HealthIn: Toward a New Paradigm for Physician-Patient Communication

Ellen A. A. Jaatun[1,2], Kari Sand[2], Martin Gilje Jaatun[3]

[1] University of Edinburgh, Edinburgh, UK
[2] European Palliative Care Research Centre, Department of Cancer Research and Molecular Medicine, Faculty of Medicine, Norwegian University of Science and Technology, Trondheim, Norway
[3] SINTEF ICT, Trondheim, Norway

Abstract. Communication in health care is dominated by oral communication which is not supported by the EHR systems. Patient work is segmented, and involves several partners in a collaboration where the network of partners is loose and invisible. In this paper we argue that an Electronic Health Record system structured along the principles of current social network applications would both make these interconnections more visible, and improve collaboration for all involved parties along the patient trajectory.

1 Introduction

Internet-based technology is to a great extent available to the general population. In daily life, letters and postcards have been replaced by email and SMS. The healthcare profession has gone through a major development on the electronic frontier. Healthcare is sub-specialized, and each worker is able to look up detailed information on each patient or illness in the blink of an eye. Patients also have more knowledge about their illness which to a large extent is acquired through internet search. Today's patients and health care workers would appear to be a perfect match, where both have abundant health-related knowledge that can be used to cure or alleviate illness. However, there are several factors that make this collaboration less efficient than desired.

Even though modern hospitals and health care institutions have based much of their communications around electronic devices, it seems like their potential is still not close to be exploited. In modern health care electronic health records and computers are available to a large extent, nevertheless oral communication between colleges has proved to be the most common way of acquiring data and getting information about patients. The same study also pointed out how the high frequency of communication caused interruption in daily work and chain of thoughts for the health care provider who was being called upon [1].

Regarding e-communication between health care workers there is still no evidence for use, benefit or effect [2]. The clinical benefit of use of email between patients /caregivers and health care professionals was reviewed in a recent Cochrane review, included nine trials with a total of 1733 patients [3]. This study proved some benefit of use but for most studies it was hard to gain evidence. On the other hand there are a high number of studies where different electronic systems have been used for

assessment or communication in research, where a clinical effect has been proven in the research setting [4-6] .

There seems to be support for the notion that technological methods of communication among health care providers and between health care providers and patients would be profitable[7].To a large extent, the equipment necessary is available and has been so for many years, but still we are not capable of getting the systems into daily practice and benefit from the possible advantages they might give us. The aim of this article is to describe the challenges when changing how we communicate with patients and between colleagues from "face to face" to e-communication systems, by highlighting the most common communication channels currently utilized in the Norwegian and Scottish health care systems. We also want to explore the challenges of traditional communication. A secondary objective is to identify relevant future communication channels in the health care systems, and identify the challenges which may be caused by e-communication systems. The question is to identify which factors might be influenced by the change from traditional communication to e-communication within a health care setting?

1.1   Traditional communication in health care

The term communication stems from the latin word *communicare* which means "to make common". Through verbal and non-verbal interaction, the participants in a communication cooperate to make common understanding or meaning of the topic of interest. In clinical work more than 50 % of all communication between health care professionals is face to face [8]. It is likely that communication between health care workers and patients is close to 100% face to face. This communication is characterized by the possibility of immediate turn taking and immediate feedback, the possibility to repair misunderstandings and the support from non-verbal cues. The face to face communication is also regarded as the best way of creating and maintaining a social relationship. A consultation is an example of professional communication, i.e., that one of the interactants take part in the interaction as part of his/her job, that there are specific professional tasks that are going to be solved or goals to be reached during the interaction, and that the professional party is the one responsible for ensuring that the participants through cooperation reach these goals. Professional interaction is characterized by clearer phases than informal interaction between friends. The interaction is asymmetrical in the way that the health care professional has to be in charge and responsible for the content, presentation of the content and that the take home message is comprehended. The asymmetry is not an obstacle for reaching the goals of the communication; it is rather a benefit, since it is part of the genre expectations in the society that the conversation between a physician and a patient is not symmetrical like a chat between friends. It is easier to reach the professional goal (both the patient's goal and the physician's goal) if the structure of the interaction is recognized [9].

1.2 Work flow and communication flow in health care

Treatment of patients in a health care system is a complex process involving many people. This system tends to be more complicated and involve more people the more complex the situation is, e.g., a sore throat in a toddler is a matter between the patient, parents and the GP; but pain treatment for a palliative care patient might involve the patient, family, GP, community nurse, oncologist, radiologist and specialist pain team. Tradition has formed the way we work and has a great influence on the communication and collaboration between co-workers within a health care institution, and communication to or from the health care institution. This tradition is based on the evolution of the professions, and traits are quite visible even today. The way physicians learn new skills and obtain knowledge and information in the medical profession has not changed significantly with the electronic era. For physicians, learning is related to work in a master/apprentice relationship. This means that the apprentice will learn to categorize and treat patients from a more skilled co-worker [1, 10, 11]. The skilled physician ("master") will in this way be more interrupted in his or her work, but through the relationship both will obtain more knowledge about the medical practice. The master/apprentice relationship is also a very important relationship in regard to sub-specialization of the medical care. In terms of communication, it tends to form close bonding between each sub-specialty where information is kept within the group. In this setting other co-workers might find it hard to be integrated and participate in a wider communication [12]. Collaboration of physicians from different subspecialties or levels of health care providers might have some kind of master/apprentice relationship, but the commitment and relation between the professionals are not always interpreted as collaboration. A recent study assessed the evaluation of interaction between hospital physicians and general practitioners in Norway, and found that a positively evaluated interaction was strongly correlated with existence of face-to-face contact between the two physicians [13].

Nursing has evolved from other traditions and other social circumstances. The work and communication is more based on teamwork and collaboration in a more flat structured way than among physicians. There is a well-defined line of responsibility between the two professions which also influences the route of communication [12, 14].

In most hospitals, nurses work as gate keepers for the physicians. This is a virtue of necessity in order to reduce the burden of inquiries to the physician on duty. To communicate information is also within boundaries of each profession. The secretary answers enquiries about the time for the patient's appointment, the nurse about more general health or illness issues and the physician answers enquiries related to specific information concerning each patient and specified patient illness issues.

Technology offers a possibility to include partners in a conversation or collaboration in a way traditional methods don't. In this setting patients could be more involved. Patient involvement might also raise the consciousness about how each individual can take an active part in their own healing process or maintaining a good health by being a part of the collaborating team.

1.3 Bringing health care communication into the 21st century

E-health systems are being developed at a high speed. A health care worker is surrounded by technology, and very many procedures are either controlled by an electronic device, or the procedure is performed by an electronic device, e.g., anesthesia during surgery and robot surgery for prostate cancer. During a regular work day patients are registered and forms are filled in and health care workers are dependent on a vast number of computer programs in order to do their work. Nevertheless is communication still mainly performed the old fashioned way [1, 10, 11] . We will try to point at some reasons why we think this might be so.

2 Security issues and patient confidentiality

One of the problems related to paper and oral communication is the relation to physical proximity and information sharing. Electronic communication would seem to be a natural alternative, but sharing of sensitive health information is strongly regulated and has become a major obstacle in the e-health setting. Data must be treated in accordance with both EU legislation and the different national data protection legislation standards [15].

One major challenge with information flow between patient and physician is that virtually all communication, even that which in isolation would be considered innocuous, turns into sensitive personal identifiable information governed by, e.g., the European Privacy Directive [16].

Conventional email is not suited to communication of personal health information, due to the lack of a proper security infrastructure. Secure email solutions such as S/MIME or PGP provide more than sufficient security from a purely technical perspective, but unfortunately the average user has demonstrated a lack of aptitude when it comes to security software [17]. This implies that a patient is likely to inadvertently send sensitive health information in clear text when contacting the physician via email. Furthermore, the proliferation of malware on home computers means that no patient can be sure that their computer does not contain backdoors and spyware that may compromise their information [18]. In order to protect the patients from themselves, the current consensus seems to be the development of portal solutions, where no information is stored on the patient's computer.

Technically, securing the communication channel between a patient's computer and the physician's server is straightforward; solutions like SSL, while not flawless, have served to protect online shopping and internet banking (although some argue that our health data is more sensitive than our banking data [19]), and is considered to work reasonably well for most purposes.

However, there are currently legal hurdles which restrict the extent of digital communication. Primarily, it is the privacy regulations that limit this, but more specific national laws are making this even more difficult; currently it is not even permitted to transmit patient information across local health authority boundaries.

3   Traditional work flow in transition

Some claim that EMR systems developed are merely a copy of the paper record transferred to a computer, implying that the potential benefits are far from being realized. Ideally, we want to standardize care, investigation and treatment in order to improve and measure the cost/benefit ratio.   Many good systems have been developed, e.g. decision support systems, but the benefit of these systems has been very difficult to evaluate [20, 21]. One reason is that the systems change the way we work, and the set of variables increases beyond what a sensible statistical method can measure.   Decision support systems would also change the pattern of communication within a health care group, and challenge the master/apprentice relationship [22] The health care provided will presumably be more standardized, and it will be more easy to compare. In case the master/apprentice relationship is good and prosperous (i.e., the "master" has a lot of knowledge to pass on to the "apprentice"), minimizing this relationship might reduce the quality of health care. In the opposite case, where the master / apprentice relationship doesn't work well, a change might be a better alternative. By standardizing, health care decisions, such decisions might to a larger extent be based on evidence, rather than making decisions based on experience or local tradition.   A decision support system would thus need to be developed from medical evidence; whereas decisions made by a master/apprentice system might be evidence-based, they might also be based on tradition and experience. Traditional decision making is made through discussion and with support from peers. This type of work is also a part of the collaboration in health care. The technological decision making is based on individuality with support from evidence.

4   EHR systems

Studies of communication patterns in an emergency unit have suggested that 90 % of the information transfer is performed orally. Even with a working EHR system in a high density communication area like the emergency unit, the information transfer is not passed on using the EHR system [23, 24]. This might be related to the tradition of information transfer, but it also indicates that the properties of the EHR does not support quick information transfer, and one can possibly also claim that the EHR used today is merely an instrument for putting information into, and not flexible enough for extracting information in all given settings. From this train of thought it is hard to understand how giving patient's access to the EHR should improve health care communication and information transfer.
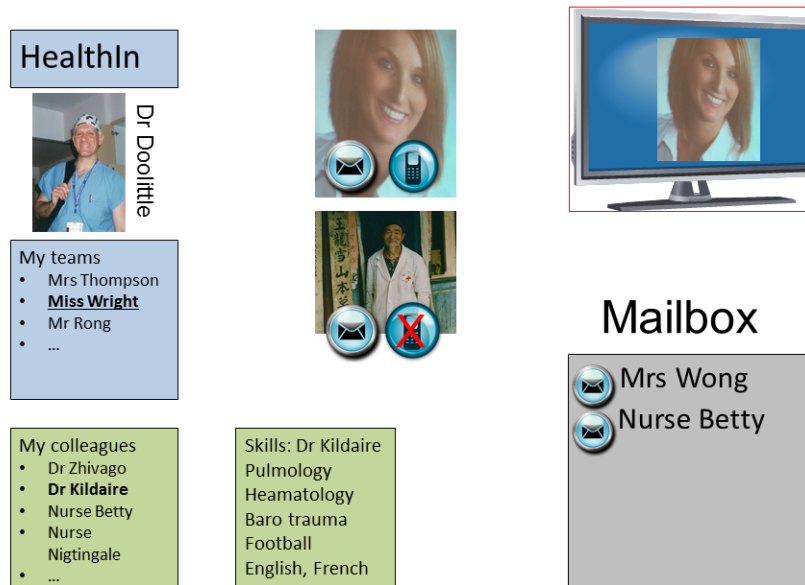
Fig. 1: Example of EHR Social Network Application

4.1 The EHR as a communication system

Technology seems to change the way we work, and technology challenges the traditional way of learning. It also widens the possibilities of communication. In many other fields we have exploited new possibilities offered by technology; e.g., in banking, physical proximity between customer and bank is no longer considered necessary. In health care we have access to the same technology, but we are not able to exploit its full potential. In different settings there are different needs. The operation theatre or the emergency room does not afford extensive reading and writing in order to communicate the needed information. The needs for communication in this setting will be different than in the Lung clinic where patients will have a follow-up for years, where both GP and hospital will be involved. The EHR system will have to be flexible enough to serve both purposes and yet have a level of conformity in order to be understood and usable by personnel crossing between the different departments.

The EHR should also promote face-to-face contact and be able to identify participants in a collaboration or conversation. There should also be an option to identify potential collaborators as available or occupied and the physical location should also be revealed. Patients accessing this network should be based on invitation. The system should also encourage short messages or short statements but also provide options for extensive reports, video or audio recording/messages for further information. A feedback system for participant interaction in the media, task or message should also be implemented.

These are all options available in different social media today. Social networks are identified and made accessible or inaccessible in all social media concepts. Skype has

an option for face to face communication with an already established network; you also have chat function for short messages. Twitter challenges the short message or statement option, and LinkedIn provides a professional network of the kind that might be suitable for rolling out decision support systems. All these functionalities should be implemented in one system accessible either from home (patients), in hospitals or a GP practice.

5 Conclusion

Current communication paradigms in the health care sector have not been significantly adjusted with the introduction of modern technology, and the full potential of the new technology is not being reached. We believe that Electronic Health Records could have been extended with features borrowed from various social networks. This way we might be able to provide easier and more accessible communication for health care professionals, a more flexible and usable health care record, give patients better information, and facilitate closer collaboration for all participants within a patient trajectory.

References

1. Coiera, E., Tombs, V.: Communication behaviours in a hospital setting: an observational study. BMJ 316, 673-676 (1998)
2. Pappas, Y., Atherton, H., Sawmynaden, P., Car, J.: Email for clinical communication between healthcare professionals. Cochrane Database Syst Rev 9, CD007979 (2012)
3. Atherton, H., Sawmynaden, P., Sheikh, A., Majeed, A., Car, J.: Email for clinical communication between patients/caregivers and healthcare professionals. Cochrane Database Syst Rev 11, CD007978 (2012)
4. Hjermstad, M.J., Lie, H.C., Caraceni, A., Currow, D.C., Fainsinger, R.L., Gundersen, O.E., Haugen, D.F., Heitzer, E., Radbruch, L., Stone, P.C., Strasser, F., Kaasa, S., Loge, J.H.: Computer-based symptom assessment is feasible in patients with advanced cancer: results from an international multicenter study, the EPCRC-CSA. Journal of pain and symptom management 44, 639-654 (2012)
5. Cox, A., Illsley, M., Knibb, W., Lucas, C., O'Driscoll, M., Potter, C., Flowerday, A., Faithfull, S.: The acceptability of e-technology to monitor and assess patient symptoms following palliative radiotherapy for lung cancer. Palliative medicine 25, 675-681 (2011)
6. Gaertner, J., Elsner, F., Pollmann-Dahmen, K., Radbruch, L., Sabatowski, R.: Electronic pain diary: a randomized crossover study. Journal of pain and symptom management 28, 259-267 (2004)
7. Brink, J.v.d., Moorman, P., de Boer, M., Pruyn, J., Verwoerd, C., van Bemmel, J.: Involving the patient: A prospective Study on Use, appreciation and effectiveness of an information system in head and neck cancer care. Int J Med Inform 74, 839-849 (2005)

8. Conn, L.G., Lingard, L., Reeves, S., Miller, K.L., Russell, A., Zwarenstein, M.: Communication channels in general internal medicine: a description of baseline patterns for improved interprofessional collaboration. Qualitative health research 19, 943-953 (2009)

9. Linell, P.: Approaching Dialogue. Talk, interaction and contexts in dialogical perspectives. John Benjamins Publishing Company, Amsterdam (1998)

10. Tang, P.C., Jaworski, M.A., Fellencer, C.A., Kreider, N., LaRosa, M.P., Marquardt, W.C.: Clinician information activities in diverse ambulatory care practices. Proceedings : a conference of the American Medical Informatics Association / ... AMIA Annual Fall Symposium. AMIA Fall Symposium 12-16 (1996)

11. Safran, C.: A decade of experience The international working Conference on Electronic Patient Records in Medical Practice, Roterdam (1998)

12. Conn, L.G., Reeves, S., Dainty, K., Kenaszchuk, C.: Interprofessional communication with hospotalist and consutant physicians in general internal medicine: a quantitative study. BioMed Central 12, (2012)

13. Martinussen, P.E.: Hospital Physicians Assessment of their interaction with GPs:The role of physicians and community characteristics. Health policy Article in press, 8 (2013)

14. Hall, P.: Interprofessional teamwork: professional cultures as barriers. Journal of interprofessional care 19 Suppl 1, 188-196 (2005)

15. Jha, A.N., Doolan, D., Grandt, D., Scott, T., Bates, D.W.: The use of health information technology in seven nations. International Journal of Medical Informatics 77, 848-854 (2008)

16. Directive 95/46/EC. In: Parliament, E. (ed.), (1995)

17. Witten, A., Tygar, J.D.: Why Johnny can't encrypt: a usability evaluation of PGP5.0. In: Proc. of the 8th USENIX security symposium. Usenix Assiation, (Year)

18. Jaatun, M.G., Jensen, J., Vegge, H., Halvorsen, F.M., Nergard, R.W.: Fools Download Where Angels Fear to Tread. IEEE Security & Privacy 7, 83-86 (2009)

19. Rowley, R.: A Wish List for Health IT. EHR Bloggers, https://www.practicefusion.com/ehrbloggers/?p=7057 (2011)

20. Kaushal, R., Shojania, K.G., Bates, D.W.: Effects of computerized physician order entry and clinical decision support systems on medication safety: A systematic review. Archives of Internal Medicine 163, 1409-1416 (2003)

21. Garg, A.X., Adhikari, N.K., McDonald, H., Rosas-Arellano, M.P., Devereaux, P.J., Beyene, J., Sam, J., Haynes, R.B.: Effects of computerized clinical decision support systems on practitioner performance and patient outcomes: A systematic review. JAMA 293, 1223-1238 (2005)

22. Lam, S.K.S.: The effects of Group Decision Support Systems and Task Structures on Group Communication and Decision Quality. Journal of Management Information System 13, (1997)

23. Coiera, E.W., Jayasuriya, R.A., Hardy, J., Bannan, A., Thorpe, M.E.C.: Communication loads on clinical staff in the emergency department. Med J Aust 176, 415-418 (2002)

24. Chen, Y.: Documenting Transitional Information in EMR. CHI 2010, Atlanta GA, USA (2010)