



The Role of Telehealth in Educating Hospitalized Patient

Andreas Soejitno

Undergraduate First Semester Student, Faculty of Medicine, Udayana University, Bali, Indonesia

INTRODUCTION

The increased attention to doctor-patient relationship in contemporary medical practice has recently influenced the model of communication. The modern system-based approach which lies in partnership; replacing the old paternalistic model^{1,2} contributes significantly on patient autonomy and rights, enhanced capacity to so-called 'supply-and-demand' of medical information². Giving clear information whenever the patient enquires is considered to be the precondition for patient autonomy³.

Nowadays patient mainly the hospitalized frequently possess many questions related to their health care and management. This encompasses, e.g. details of the result of physical examination and tests, diagnosis, cause of the problems, necessary further investigations, treatment plan, prognosis, etc⁴.

If the doctor is able to cover all of the above questions and provide good patient understanding, he will have accomplished the duty to educate patients^{5,6} and promote diseases prevention⁵.

Moreover, there are several major advantages on patient care⁴, including:

1. reduced level of anxiety and stress,
2. improved clinical outcome,
3. enhanced patient's compliance with treatment, and
4. finally increased patient's satisfaction.

There are still some deficiencies both on doctor or patient-related factors, and also from the method of giving information.

Common deficiencies among doctors are:

1. **Poor communication skills.** Some doctors did not listen seriously to patient's enquiries, consequently

unable to give appropriate information⁴. This can be the result of low cultural competence and medical professionalism behavior^{7,8,9}.

2. **Limited time of consultation.** Certain medical specialty visit lasts not more than 15 minutes¹⁰. In such brief encounter, it's almost impossible to provide detailed answers to patient's inquiries.

While obstacles found in patient-related factors comprise:

1. **Inadequate patient's intelligence and memory.** It is quite difficult to memorize all the information all at once, especially if it contains medical terminologies and detailed mechanism of disease, medication, etc, which are unfamiliar to patients.
2. **Reduced concentration in certain conditions.** Patients are less likely to listen and remember doctor's explanation, mainly if they are unfit due to their symptoms, anxious of their health, or in a shock state (Post Traumatic Stress Disorder)⁴.
3. **Low mobilization.** Most hospitalized patients must have total bed rest, thus hamper them to elicit specific medical information outside the hospital area.

Finally, restraining factors pertinent to the way of giving information involve:

1. **Rare use of media.** In conveying health information, it is better to use certain media, like: brochures, handouts, or videos, instead of verbal communication. Because patient can learn slowly and repeatedly, thus enhance their understanding, provide a permanent record and cover all important points⁴ without interrupting doctor's time.
2. **Lack of information facilities in hospital.** Typical characteristics of hospitals in Indonesia is the non-existing reliable information facilities which provide education and improve patient's knowledge related to disease and health care.

Dipresentasikan di: STROMA Jakarta, 1-2 Maret 2007



SOLVING STRATEGY :

employing telehealth to educate inpatients

Telehealth is defined as the use of communications and information technology to deliver health and health care services, information and education where participants are separated in distance¹¹. Telehealth is a general meaning of modern distant health care (also called in absentia care) that refers to clinical and non-clinical services (mainly for medical education, administration, and research)¹⁴.

Briefly, by establishing telehealth system in hospital means provides patients with digital source of information related to specific diseases, including pathophysiology, anatomy, and pharmacology aspects, also further investigations and treatment plan with attached reasons, and many other related topics. This one-stop information is packed inside integrated ICT (Information and Communication Technology) and can readily be accessed at anytime without any restrictions to its use.

Constructing telehealth system in hospital can fulfill the prerequisite of patients who need more detailed information relevant with their symptoms, which is difficult to be obtained from doctors. This is also useful to encounter the problems of biased information as a result of doctor's poor communication skills. Overall, the use of telehealth as the source of medical information would overcome common problems found in doctor-patient relation, and also from the method of giving information.

SUITABLE MODEL - Structural plan

In order to employ telehealth for the purpose of educating hospitalized patients, it is compulsory to involve the integrated ICT (Information and Communication Technology). The word of 'integrated' means to collaborate two important aspects, i.e.:

1. Software development.
2. Hardware installation.

Software development

The main criterion of telehealth software is effectiveness of conveying medical information to the patient. Likewise appraisal in common medical education system, a successful telehealth can be assessed equally to patient's understanding of the information given. Another important aspects also involved are to evaluate patient's enthusiasm and satisfaction after using the system.

Developing attractive easy-to-learn software might become a proper solution. As a debut step, might become a proper solution. As a debut step, a hospital should

prepare the core curriculum of medical information that is going to be published. Then, a number of health experts may be involved according to their work field to commence the real work of constructing medical information comprehensively, as detail as possible. This phase may need teamwork with medical educator (e.g. lecturer) at the faculty of medicine.

After the core curriculum and its detail have been done, it is now to develop the so-called of attached menu. This attached menu will provide attractive and entertaining aspects to ease the patient's boredom during treatment, but still in the context of education. That information is: accessible medical record (protected by username and password, adhering to the rule of confidentiality), audio-visual aids (medical videos, animated pictures, offline doctor correspondence, music, and so on), medical games, hospital profile and facilities, or even direct payment of health bills via debit or credit card.

The process of developing software and GUI (Graphic User Interface) is delegated to the third-party, especially to competent software developer. As soon after it is ready to be published, the hospital and doctors who are in charge to develop the curriculum should make commitment to update the information and its content regularly following the latest health issues, and to renew facilities according to patient needs. Therefore, it should be an independent department (IT and knowledge) to conduct this duty.

Hardware installation

If development of telehealth software is emphasized on effective communication outcome, hardware installation is focused on efficiency. A model may help to implement the peripheral cost-saving as revealed by the study of TeleHealth Services¹². Required instruments include the following: digital server, signal receiving systems, modulator, antennas, and monitors. For the last two devices are existed in every patient room. By utilizing signal receiver and modulator, data is transmitted locally, without the need of web-based system.

Another proposed model is described in **Figure 1**; the mechanism of data transmission still relies on LAN (Local Area Network). Irini and Branimir explained¹³, LAN users usually connected via shared-line bus or leased lines. To connect several LAN users might employ a 'star topology' (using server as terminal). The report of Sandra et al¹⁴ reveals the employment of point-to-point or point-to-multipoint connection to provide effective tele-educational service.

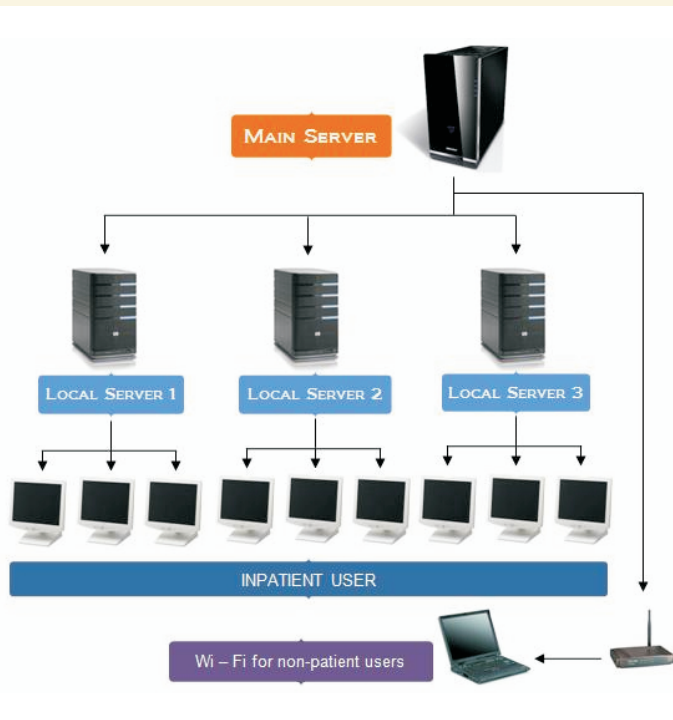


Figure 1. A proposed model for hardware initiation as part of telehealth establishment in hospital.

Ready telehealth software is mounted to main server. This primary server acts as a terminal for subsequent local servers. Each of the local servers will be placed according to the number of departments (e.g. pediatric, surgery, etc) in hospital.

The existence of one local server would provide patient's access to information stored. Every monitor will be attached by QWERTY keyboard and mouse that is plugged into terminal jack and directly connected to local server.

Non-hospitalized patient like visitors, doctors, or nurses can also access the stored information by two alternative ways. First, they may use the digital information kiosk, built by the hospital in certain public area. Second, they can access the information via wireless LAN, through employment of specific devices, such as : laptop, PDAs, and cell phone. This is possible because of the existing PC router.

By using two models of transmission, the content of telehealth system can effectively be accessed by all members of the hospital (health managers, patients, and visitors) without any boundaries.

CHALLENGE IN ESTABLISHMENT PROCESS - How to overcome

Constructional cost

Commonly encountered problem in applying hospital telehealth still concentrates in cost and funding. Providing every room with one or more monitor and input devices need immense cost, mainly if there are many wards.

Certain approaches may be useful to resolve the funding problem :

1. Commercialize the site by providing advertorial spaces. The well established telehealth software would be a good place for promotion. Therefore, the hospital may conduct an advertising column before building the system. Related affiliations such as: pharmaceutical or health insurance company, and medical instrument suppliers are potential clients.
2. Develop a contract with IT provider or producer, especially who are involved in hardware production and software development. The content of contract may vary, but primarily is to receive free-of-charge hardware instruments (LCD, servers, and input devices) or at least at discounted price.
3. In case the fund is still insufficient, constructing telehealth system may be done in stages. It can be started from building telehealth in public areas, and then is continued to first-class ward, then second-class ward, and so on.

Unpredictable user's enthusiasm

Thorough consideration is required in order to anticipate this crucial phenomenon. There are so many factors which affect the user's enthusiasm in using telehealth system. Therefore, before a hospital decides to construct this facility, it is compulsory to conduct randomized sequential surveys among hospitalized patients related to the issue. Otherwise, if the hospital has already established it and access the information via wireless LAN, through employment of specific devices, such as : laptop, PDAs, and cell phone. This is possible because of the existing PC router.

By using two models of transmission, the content of telehealth system can effectively be accessed by all members of the hospital (health managers, patients, and visitors) without any boundaries.

CONCLUSION

After analyzing all the issues above, there are few elaborating points to be concluded. Communicating with modern patient needs special approach, while not many



doctors are able to deliver ideal communication (also influenced by patient's intelligence) because of several barriers. The use of telehealth in educating hospitalized patients are considered to be effective in providing better knowledge, in addition to entertaining perspective.

Development of telehealth system comprises two aspects: software development and hardware initiation. Major potential obstacles which may be encountered are related to constructional funding and unknown user's enthusiasm on post-establishment. These problems may be resolved by using several strategies.

REFERENCES

1. Mendis S. Professional ethics medicine. *India J Med* 1989; 44-61.
2. Hope T, Savulescu J, Judith H. Medical ethics and law: three core concepts in medical ethics: best interests, autonomy and rights. Churchill Livingstone, 2003; 29-37.
3. Seeberg J, Verma K, Mehta M, et al. Family autonomy and patient rights to health care in an 'asian values' context. *FOLK* 2000; 45: 99-103.
4. Lloyd M, Bor R. Communication skills for medicine: giving information. Churchill Livingstone, 1996; 4-5; 43-51.
5. Kode Etik Kedokteran Indonesia. *Chapter 8*. (SK. PB. IDI no:221/PB/A.4/04/2002).
6. Indonesian Medical Council. Penyelenggaraan praktik kedokteran yang baik di Indonesia 2006; Chap. 3: section 7; Chap. 8: section 27b.
7. Fox RC. Cultural Competence and the Culture of Medicine. *N Engl J Med* 2005; 353(13): 1316-19.
8. Sukardi E. A model for teaching professionalism in the undergraduate medical education. *The Indon. J. of Medical and Health Profession Education* 2006: 57-60.
9. Kirk LM, Blank LL. Professional behavior a learner's permit for licensure. *N Engl J Med* 2005; 353(25): 2709-10.
10. Korsch BM, Alley EF. Pediatric interviewing techniques. *Curr Prob Pediatr* 1973; 3:33-42.
11. Definition of telehealth. At <http://www.telehealth.com/wiredmd/home.asp>. Accessed : November 30, 2007.
12. Related instruments for building telehealth. At <http://www.telehealth.com/home.asp> . Accessed : November 30, 2007.
13. Reljin I, Reljin B. Telecommunication requirements in telemedicine. *Ann. the Acad. of Studenica* 2001; 4: 58.
14. Jarvis-Selinger S, Kendall H. A Pan Canadian Environmental Scan of Clinical Telehealth Applications. Division of Continuing Professional Development and Knowledge Translation 2006; 7-12.

