

## Relevant Patient Data for Health Information Exchange: A Delphi Method Study among Occupational Health Professionals

Sari Nissinen<sup>1\*</sup>, Timo Leino<sup>1</sup>, Tuula Oksanen<sup>1</sup> and Kaija Saranto<sup>2</sup>

<sup>1</sup>Finnish Institute of Occupational Health, Finland

<sup>2</sup>University of Eastern Finland, Finland

\*Corresponding author: Nissinen S, Finnish Institute of Occupational Health, Finland, Tel: +358438252435; E-mail: [sari.nissinen@ttl.fi](mailto:sari.nissinen@ttl.fi)

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### Abstract

**Objective:** To examine which data on patients' primary care visits are considered relevant for documentation in the electronic records of occupational health services, to enable health information exchange between occupational health care professionals, the employee, employer, other health care professionals, and social insurance system actors.

**Methods:** We used the Delphi method to evaluate which electronic health data are considered relevant for patient health information exchange by 37 occupational health team members (physicians, nurses, physiotherapists, and psychologists). The surveys were conducted in three rounds. The response rates to the consecutive electronic questionnaires were 76%, 73% and 73%. We used content analysis to analyze the data.

**Results:** The most relevant electronic patient data for health information exchange were individual action plans and their follow-ups, work-related primary care visits, professional assessment of employee's work capacity and the ability to cope at work, and work-related diseases and reported symptoms.

**Conclusion:** The results show that occupational health professionals considered structurally documented electronic health records relevant for patient health information exchange between occupational health services and the employee, employer, other health care professionals and social insurance system actors. The National Patient Data Repository (Kanta) was considered one means with which to implement electronic health records in occupational health services. These results can be used in the further development of data structures and information exchange in occupational health services.

**Keywords:** Occupational health; Occupational health services; Documentation; Health information exchange; Electronic health records; Occupational health physicians; Occupational health nursing; Delphi technique

### Introduction

In Finland, all employers are obliged by law to arrange preventive occupational health services (OHS) for their employees in order to prevent work-related ill health and to promote employees' health, safety and work ability [1]. As well as the statutory preventive services, employers can also offer general practitioner-level primary care services. In 2014, preventive OHS was organized for 1.8 million (87%) employees. Primary care services were available to approximately 1.7 million employees. Altogether 4.9 million primary care visits to OHS were made, corresponding to about three visits per employee. The majority of these visits were to OH physicians (3.3 million) and OH nurses (1 million) [2]. The Occupational Health Act (1383/2001) is accompanied by the code of conduct for OHS: Good Occupational Health Practice [1]. This sets the framework for systematic and target-oriented cooperation between employers and employees, and emphasizes its important role in the coordination of health care, rehabilitation, and return to work among health care stakeholders. According to recent legislation, OH personnel are assigned specific tasks to increase return to work from sickness absence (the 30-60-90

day rule). When a person has been on sick leave for 30 days, the employer must transfer information about recommended sick leaves lasting over 30 days to OHS. OHS' ensuing task is to offer counselling to the employee, and to coordinate their care, rehabilitation and return to work. After 60 days of sickness absence, the OH physician must assess the work capacity of the employee. After 90 days of absence due to illness, in order to be entitled to disability benefits, the employee must undergo an OH physician's assessment. The 30-60-90 day rule emphasizes the collaboration of all involved parties with OHS; that is the employee, employer, vocational rehabilitation actors, and the employers' pension and accident insurance companies. OHS needs appropriate, timely health information exchange (HIE) in order to reach goals they have been set. Previous studies show that HIE between OHS and other health care professionals and social insurance system actors is both desired and needed in patient care [3-5]. For example, OH professionals have special knowledge and data on employees' ability to cope at work and their work ability, issues that are often important in primary care visits [6]. Similarly, work-related visits to primary care provide important information for the provision of OHS. HIE extends beyond primary health care to other health service providers, e.g. hospitals, rehabilitation units, and social insurance system actors [7]. With jointly reviewed and more complete patient information, all health care providers are able to make better decisions and provide more coordinated care. In Finland, electronic health

records are in widespread use, and essential patient data are almost exclusively handled in electronic form [8]. Health information technology provides new opportunities for HIE, which allows all stakeholders to appropriately access and securely share employees' health data electronically. Data protection and privacy is essential. OH professionals have to carefully consider how much private information on individual employees to release to employers and others, and in what situations they can do so [9]. The HIE of patients' own data among different health care service providers is generally accepted, as it improves the quality of care and patient safety. However, a condition for approval is that patient privacy is respected [10,11]. HIE with the employer is limited and mainly takes place at a group level (e.g. sickness absence records) [12]. In any case, widespread collaboration motivates OH professionals to use health information technology. Its use is further promoted by successful implementations of information systems, easier access to patient data, and positive changes in employee health surveillance. However, the lack of legislation, concern that workloads will increase, and the need for changes in measures may in turn inhibit the use of technology [13]. In 2013, the National Patient Data Repository (Kanta) was taken into use; a national electronic health data system for healthcare services, pharmacies and citizens in Finland. It enables the centralized electronic archiving of health records and long-term storage of data. The My Kanta service also allows citizens themselves to see the information that health care providers have recorded about them. Health records are documented in Kanta in a structurally unified format, which enables the exchange of data from one system to another and improves the accessibility of information in health care units involved in patient care [14]. Kanta and its structurally documented data enable HIE between health care providers. However, if the documentation structure is poor, using data for decision-making, reporting, and nationwide statistics may prove challenging [15]. Indeed, electronic health record (EHR) data can also be utilized in national population health monitoring and statistics, as well as in monitoring OH organizations' own activities [16,17]. Nonetheless, prior research shows that OH professionals are satisfied with EHR and want to continue using them [13,18]. According to international studies, the use of EHR increases the efficiency of services, mutual communication, and the safety and quality of patient care [18-20]. Patient satisfaction also increases when patients can see their own health data in the EHR. Rather than harming the patient-health professional relationship, being able to see one's own health records is perceived as beneficial by both the patient and the health care provider [21]. Health record systems, both electronic and manual, are primarily designed for documenting and archiving patient/employee data, rather than to support cooperation between professionals [22]. However, the content of documentation related to HIE in OHS has not been studied very much. The aim of this research was to produce new information on the structure and contents of data collected in primary care visits in OHS, and to determine which data are the most relevant for the exchange of information among OHS and the employee, employer, other health care professionals, and social insurance system actors. The ultimate goal is to develop better EHR in OHS.

## Material and Methods

### Data collection

We used the Delphi method in data collection. This is a structured communication method that relies on a panel of experts. The assigned experts answer questionnaires in two or more rounds [23]. In this

study, the relevant data to be documented in the EHR of OHS for HIE were elicited by asking OH professionals to answer three electronic questionnaires.

In Finland, over 2800 OH physicians, 2600 OH nurses, 900 OH physiotherapists and 500 OH psychologists work in OHS [24]. We selected a sample of each group of professionals. The selection criteria were educational background, a known interest in developing EHR and being able to participate in the time-consuming panel during working hours. Our sample contained 62 professionals (24 OH physicians, 21 OH nurses, 9 OH physiotherapists and 7 OH psychologists). In June 2015, 40 of these agreed to participate in the study (19 OH physicians, 12 OH nurses, 5 OH physiotherapists, and 4 OH psychologists). The final number of participants in the study was 37, of which 17 were OH physicians, 11 OH nurses, 5 OH physiotherapists, and 4 OH psychologists.

The first questionnaire was sent by email in August 2015. It included open-ended questions concerning which primary care visit data is relevant for documentation in EHR for HIE between OH professionals, other health care professionals, social insurance system actors, employers, and employees. The second questionnaire was sent at the beginning of November 2015, and included five multiple-choice questions based on the responses of the first questionnaire. We also asked if the data should appear in Kanta. The third questionnaire was sent at the end of November 2015. This also focused on the questions that reached the consensus limit in the first questionnaire, and included questions about how the relevant data should be documented: structurally or narratively (yes/no).

### Data analysis

The research material of the first questionnaire was narrative text. After the material was read several times, it was divided into sections, which were grouped into categories based on the similarity of their content. These categories were defined so that they could be traced back to the original material. In addition, we calculated how many times the professionals gave similar statements on the subject matter. The analysis was conducted using ATLAS.ti software.

We first utilized data-driven content analysis to extract data from the narrative text [25] and then continued the analysis by quantifying the data. This allowed us to produce qualitative information with a quantitative element for finding the consensus. We used a rather low consensus limit of 25% in order to avoid the loss of relevant information in the first round.

We calculated the distribution of responses in the second and third questionnaire.

## Results

Thirty-seven OH professionals participated in the study, of which 17 were OH physicians, 11 OH nurses, five OH physiotherapists and four were OH psychologists. The response rate of the first questionnaire was 76% (n = 28), and of both the second and third 73% (n = 27).

Four types of patient data exceeded the set consensus limit. As the most relevant health care data to be documented for HIE, OH professionals chose the individual action plan and its follow-up (75%), work-related primary care visits (39%), professional assessment of employees' work capacity and the ability to cope at work (29%), and work-related diseases and symptoms (29%) (Table 1).

Patient data	%	n
Individual action plan and its follow-up	75	21
Work-related primary care visits	39	11
Professional assessment of employees' work capacity and ability to cope at work (work ability)	29	8
Work-related diseases and symptoms	29	8
Results of examinations	18	5
Diagnoses of sick leaves	7	2
Working conditions and need for work modifications	7	2
Work-related risks and stress factors	4	1
---- 25% consensus limit		

**Table 1:** Relevant patient data to be documented for health information exchange (n=28).

Altogether 76-93% of the respondents considered all four types of identified patient data relevant for collection in the EHR of OHS and to be used in HIE with employees. Half of the respondents considered it important that the data appeared in Kanta. The results are shown in (Table 2).

Patient data	HIE with employee (%)	HIE with employer (%)	HIE with other health care professionals (%)	HIE with social insurance system actors (%)	Data should appear in Kanta (%)
Individual action plan and its follow-up	93	45	72	62	55
Work-related primary care visits	76	79	52	48	45
Professional assessment of employees' work capacity and ability to cope at work (work ability)	86	59	69	72	48
Work-related diseases and symptoms	86	79	79	69	55

**Table 2:** Relevant patient data for health information exchange in occupational health services (n=27).

Over half of the respondents believed that all identified relevant patient data should be structurally documented. Work-related primary care visits (79%) and professional assessments of employees' work capacity and ability to cope at work (work ability) (76%) received the most support (Table 3).

Patient data	Structurally (%)	Narratively (%)
Individual action plan and its follow-up	62	38
Work-related primary care visits	79	21
Professional assessment of employees' work capacity and ability to cope at work (work ability)	76	24
Work-related diseases and symptoms	61	39

**Table 3:** Documentation method of relevant patient data in occupational health services (n=27).

## Discussion

The aim of this research was to determine which primary care visit data in OHS is regarded by OH professionals as relevant for HIE between the employee, employer, other health care professionals and social insurance system actors.

We used the Delphi method, because it is well suited to new research areas and exploratory studies. The experts were qualified OH

professionals, and the number of respondents was sufficient for this type of study. Each respondent answered the questions individually. Their names or jobs were not disclosed at any stage of the research process. All experts participated voluntarily, and had been told in advance that the research would include three survey rounds. The approach suited this study well, because its purpose was to explore a little-known issue and find completely new perspectives [23].

The OH professionals rated the individual action plan and its follow-up as the most important primary care visit data to be documented. This is an excellent choice, provided the plan is properly structured and documented. It can be a powerful tool in care and the return to work if it is shared and used systematically. It is not only for the OH expert, employee and employer to share, but should be used with all health and social insurance system actors. The data considered the least important for documentation in the EHR for HIE were related to working conditions. This result reflects the fact that, in Finland, data on exposures, strains and stress factors at work are recorded in OH units' client organization data bases, separate from patient records.

The individual action plan and its follow-up was also selected as the most important patient data in HIE with an employee. The plan includes the objectives set by the employee together with the OH professional, whose role is to provide advice and guidance on healthy working and living habits, and also to support employees in situations in which their health and work ability is compromised [7]. Planning the treatment together with the employee improves commitment and participation in the action plan and also the employee's self-confidence and motivation to make behavior changes that could impact their health [26].

The top three types of data to be exchanged with the employer were work-related primary care visits, work-related diseases and symptoms, and the assessment of work ability. These data are available to the employer in anonymous form only, so that no individual employee can be identified. These data interest employers greatly, as sickness absence and work disability costs can be substantial [27,28]. Good management of the above data can also give an OHS provider an edge in the market. Client organizations are more likely to be satisfied with OHS that offers good cooperation and professional knowledge regarding the health and work ability of employees and working conditions at workplaces [3].

The most mentioned items in the HIE between OHS and other health care professionals were data on work-related diseases and symptoms, individual action plans and their follow-up, and work ability. The results were parallel to the information that general practitioners need from OH physicians, namely employees' diagnoses, and OH physicians' advice on the timing and adjustments of return-to-work plans [4]. Multiprofessional cooperation and planning patient care together ensures that all aspects are monitored and evaluated, and that the control of employees' diseases improves [26].

The data on work ability and work related diseases and symptoms were the two most mentioned items in HIE with social insurance system actors. Further elaboration of our results is not possible. However, one can assume the situation is the same in Finland as that in Belgium, where insurance consultants need to reserve data on employees' needs for work modification and work resumption prognosis [5].

On average, two out of three OH professionals agreed that all four data items (individual action plans and their follow-up, work-related primary care visits, professional assessment of employees' work capacity and the ability to cope at work, and work-related diseases and symptoms) should be documented in a structured form and appear in Kanta. This information can be used in the future development of Kanta and in the ongoing integration of the EHR of OHS into this system.

HIE with other health care professionals are realized through Kanta, and HIE with employees via My Kanta. However, electronic HIE with

employers is not integrated into Kanta. For dealing with employers, OHS use many different data systems and HIE is usually carried out via an extranet service. HIE with social insurance system actors is not very well integrated into OHS either. Currently, EHR in OHS do not sufficiently support HIE [22]. This means that when applying for social insurance benefits, for example, OH professionals have to document patient data in EHR, and then again in another information system.

Fluent HIE between different information systems requires data to be documented structurally, as was the opinion of the majority of OH professionals in this study. In order to do this, the content and structure (codes, standards or classifications) of documentation must be improved. This work continues under the umbrella of the Kanta services, and the situation will hopefully be better in the future.

Electronic patient data management in OHS is growing and will become increasingly important. This study produces new information that can be used in the development of health information systems in OHS and in the data structure and contents of primary care visits, to better serve information exchange among OH professionals and the employee, employer, other health care professionals, and social insurance system actors. It enables the relevant patient data to be exchanged in the right format, at the right time and in the right place; effectively and reliably. Overlapping operations in patient care are reduced and patients' treatment pathways will become faster; this is important not only for the individual, but also for society.

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