Role of ICT in Improving Medical Care in Northern Thailand

Watana Navacharoen, MD.
Hospital Director,
Maharaj Nakorn Chiang Mai Hospital,
Faculty of Medicine, Chiang Mai University, Thailand

The Maharaj Nakorn Chiang Mai Hospital serves more than 980,000 out-patients and 48,000 in-patients annually. About 30% of the patients are referred from hospitals in Chiang Mai province and about 70%, from hospitals in other northern provinces. Without an efficient communication and referring system, patients waste valuable time and money finding a hospital that is available to admit them. Among the 48,000 in-patients, almost half are critically-ill and suffer from late-stage conditions. For out-patients; long waiting time occurred because of large number of patients requiring services each day, no unifying system for continuous quality improvement, insufficient hospital beds to admit patients and patients’ arrival not coincide with required specialty clinic.

Since 1999, we have developed the hospital policy to improve the quality of care and established a working team including clear objectives to achieve the quality improving purposes. The solutions for the problem are to increase accessibility of patients to quality health care by streamlining hospital administrative processes and by forming health care network with community hospitals. Reducing the amount of paper work and simplifying patient referring process are used to improve the hospital efficiency.

Through health care network, the hospital provides consultations and training courses for community, district, and provincial hospital to improve medical personnel’s skills and knowledge in managing complicated conditions by themselves before deciding to refer patients. The trainings help to reduce costs for patients seeking medical care from the Maharaj Nakorn Chiang Mai Hospital and to improve patients’ access to quality health care from their local hospitals.

The patient administration system was streamlined by taking the advantages of information technology. Patient screening and registration processes were reduced to a single step called “One-Stop Service”. The hospital encouraged information technology and innovations to provide better medical services. Many processes such as patient appointment and referral could be done over the internet. Digital medical record also helped to reduce the amount of necessary paperwork and personnel’s workload. Reducing service time without sacrificing quality provided faster access to service and good healthcare
experiences for patients who came to the hospital from remote areas by using information technology to reduce paper use for routine tasks such as:

- **Medical information system** called “Suandok Medical Information or SMI” is an integrated system for managing patients’ medical data in order to reduce error and improve speed of services.
- **Barcode identification stickers** for patient documents: reduce human error, patient misidentification, and to provide faster service.
- **OPD card** scanning to decrease waiting time, card loss, inter-departmental consultation time, medication error and storage space.
- **IPD card** scanning to reduce card loss, data search time, and to increase service efficiency.
- **Drug safety**: The SMI allows physicians to prescribe medications online and instantly informs the physicians of adverse drug reactions including high alert drugs.
- **24-hrs. Consultation**: the network hospitals can consult and send laboratory results including Electrocardiograph (ECG) via SMS or facsimile to increase accessing speed to medical services by reducing administrative steps, increase work flow efficiency, reduce cost of providing services.
- **Internet registration**: patients can make doctor appointments through internet.
- **Internet referring system**: The patients referred from community and provincial hospitals through internet referring system.
- **Intranet OR setting**.
- **Intranet inter-department consultation**.
- **Call center** to coordinate between all the network hospitals.
- **SMS appointments**: hospital sends appointment date to the patient via SMS.

Under the new “Fast Track” program, the average door-to-needle time for patients with acute myocardial infarction with ST-elevation is decreased and under the new health care network, pre-hospital death rate is also decreased. After the initiatives, patient satisfaction survey conducted at emergency department of the Maharaj Nakorn Chiang Mai Hospital found that 96.5% of patients and relatives are satisfied with services.

It has been a policy of the Maharaj Nakorn Chiang Mai Hospital to promote knowledge sharing among different health care providers. Individual network plays an important role in maintaining its own function through continuous self improvement by knowledge sharing among different networks to determine and maintain Best Practice. Each network also acts as a learning center and a referral site for smaller sub-network.
After implementing the initiative, collaborative networks have expanded to cover many areas of health care services including acute coronary syndrome (ACS), trauma, acute stroke, palliative care, breast cancer and other cancers. Community hospitals’ potential to provide quality patient care has improved to the level comparable to those provided by the Maharah Nakorn Chiang Mai Hospital. Successful collaborative networks have also produced not only patients’ satisfaction but medical personnel’s satisfaction and pride in their work as well.