

# ICT Supported Communication Between Patients and Staff at Radiology Departments

Susanne Hjorth Hansen

Department of Communication and Psychology Aalborg University, Department of Radiography University College North Denmark

## Introduction

*Digital Post* is a secure web application for written digital communication between citizens and authorities in Denmark. Since November 2014, it has been mandatory for individuals above the age of 15 registered with a Danish civil registration number (CPR number), to receive messages from public authorities as *Digital Post* including referrals from public hospitals. By the end of 2015 80% of the written communication between citizens and the health care system will be carried out by digital means in order to make workflow more effective and reduce costs for paper and stamps [1].

In governmental strategies for digitalization emphasis is on digital distribution of information from authorities to citizens [1]. However, *Digital Post* can be used as means of two way communication between citizens and authorities, and thus be a tool for involving the patient in decision making and planning of his/her care pathway, which is a policy goal for both politicians, healthcare professionals and patient organisations [2]–[4].

The *Digital Post* user interface is similar to that of an email system. When health care systems provide for email consultations, patients appreciate the possibility for communication with healthcare professionals concerning non-acute conditions, appointment scheduling, flexibility in when to write, read, and respond, etc. Healthcare professionals acknowledge the advantages of flexibility and possibilities of greater continuity in the treatment, but are also concerned about the use of time, and risk of compromising the patients sensitive personal data [5]–[8]. The use of *Digital Post* for communication between patients and healthcare professionals affords the benefits of email communication, and thus the possibilities for involving the patient in decision making and planning of his/her care pathway, with no risk of compromising the patients sensitive personal data<sup>1</sup>. However, the use of time for written communication will still be a concern.

Patients undergoing X-ray examinations and scannings communicate with healthcare professionals at the radiology department for a relatively short period of time compared to the care pathway in total. Outpatients receive a *Digital Post* message comprised of the scheduled time, information on how the examination is performed and how the patient can prepare for

the examination. If the patient wants to alter the scheduled time, or need some more information on the examination, or scanning the traditional means of communication is a telephone call in opening hours. *Digital Post* offers itself as an alternative means of communication between patients and healthcare professionals at radiology departments.

How *Digital Post* can be a tool for involving the patient in decision making and planning of X-ray examinations and scannings is being investigated in an Action Research project.

This abstract describes the results of the initial actions focusing on exploring potentials for using *Digital Post* for dialogue between patients and healthcare professionals at radiology departments.

## Materials and Methods

The project is carried out in cooperation with representatives for patients and staff at the Department of Radiology, Diagnostic Centre, Regional Hospital Silkeborg, Central Denmark Region. Approximately 80,000 patients undergo X-ray examinations and scannings at the department every year [10].

A dialogue conference initiated the project in the spring 2014. The purpose was to explore visions and ideas in relation to *Digital Post* dialogue. The dialogue conference was conducted according to principles for Action Research dialogue conferences [11] combined with participatory design methods for designing learning processes supported by information and communication technology [12]. The 17 participants represented patients, secretaries, radiographers, radiologists, communication workers, staff manager, ICT managers at all levels (department, hospital and region) and an ICT developer from a company providing *Digital Post* solutions.

Visions and ideas from the dialogue conference formed the basis of 5 subsequent workshops performing iterative processes on developing and testing designs for using *Digital Post* as means for dialogue. The workshops was conducted according to principles of participatory design and usability testing [13]–[15]. Workshop participants represented patients, secretaries, radiographers and communication employees depending on the objective of the specific workshop.

In total 6 representatives for patients, 2 secretaries, 4 radiographers, 1 communication employee and 1 local ICT manager participated in the workshops. One representative for the patients and all of the representatives for the staff participated in the initiating dialogue conference.

The project has been assessed by the Danish Scientific Ethical Committee in Region North. The Committee found that as the project is not a Health Science Research project, consequently it shall not be reported according to the Law on Scientific Ethical Consideration of Health Science Research Projects (no. 593, 14/6/2011).

Every participant signed an informed consent statement at the dialogue conference and at each workshop.

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<sup>1</sup> Messages from authorities to citizens are sent by Secure/Multipurpose Internet Mail Extensions (S/MIME) protocols through an Electronic Document Management System or an email client (i.e. Microsoft Outlook). This provides authentication of origin by digital signatures, and data confidentiality by encryption.

Citizens access *Digital Post* by a twostep authentication called *NemID* consisting of username and password, followed by a one-time password from a code card. Messages sent by citizens via *Digital Post* are encrypted by the certificate indicated for the receiving address by the authority [9].

## Results

The dialogue conference disclosed the participants' visions and ideas on using Digital Post for communication as means for enhancing cooperation, coordination of information and shared decision making by patient and staff. The secure written communication can provide for including patients knowledge and preferences in scheduling, preparing and following up on X-ray examinations and scannings.

At the workshops, participants designed and tested prototypes of tools to support the use of Digital Post for communication as means for cooperation, coordination and shared decision making. The prototypes are:

*Patients guide for Digital Post dialogue.* The guide consists of illustrations and a short text (190 words).

*Staff guide for Digital Post dialogue.* The guide consists of:

- Guidelines for conducting Digital Post dialogue to ensure both patient care and patient data protection.
- Drafts for answering Digital Post messages from patients. The drafts comprise wording suggestions for answering common questions asked by patients.
- Manual for using and producing new drafts for answering Digital Post messages from patients.

The templates for information are written in Microsoft Office Word and will be applied to the relevant communication systems as part of the implementation process:

- The patients' guide will be published on the department home-page. A link and brief information will be included in the Digital Post referrals.
- The staff guidelines and manual will be created in e-Dok, the document management system in the Central Denmark Region. e-Dok is open to the public.
- The staff guide drafts will be created as email message templates and signatures in Microsoft Office Outlook, which is the mail system used by staff for receiving and sending Digital Post.

## Discussion

This project has pointed out possibilities for expanding the utility of the common public ICT system Digital Post. Patients and healthcare professionals have designed and tested tools for using existing technology for communication in order to enhance cooperation, coordination and shared decision making in relation to X-ray examinations and scannings. The design of the tools take into consideration coherence in Digital Post correspondence, efficiency in working processes and protection of patients personal data.

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## Address for correspondence

Susanne Hjorth Hansen

Email [shh@hum.aau.dk](mailto:shh@hum.aau.dk) or [shh@ucn.dk](mailto:shh@ucn.dk)

Mobile +45 7269 1038