

## **Examination of an electronic patient record display method to protect patient information privacy**

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## **ABSTRACT**

Electronic patient records facilitate the provision of safe, high-quality medical care. However, since personnel can view almost all stored information, this study designed a display method using a mosaic-blur (pixelation) to temporarily conceal information patients do not want shared. This study developed an electronic patient records display method for patient information that balanced the patient's desire for personal information protection against the need for information sharing between medical personnel. First, medical personnel were interviewed about the degree of information required for both individual duties and team-based care. Subsequently, they tested a mock display method that partially concealed information using a mosaic-blur and they were interviewed about the effectiveness of the display method that ensures patient privacy. Participants better understood patients' demand for confidentiality, suggesting increased awareness of patients' privacy protection. However, participants also indicated that temporary concealment of certain information was problematic. Other issues included the inconvenience of removing the mosaic-blur to obtain required information and risk of insufficient information for medical care. Despite several issues with using a display method that temporarily conceals information according to patient privacy needs, medical personnel could accept this display method if information essential to medical safety remains accessible.

**Keywords:** Confidentiality; Electronic Patient Records System; Health Personnel; Mosaic; Need to Know

## INTRODUCTION

The concept of privacy pertains to all areas of human activity and is applicable in many different disciplines.<sup>1</sup> In Warren and Brandeis's "The Right to Privacy," privacy is defined as the "right to be let alone" (p 193).<sup>2</sup> According to Erickson et al., "privacy is the right of individuals to keep information about themselves from being disclosed; that is, people (our patients) are in control of others access to themselves or information about themselves. Patients decide who, when, and where to share their health information" ("Challenges of Maintaining Privacy," para 1).<sup>3</sup> Leino-Kilpi et al. divided privacy into four dimensions: physical, psychological, social, and informational.<sup>1,4</sup> Informational privacy is an individual's right to determine how, when, and to what extent personal information is shared with a person or organization (e.g., hospital). According to the National Committee on Vital and Health Statistics (NCVHS), health information privacy is an individual's right to control the acquisition, uses, or disclosures of his or her identifiable health data.<sup>5</sup>

To provide patients with safe and high-quality medical care, medical personnel must obtain sufficient information and utilize it appropriately. Similarly, patients must provide medical personnel with sufficient information to receive excellent medical care. Health services involve highly sensitive information,<sup>6</sup> and medical data is generally more sensitive than other information types.<sup>7-9</sup> Therefore, because of patients' increasing concerns about of privacy and security of their medical records, some may not want to provide sensitive healthcare information.<sup>10-12</sup> The NCVHS has defined highly sensitive medical health-related information as including domestic violence, genetics, mental health, reproductive/sexual health, and substance abuse.<sup>13</sup> Research indicates that the level of privacy need can increase depending on the information type,<sup>14-17</sup> that patients may be more likely to share information with specific people,<sup>16,18</sup> and that the degree of information sharing will change depending on the professional-patient relationship.<sup>19,20</sup> In addition, it has been reported that patients wish to control medical record sharing differently for each person who handles the information.<sup>13,21-24</sup>

Recently, many medical institutions have introduced electronic patient record (EPR) systems, and the computerization of medical records has considerably transformed workflow. Specifically, patient

records that were previously stored in multiple locations can now be viewed on a single EPR screen, enabling medical personnel to access patients' medical information from any one location and at any time. As a result of this development, a broad range of personnel are now privy to any given patient's information. To achieve safe and high-quality medical care, vast amounts of information essential to each type of medical professional are recorded. However, the value and utility of collected information is contingent upon profession and specific professionals only need to access certain information. Consequently, all professionals do not need to view all information. Although some patient-related information is essential to medical care, a patient may not wish to provide access to some information, even to the physician directly involved in his or her medical care.<sup>19,20</sup> Therefore, it is necessary to review the balance between a need for information access and respect for personal information protection and confidentiality.

The EPR systems introduced at medical facilities are legally required to have measures in place for the protection of personal information. However, the system administrator determines the access rights to EPRs, and once personnel have restricted access rights they can no longer quickly access required information. Therefore, medical personnel face a difficult task when determining the right course of action in setting the scope of information sharing based on individual patients' privacy needs. Currently, no system addresses this issue and the need for this system is not adequately recognized. Furthermore, settings for access rights may result in the reader being unable to view some relevant information. Since viewing obscured information requires system administrator changes to access rights, this method is inappropriate for medical settings with limited timeframes.

The "screen saver" is an existing technique for concealing patient information.<sup>25</sup> In this approach, the monitor changes to a screen saver automatically after a set amount of time passes. The original screen can be retrieved via two methods: a simple mouse click, or inputting a password. However, when the screen saver is removed, the screen continues to provide all patient information. This clearly differs from a system that addresses patients' privacy needs by concealing certain types of information.

Consequently, this study proposed a display method including the following conditions: 1)

necessary information can be viewed; 2) dependent on the patient's privacy needs, some information can be obscured by applying a mosaic effect (pixelation); and 3) when information deemed necessary for medical personnel is obscured, the reader can remove the mosaic effect to immediately secure what they "need to know." Based on these conditions, an EPR display method for patient information that balanced the patient's desire for personal information protection against the need for information sharing between medical personnel was developed in this study. However, this study did not investigate specific methods of ascertaining patient privacy needs, what information items should be obscured, and to what extent.

## **METHOD**

### **Study Design and Sample**

A qualitative approach was used to obtain a detailed understanding of medical personnel's opinions about the EPR display method. Depending on the number of participants, either individual interviews or focus groups were conducted. To achieve this purpose, two surveys were developed. The surveyed institutions included five medium- to large-scale hospitals located in the central region of Japan. Medical personnel employed at these institutions acted as participants for both surveys. Convenience sampling was used for participant recruitment. Participants of different ages, sexes, and positions were included to represent a broad range of opinions. Participants consisted of individuals with three or more years of clinical experience and who accessed an EPR system daily. The Nagoya University Ethics Committee approved the surveys and protocol. Departmental managers from the participating hospitals provided permission to conduct focus groups and interviews.

### **First Survey: Necessity of Patient Information**

The first questionnaire was based on the four categories of the Patient Information Privacy Scale (PIPS),<sup>26</sup> which included information pertaining to: treatment, identification, daily life behavior, and personal life. Contents were adjusted to fit the study's purpose. The questionnaire consisted of 28 patient information items. The participants rated the degree that each item was necessary for carrying out their

respective roles. Participants responded on a 5-point Likert scale ranging from 1 = “*unnecessary*” to 5 = “*absolutely necessary*.” Participants reviewed the questionnaire and stated the degree of necessity of each item from two medical care perspectives: individual care and team-based care.

Semi-structured interviews were used because they were best suited to obtain detailed data. Prior to the interviews, participants received an explanation about the use of a mosaic effect method to temporarily obscure information the patient did not want disclosed to medical practitioners as a means of implementing control rights for patients’ personal information. After doing so, the participants were interviewed using questions derived from an interview guide. Examples of questions included the following: “What do you think about information privacy?” “If certain information on the EPR system was hidden by mosaic-blurring, how do you think this would hinder individual duties?” and “How do you think mosaic-blurring would hinder the provision of team-based care?” Two authors of this study and three nursing teachers closely reviewed the guide. Focus groups were used because they effectively captured the group’s opinions and attitudes about a particular topic in a short amount of time.<sup>27</sup> The sample was divided into 11 focus groups, each consisting of five to seven participants from each medical department. Focus groups discussions took approximately 60 minutes. Since it was unfeasible to organize physicians’ participation in focus groups, researchers conducted 30-minute one-on-one interviews with this participant group. Researchers conducted all interviews, which occurred in a hospital conference room. Participants consented to interview recording using a digital voice recorder and interviews ended when there were no more utterances. Data was collected between March–August, 2012.

### **Second Survey: Mock-up Display Feedback**

Building on the results of the first survey, participants viewed a mock-up display based on the actual EPR screen to obtain a concrete image of what the method would look like in practice. In this example, the case information from a simulated patient with mild stroke symptoms was presented on the screen. When the patient had made a request for information privacy, pixelation was applied to the corresponding information on the EPR screen so that it could not be read directly. However, if a need to

access this information occurred, a mouse click on the mosaic (pixelation) removed the blur and presented the necessary information (Figure 1). After several readjustments to the mock-up display, four nurses tested it to verify ease of operation.

The second set of interviews involved 13 focus groups in a university hospital, each including 5 participants. Interviews lasted approximately 60 minutes. Subsequently, physicians were individually interviewed for around 30 minutes. Each participant was provided with a personal computer with the mock-up display installed. Interviews were based on the interview guide, and questions commenced after participants had mastered system operation. Participants responded freely to the three main themes of the interview: 1) privacy-prioritized display method for cases when EPR is viewed by team members, 2) how duties will be affected by discrepancies in concealed information based on patient relationships, and 3) method of erasing mosaics that concealed information. Data were collected between January–July, 2014.

## **Data Analysis**

Graneheim et al.'s steps for content analysis were used.<sup>28</sup> Field notes written during intervals between data collection were included in analysis to ensure important background information was obtained. The study's two authors discussed interview data until a consensus was reached about categories and sub-categories. An independent nursing teacher well-versed in qualitative research verified and confirmed the validity of the categories and sub-categories. To increase the reliability of results, participants' original expressions were transcribed.<sup>29,30</sup> However, partial amendments were made to the context of expressions when they were unclear.

Mean scores and standard deviations were calculated for the 5-point questionnaire. A paired t-test was used to analyze the difference between informative necessity from individual and team-based care perspectives. SPSS version 22.0 (IBM Corp., Tokyo, Japan) was used for statistical analysis.

## **RESULTS**

### **Participants' Characteristics**

All participants were medical personnel, and 78 individuals participated in the questionnaire and interview. Seventy-one participants were interviewed in the second survey. Participants' attributes are shown in Table 1. Since about 40% of the participants were nurses, there were substantially more female than male participants.<sup>31</sup>

## **First Survey**

### ***Necessity of patient information***

Four patient information items had an average of 4.50 or higher in terms of necessity for individual duty performance: patient's name, diagnosis, age/date of birth, and current illness. Educational background had the lowest score (1.90). Along with these, three other patient information items had an average of 4.50 or higher in terms of necessity for team-based care: medications, past medical history, and allergies. Again, educational background had the lowest average score (2.22) (Table 2).

A comparison of individual duties and team-based care perspectives revealed significant differences for 11 items (Table 2). Participants (n = 71) from particular specialties tended to provide higher scores for the team-based care perspective.

Furthermore, conducting the same comparison between each medical specialty revealed the same overall trend. Specifically, participants provided higher scores when considering performance in team-based care. On the other hand, there were a number of items that received significantly lower scores when team-based care was considered ( $p < 0.05$ ). Specifically, nurses' rated address/telephone number and sleeping habits as less important and dieticians rated leisure activities as less significant.

### ***Opinions regarding method of concealing patient information***

Four categories related to potential issues with EPR system information concealment to respect patients' privacy were identified: quality of medical care, medical safety, effective team-based care, and patient/family communication.



## Second Survey

### *Feedback regarding proposed display method*

After using the privacy-prioritized mock-up display, participants provided feedback about the display method, its impact on duties, and operation method. Three categories were identified (Table 3). Examples of participants' statements are presented below. Subcategories are indicated using double quotation marks and participant statements are italicized.

### *Effectiveness of proposed display method*

Of the 71 participants in the second survey, 42 regarded partial information concealment using a mosaic-blur as a visual indication of patients' information privacy demands. This subcategory was named "understanding of the patient's demand for privacy protection." Here, participants recognized that these patients wanted to conceal certain information.

*If I were to open the EPR in the course of my duties and notice a mosaic-blurring, I would take this as a sign that I should not access that information. It indicates that I should not advance any further. In this sense, the EPR itself is telling me not to look at it. (Social worker)*

Forty-two of the participants cited "specific advantages from using the system." Advantages included raising awareness of privacy protection, understanding patient and personnel relationships, giving patients' peace of mind, and care and service application.

*The system conveys the psychological need of the patient to keep certain information they are sensitive about private, and it gives a hint for how to approach the patient. If the patient says they want to conceal certain information, then this will encourage personnel to be sensitive to this need and avoid the topic when they approach the patient. (Nurse)*

Another nurse said that hiding information with a mosaic-blur had the following advantage:

*I think such a system would be very advantageous for the times when medical personnel need to open the records of a patient in another ward of the hospital. They will be able to do so without being shown unnecessary information. (Nurse)*

Furthermore, nine participants mentioned that mosaic-blurring would be useful for “prevention of confidential information leakage.”

*Nurses sometimes enter information into the medical records by the patient’s bed. Such a system would prevent the information being seen by other patients. (Rehabilitation therapist)*

### ***Problems with proposed display method***

Twenty-seven participants mentioned the “burden of obtaining confidential information.” That is, the burden of ascertaining patients’ privacy needs and displaying EPR information accordingly. Participants of all professions assumed that nurses would be responsible for these operations, and nurses concurred:

*Being in charge of inpatients and inputting their data takes time. I’m worried about the additional burden of concealing certain information with a mosaic-blur. I’m somewhat concerned that it will increase our workload. (Nurse)*

Forty-six participants representing all professions indicated how the “burden of operating the display” would prove problematic in the midst of a busy work environment.

*Each time I see the EPR, I’ll have to click on the mosaic parts, which will take time. (Nurse)*

Moreover, this burden will most strongly impact medical personnel who manage hospital ward-level patients.

*As part of my daily duties, I have to look at the records of many different patients. Pharmacists must view patients’ records every day, and there are around 60 patients in a ward. Therefore, the mosaic blurring will cost time. (Pharmacist)*

Medical staff other than physicians and nurses suggested that users need to understand the display information layout to effectively utilize the system.

*If you don’t know how the system works, you might find it awkward to operate. (Laboratory technician)*

Thirty participants expressed concern that partially concealing information may result in

overlooking information thereby creating the possibility of the “occurrence of incidents resulting from inadequate information.”

*Using the system might result in information being overlooked. Information that was completely disregarded at the time may turn out to be highly important information. If information is overlooked, staff may not be able to realize the fact later.* (Physician)

The display system is designed so that mosaic-blurred information depends on patient relationships. Therefore, record appearance may vary depending on medical personnel professions. Accordingly, participants expressed fear of issues concerning appropriate information sharing.

*If information is displayed according to the will of each patient, then the information medical personnel get to see—or rather the information that they won’t be able to see—will vary from patient to patient. I think that this will cause trouble. I fear that not knowing the right information will result in the patient being disadvantaged.* (Social worker)

Finally, 10 participants stated that partially concealing information with mosaic-blurring could create “unethical behavior” such as curiosity about concealed information or unauthorized access.

*Staff might get curious and want to know the information that is being concealed.* (Radiological technologist)

### ***Suggestions and issues concerning proposed display method improvement***

Sixty-eight participants suggested an “examination/rearrangement of display method of disclosed/non-disclosed information” prior to determining non-displayable information.

*I certainly don’t need to know about excretion behavior issues in order to do my job as a technologist, but it may be a very sensitive issue for the patient. So it would be reasonable to conceal that kind of information from me by mosaic-blurring.* (Radiological technologist)

Additionally, 25 participants suggested an “examination of appearance of confidential information.” To minimize daily work impact, one physician proposed:

*If privacy information is concealed based on the presence or absence of certain qualifications,*

*then I'd suggest that those qualified should, in principle, have access to all the information.* (Physician)

Conversely, a nurse stated:

*Staff in the same ward should be able to view the records to some extent, but the information should be concealed from staff in other wards. Doing so would be good for running daily operations smoothly.* (Nurse)

In addition to the previously discussed responses, 38 participants commented on “operational issues with the proposed display method.”

## **DISCUSSION**

In this study, an EPR display method capable of handling patient privacy was developed. In the first survey, participants were presented with 28 PIPS privacy-related items to ascertain how necessary specific information items were to each medical profession. All medical personnel regarded items such as the patient's name, diagnosis, and current illness as highly important for individual duties and team-based care as well as to guaranteeing medical safety. Furthermore, participants indicated the high value of this information meant that concealment was unacceptable, regardless of whether patients requested privacy protection. Safety-related information is essential and a priority in medical care despite privacy issues. For example, this information can prevent administration of a contraindicated drug related to inadequate reporting of allergy information.<sup>32</sup> Medical personnel also tended to regard information related to inter-professional practice as more important than individual duties. With the proliferation of the team-based approach, both necessary medical and personal life information should be shared. Overall, participants indicated that increased patient information led to increased patient care quality. Van Liew asserts that, “a certain degree of information-sharing facilitates care coordination, while sharing too much information threatens patients' privacy rights and violates professional ethics of confidentiality” (p 412).<sup>33</sup> Results from this study make it clear that inter-professional collaboration entails a greater degree of information sharing, increasing the ease of patient privacy violation. Moreover, in the context of multidisciplinary collaboration, there is an increase in both the types of information that are shared and

the scope of sharing, creating a situation in which the patient's privacy is easily violated. As such, medical personnel must remember to be extremely careful when handling patient information. After proposing partial obscuration of the information displayed on the EPR screen to meet patients' information privacy needs, it became clear that the idea of temporarily obscuring information from medical practitioners solely to protect patient privacy is unaccepted from the viewpoints of quality of medical care, medical safety, effective team-based care, and patient/family communication.

In the second survey, an EPR screen display method designed to protect privacy by applying a temporary mosaic to part of the patient's information was devised. An assessment revealed that the proposed display method for indicating a patient's privacy needs using a mosaic effect enabled participants' to visually recognize these privacy needs. In addition, as the EPR screen display permanently displays unnecessary information,<sup>34</sup> applying a mosaic effect could ultimately prevent the disclosure of private information. This display method allows medical staff to obtain patient information while maintaining privacy protection. In other words, it made medical personnel aware of the considerations required in viewing patient information. Moreover, one of the benefits of this display method is that multiple treating practitioners from different specialties can share recognition that a patient has indicated their desire that certain information not be accessed. This improves medical personnel's privacy awareness, and should enable them to protect information according to each patient's individual requirements.

However, participants were concerned that the display method may lead to an emerging hindrance to their work. In particular, nurses expressed concern about the burden of obtaining confidential information. In Japan, nurses who care for inpatients already have many duties (e.g., interviewing patients, planning nursing care, paperwork) and nurse participants were concerned about workload increase. As previously noted, this study did not attempt to ascertain what kind of information would be flagged as private and on what basis. However, participants believed that nurses would determine privacy needs, offering further explanation for increased workload concerns. Therefore, understanding patients' needs while reducing nurses' burden should be considered.

A merit of EPR systems is the provision of easy information access. Approximately 60% of participants understood that necessary information could be obtained with a simple click of the mouse, but were concerned that repetition of this procedure would reduce efficiency. According to Poissant et al., “time efficiency is one of many benefits targeted by EHR [EPR] implementers” (p 514).<sup>35</sup> That is, “excessive time spent trying to find information could imply less time for hands-on patient care and thereby, patient safety could be put at risk” (p 673).<sup>36</sup> The proposed method does not change the amount of screen switching relative to previous systems. However, the greater the patient’s privacy needs, the more mosaic-blurring, resulting in increased clicking operations. Therefore, it may be necessary to investigate an alternative technology to this method; for example, “mousing over” rather than clicking on obscured sections.

The notion of display methods that respect patients’ needs for privacy raised issues of safety in medical care in both the first and second survey. Specifically, the first survey demonstrated participant attitudes towards display methods that respected patient privacy, while the second survey asked participants to use an actual mock-up display. Despite this, concerns regarding possible incidents were raised. In particular, the prominent current attitude among medical personnel seemed to be that if information is not visible (even for a moment), the opportunity to acquire that information will be limited and could lead to an incident. This may adversely affect patients’ care by interrupting the flow of information.<sup>37</sup> While a system that temporarily obscures information may not be the perfect solution, most participants acknowledged the importance of protecting patient privacy. Consequently, it will be necessary to devise a method of operating the display that makes every effort to ensure that information that could lead to an incident is not obscured.

To date, there have been scarce examples of systems where patients can proactively assert their right to control personal information, refuse to provide information, or set a range of information sharing.<sup>38</sup> However, previous research demonstrates changes in awareness and attitudes toward patient privacy. There is research underway regarding development of a user interface that assigns patient approval for access to electronic health record data.<sup>21</sup> Given that “privacy means different things to

different people” (p 668),<sup>1</sup> it is essential that medical personnel commit to confirming each patient’s exact privacy needs. Through this process, medical personnel will handle patient information more cautiously, and the display system will foster respect for patient privacy.

### **Implications for the Display Method Based on Privacy Protection**

Using the proposed display method made participants aware that some EPR information can remain private. In Japan, there are many low-importance information items nurses obtain from their patients (e.g., educational background). This study revealed that many types of medical personnel do not consider such information necessary. Consistent with a study of nurses,<sup>39</sup> this implies that low-importance information be immediately concealed. Additionally, EPR systems are generally designed for all users to view the same display, regardless of profession. As a result, there is a need to review the information required by specific types of medical personnel and examine how to ensure that professionals can access only required information.

Moreover, medical personnel have been known to unethically access patient data.<sup>40,41</sup> The mosaic-blur method does not necessarily restrict them from accessing the data, since they can simply click the blur and view the information. Therefore, it is not an access control method. However, as a substitute for a method that actually enforces granular access controls, applying a mosaic effect may still help to emphasize the need for patient privacy to medical personnel.

### **Limitations**

One limitation of this study is that all participants were hospital staff that used a particular hospital information system; therefore, their opinions do not represent all healthcare settings. Consequently, the design may not be feasible for other EPR displays. Striking the right balance between medical care safety, workflow efficiency, and patients’ privacy needs is challenging; however, temporarily concealing confidential information will effectively protect privacy. That said, this research is at the mock-up stage, and the system does not represent the operation of a privacy-prioritized display method in

an actual EPR system. Other matters requiring further examination are if mosaic-blurred items and content should be based on the four PIPS categories or more precise criteria. Therefore, future research should examine patients' understanding of and demands about privacy display systems using a mosaic-blur method.

## **CONCLUSION**

The proliferation of an inter-professional team approach has led to an expansion in the range of patient information sharing and types of information shared. Participants could accept a display method that temporarily conceals confidential information according to patient privacy needs if information essential to medical safety remains accessible. However, participants expressed that prioritizing patient privacy by partially concealing information with mosaic-blurring would pose problems in healthcare quality and safety.

This study also highlighted issues requiring resolution to preserve the right to privacy by balancing patients' privacy needs against the necessity of information for medical personnel. With the increased number of EPR systems available, patients' right to protect privacy is gaining importance and there is a great need for a display method that enables easy utilization and patient information sharing while respecting patients' privacy.



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**TABLE AND FIGURE LEGENDS**

Table 1. Participants' characteristics

Table 2. Degree of necessity of patient information from individual versus team-based care perspectives

(n = 78)

Table 3. Participants' feedback regarding the patient privacy-prioritized display system (n = 71)

Figure 1. Screen image of the mock-up privacy-prioritized electronic patient records system

Table 1. Participants' characteristics

Attributes	N = 78 <sup>1</sup>	N = 71 <sup>2</sup>
Sex, n (%)	Male: 23 (29.5)	Male: 25 (35.2)
	Female: 55 (70.5)	Female: 46 (64.8)
Age, mean (SD) [range], y	36.25 (6.98) [25–51]	35.96 (6.75) [24–52]
Profession, n (%)		
Physician	9 (11.5)	6 (8.5)
Nurse	28 (35.9)	30 (42.3)
Physiotherapist	4 (5.1)	3 (4.2)
Occupational therapist	2 (2.6)	2 (2.8)
Social worker	4 (5.1)	5 (7.0)
Clinical psychotherapist	1 (1.3)	0 (0.0)
Pharmacist	7 (9.0)	5 (7.0)
Registered dietician	5 (6.4)	5 (7.0)
Clinical laboratory technologist	5 (6.4)	3 (4.2)
Clinical engineer	2 (2.6)	2 (2.8)
Radiological technologist	6 (7.7)	5 (7.0)
Medical clerk	5 (6.4)	5 (7.0)
Position, n (%)		
General staff	36 (46.2)	31 (43.7)
Chief/assistant chief	29 (37.2)	35 (49.3)
Manager/assistant manager	6 (7.7)	3 (4.2)
Director	1 (1.3)	0 (0.0)
Other	6 (7.7)	2 (2.8)
Years of clinical experience, mean (SD)	13.05 (6.58)	12.45 (6.40)
Years of EPR use, mean (SD)	6.23 (1.99)	7.77 (2.53)
Degree of effort toward patient privacy protection, mean (SD) <sup>3</sup>	67.47 (19.15)	65.26 (19.22)

<sup>1</sup>First survey participants

<sup>2</sup>Second survey participants

<sup>3</sup>Degree of effort toward patient privacy protection was calculated based on participant responses on a visual analogue scale (0–100).

EPR: Electronic Patient Record, SD: standard deviation

Table 2. Degree of necessity of patient information from individual versus team-based care perspectives (n = 78)

Patient information items	Individual duties		Team-based care <sup>1</sup>		t-value <sup>2</sup>
	M	SD	M	SD	
<b>Treatment-related information</b>					
Diagnosis	4.72	0.68	4.88	0.33	1.521
Current illness	4.62	0.74	4.78	0.48	1.000
Past medical history	4.33	0.96	4.56	0.69	.973
Medications	4.19	1.11	4.60	0.64	2.789*
Laboratory results	4.28	0.94	4.44	0.78	.270
Infectious status					
HBV/HCV	3.96	1.25	4.34	0.85	2.248*
STI	3.54	1.38	4.04	1.07	3.161*
HIV	3.97	1.33	4.34	0.89	1.837
ADL independence index:					
Feeding behavior	3.83	1.40	4.18	0.99	1.467
Self-excretion behavior	3.60	1.44	4.08	1.09	2.467*
Self-hygiene activity	3.41	1.50	3.97	1.15	3.381*
Mobility	3.81	1.24	4.15	0.91	1.837
Communication	4.19	1.03	4.37	0.83	.445
Worries associated with hospitalization	3.23	1.36	3.81	1.06	4.061**
<b>Personal attribute information</b>					
Patient's name	4.87	0.37	4.88	0.44	.331
Age/date of birth	4.63	0.69	4.62	0.78	.257
Address/phone number	3.47	1.43	3.48	1.33	.600
Occupation	2.95	1.19	3.04	1.16	.000
Educational background	1.90	1.18	2.22	1.19	2.223*
Family members	3.64	1.26	3.82	1.15	.917
<b>Daily behavior-related information</b>					
Dietary habits prior to hospitalization	3.08	1.24	3.41	1.07	1.607
Sleeping habits prior to hospitalization	2.78	1.14	3.12	1.00	1.949
Allergy history (drugs/food)	4.00	1.41	4.53	0.75	2.477*
History of alcohol consumption/ smoking	3.03	1.29	3.27	1.16	.988
<b>Personal and lifestyle-related information</b>					
Family financial issues	3.12	1.35	3.84	1.05	5.653**
Family's health history	2.79	1.17	3.23	1.12	2.123*
Patient's values/beliefs	3.04	1.19	3.62	1.01	4.854**
Leisure activities	2.35	1.10	2.60	1.06	1.404

Question items were responded to on a 5-point Likert scale (1: *Absolutely unnecessary*, 2: *Slightly necessary*, 3: *Necessary to a certain extent*, 4: *Very necessary*, 5: *Absolutely necessary*). \*p < .01, \*\*p < .001.

<sup>1</sup>When team-based care results were calculated, data from medical clerks were excluded.

<sup>2</sup>Paired t-tests were conducted after excluding data from medical clerks.

HBV: hepatitis B virus, HCV: hepatitis C virus, STI: sexually transmitted infection, ADL: activities of daily living, SD: standard deviation

Table 3. Participants' feedback regarding the patient privacy-prioritized display system (n = 71)

Category	Sub-category	n
Effectiveness of proposed display method	Understanding of the patient's demand for privacy protection	42
	Specific advantages of using the system	42
	Prevention of confidential information leakage	9
Problems with proposed display method	Burden of obtaining confidential information	27
	Burden of operating the display	46
	Occurrence of incidents resulting from inadequate information	30
	Unethical behavior	10
Suggestions and issues concerning proposed display method improvement	Examination/rearrangement of display method of disclosed/non-disclosed information	68
	Examination of appearance of confidential information	25
	Operational issues with the proposed display method	38





患者ID 123456-A

主治医:

担当看護師:

男 血液型 確 A(+) 病棟: 1-4W

看護 全科 N#0 NOTE

メッセージ

看護情報 履歴

データベース 入院サマリー 中間 褥瘡 成人・老年 プレビュー 未確定印刷 確定

褥瘡計画書

登録

リセット

コピー

- VI 運動・知覚① VI 運動・知覚② VII 睡眠 VIII 清潔 IX 環境 X コミュニケーション XI その他
- XII 褥瘡危険因子評価 XIII DPC・連携票 継続看護 XIV 申し送り① XIV 申し送り② 全体像
- I 健康認識① I 健康認識② I 健康認識③ I 健康認識④ II 呼吸 III 循環 IV 栄養 V 排泄

その他の関連情報

便の状態

排便回数  回 /  日

便の性状  排泄方法

排便調節方法  無  有

ストーマ  無  有 部位  種類

尿の状態

排尿回数  回 / 日

( 昼  回 夜  回 )

一日尿量  ml / 分

利尿剤の使用  無  有

自覚症状

無  頻尿  多尿  乏尿  残尿感  血尿

膿尿  失禁  排尿時痛  排尿困難

腸蠕動音  無  亢進  微弱  金属音  正常

腹音膨満感  無  有

緊満  無  有

圧痛  無  有

打診異常  無  有

排ガス  無  有

腹壁皮下静脈怒張  無  有

悪心  無  有

嘔気  無  有

嘔吐  無  有

腹囲  cm

アセスメント

Assessment area with a green mosaic background.

If you click on part of the mosaic, you will be able to see privacy information.