportion of adverse events was similar in primary healthcare as well as secondary and tertiary healthcare. In both sections, half of the adverse events were reports from inpatient wards. Of all data obtained, most of the reports (63,2 %) came from registered nurses and physicians 4,2 percentage.

Table 2. Information flow and documentation related adverse events

Information flow and information management related adverse events (n = 12 294)	n	%
Patient data management and documentation	5070	41,2
Care coordination	4686	38,1
Verbal communication	2538	20,7
Patient data management and documentation related adverse events (n = 5 070)	n	%
Inadequate, missing or incorrect patient information	2066	40,8
Error in personal data or contact information	576	11,4
Patient information not retrieved or printed from patient records	413	8,1
Wrong or outdated information in patient records	376	7,4
Missing referral or inadequate, missing or incorrect information in referral	329	6,5
Information input or retrieval of patient records hindered	306	6
Referral of test result documentation for wrong patient	215	4,2
Patient information documented in wrong place	201	4
Other or unknown	588	11,6

When reporting, the nurse or physician picks the incident category and the applicable harm that he or she thinks has occurred to the patient. In most cases (59,2 %, n = 1948), as a consequence, no harm was done to patients due to adverse events of *Patient data management and documentation*. Patients suffered from moderate harm in 178 (5,4 %) cases and serious harm in 18 (0,5 %) cases. Five of those serious cases were related to inadequate, missing or incorrect information. Not knowing the degree of harm were 10.8 % of the cases (n=166) which related to inadequate, missing or incorrect information.

4. Discussion

Uniform, accurate, and standardized data structures and documentation are a prerequisite to safe and good-quality care [6]. Inadequate, missing or incorrect information can be

very important information. It may be essential for patient care which has an explicit connection to patient safety [3-5,12]. There are a lot of differences in the structures of patient care documentation [13]. Over one-third of the incident reports of *Information flow and information, management* were related to *Patient data management and documentation*. Of those reports, nearly half were of inadequate, missing or incorrect information. This information deficiency can be, e.g. missing information about patient's medicine or allergy, which cannot be seen in the electronic documentation system. It can also be inadequate documentation of medicine administration, a missing patient identifier in a laboratory test, or wrong electrocardiogram for a physician to interpret.

Adverse events related to patient data management and documentation included a total of 18 cases where the patient suffered serious harm. Most of these incidents were because of inadequate, missing or incorrect information. Lack of and deficiencies in documentation likely refers to poor-quality care and missing standardized care processes [7]. Adverse events related to *Patient data management and documentation* can refer to inoperative work and operational practices, which means that professionals need to be trained simultaneously when implementing a new system [10-11].

Documentation deficiencies can also be an outcome of inoperative and unclear documentation systems [7] or lack of rules and requirements for documentation [8]. These need to be taken into account in the early stages of the electronic documentation system's acquisition and when defining the common documentation guidelines for both organizational and national levels [6, 11]. Advances, such as improved data quality and patient's legal protection, decreased misinterpretations, better possibilities for data re-use and data retrieval, and possibilities for decision support connection to patient records and its use have been presented. This also applies to the use of standardized health and social care languages [6, 13].

The purpose of HaiPro system is highlighting learning from mistakes [9, 14]. Accurate documentation is evidenced to affect patient safety, and the main criteria for high-quality healthcare are considered to be well-trained staff and treatment that works [3-5]. Incidents of *Patient data management and documentation* occurred both in primary and special healthcare. Our data illustrated that the handling process requires confirmation.

5. Limitations

Data for this study represent seven health and social care districts. However, our data included safety incidents reported by the largest hospital district in Finland, which accounts for approximately one-third of the population. Due to the voluntary nature of the HaiPro incident reporting system, not all incidents are reported. In the future, more emphasis should be put on how the systems can be made more comprehensive and more effective.

6. Conclusion

Good quality and accurate documentation **are** known to affect patient safety positively. Organizations need to plan and implement standardized documentation platforms and care processes. Additionally, we need more accurate information on adverse events and understanding of the problem for improving health and social care processes. Even

though the amount of serious harm to the patient because of inadequate, missing or incorrect information was not big in this data, this example shows the value of incident reporting systems. Patient safety must never be harmed because of poor documentation.

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