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Developing a Home-Based Palliative Care Information System by Utilizing Wired/Wireless Network and Mobile Computing System in Japan

Nobutaka Kikuchi[a,b,c], Noriaki Aoki[a,b,d], Sachiko Ohta[a,b,e], May Ito[c], Takeshi Okabe[c], Kim Dunn [a,f]

[a] *School of Health Information Sciences, University of Texas Health Science Center at Houston, Houston, TX, USA*
[b] *Center for Health Service, Outcome Research and Development – Japan (CHORD-J), Tokyo, Japan*
[c] *Okabe Clinic Regional Palliative Care Program, Natori, Japan*
[d] *University Hospital Medical Information Network (UMIN) Center, The University of Tokyo Hospital, Tokyo, Japan*
[e] *Okayama Central Hospital, Okayama, Japan*
[f] *The Schull Institute, Houston, TX, USA*

Abstract

Interpersonal communications within specialized community palliative care consulting teams are fundamental to patient care. However, the process of communication has not been well supported technologically. We developed a network-based information system to improve communication within team. The Network Tool is a database system developed using FileMaker Pro® (File Maker, Inc., CA, USA), which utilizes the wired/wireless network and the mobile computing system. It enables interactive communications between the office headquarters and professionals over the intranet. This database comprises information relevant to the patients including details on their family, home, medication, and actual clinical status assessed by each professional. It is designed to improve clinical information, facilitate an interdisciplinary team approach, and allow collecting structured clinical data in general practice on a daily basis. The system has been successfully implemented and used, especially to improve communication within the interdisciplinary team. This system supports practices that are consistent with improvements in the quality of care. An infrastructure that shares the database of patient's records was developed for home-based palliative care.

Keywords:

delivery of health care, palliative care,
Computerized Health Record

Introduction

In recent years, information and communication technology (ICT) support system has been recognized as a tool for improving care delivery, symptom assessment and communication between medical staff and patients/families in palliative care settings [1-3]. However, the efficient sharing of information and the process of communication within interdisciplinary teams has not been well supported technologically in the delivery of home-based palliative care. To ensure that home-based palliative care is provided reliably and sustainably, we developed a network-based information system for specialized palliative care consulting teams in the community. The objectives of this project are: (1) to improve the efficiency of visiting clinicians and nurses who are overburdened with paperwork and frustrated with bottlenecks in the information exchange process, and (2) to improve the sharing of information within interdisciplinary teams by using a network-based information system (computerized medical records).

Materials and methods

We have deployed the information system on the Okabe Clinic Regional Palliative Care Program since July 2003.

The Information System

The network tool is a database system using FileMaker Pro® (FileMaker, Inc. CA, USA), which utilizes the wired/wireless network and the mobile computing system.

This system provides the connectivity required to enable complete workforce mobility. Team staff can carry their mobile computers when working in the field. More importantly, with integrated modem, wireless LAN capabilities, and fast 10/100 Ethernet, the mobile computer allows users to stay connected at all times. This enables interactive communication between the office headquarters and each professional over the intranet.

This database comprises information relevant to the patients including details about their medical history, family, medication, administrative function and actual clinical status as assessed by each professional. It also includes narrative visit notes by each interdisciplinary expertise, physician orders, prescriptions, care plans and laboratory data. It was designed to improve clinical information, facilitate an interdisciplinary team approach, and enable the collection of structured clinical data in general practice on a daily basis.

During each visit, a professional briefly assesses the symptoms, side-effects, and other key problems of the patient

and enters this information into the system. Most importantly, visiting nurses measure vital signs including pain score [4] based on numeric rating scale (from 0 to 10). They also assess patients' symptoms including general fatigue, anorexia, nausea, dyspnea at rest, edema, dry mouth, drowsiness, insomnia, anxiety, bed sore, dysphagia, depression and delirium based on symptom intensity score (from 0 [absent] to 3 [severe]).

Subsequently, when other professionals access the patient's electronic medical record from any remote location, a window containing the patient's complete assessment information is displayed.

Physicians and managers receive updates regarding the quality of treatment being received by the patient. Each patient's identifiable data is securely and confidentially maintained on the server located at the office headquarters.

Results

The system has been successfully implemented and used, especially to improve communication within the interdisciplinary team. Using this system, field staff can electronically submit their clinical visit notes – a process that was previously done on paper, mostly in a narrative form. Since the users are required to fill out the information in a structured electronic format, we can accurately and efficiently collect a considerable amount of valuable data for future analysis and develop superior structured care plans before each patient visit. Further, the system also complements an interdisciplinary team meeting and offers 24 hours/ 7 days assistance.

After deploying this system, we have been able to improve patient care by reducing the administrative work load of our mobile workers. Clinicians and nurses can now focus on delivering high quality care, thereby significantly improving their own quality of life. In addition, field nurses may be able to make three or four additional visit each week. This system also assists in the operation of home-based palliative care during night and over the weekend; this has led to an increase in the number of patients under each team. To date, this system has been used for more than 50 advanced cancer patients and approximately 200 chronically ill patients.

Discussion

By equipping field staff with this system, we have enabled them to increase the time spent in providing care at patients' homes and less time in completing their paperwork. Now, as field staff makes their daily visit to patients' homes, the mobile computers ensure that they have all the required information with them. Hence, patient records, including medical and care history, medications, and insurance information are just a few clicks away.

The interdisciplinary team approach has been widely accepted as appropriate in the palliative care setting. The team approach, which involves shared decision making, the efficient sharing information, and the mutual understanding of the role of each member, is different from the sequential multidisciplinary care that frequently characterizes "usual" hospital care. In order to promote interdisciplinary team care, the information system we developed led to an expansion of each professional role and function, advancement of knowledge and techniques, and improvement of sharing information within team.

In this project, we did not consider the quality of symptom control and the cost of care in relation to this system. Further studies should assess symptom control as well as patient's and family's satisfaction. Cost of care also needs to be addressed in future researches.

Conclusion

An infrastructure that facilitates sharing of the database of patient's record was developed for home-based palliative care provided by the interdisciplinary team.

As a result, we now have access to all patient-related data collected by the interdisciplinary team and can leverage this data to develop new treatment plans and processes that will further enable the consistent delivery of high-quality patient care across the community.

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Address for correspondence

Nobutaka Kikuchi, MD, PhD, MS
School of Health Information Sciences,
University of Texas Health Science Center at Houston
7000 Fannin, Houston, TX 77030, USA.
E-mail: Nobutaka.Kikuchi@uth.tmc.edu