

Telemedicine: An Opportunity to Both Internationally Educate and Connect Residents

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Introduction

Telemedicine is becoming an increasingly more important modality to teach health care teams. Currently, at our RWJ academic health center, we have the ability to do global conferencing, teaching, and bedside consults with the systems that we have available. We have the capability to exchange health related information not only in the medical and surgical specialties, but also in the public health, dental, and research areas as well. However, we wanted to extend these uses. In addition to utilizing telemedicine to accomplish the well publicized goals of globally teaching other health care professionals and learners, we also want to accomplish a goal that is not frequently written about - connecting resident learners at two institutions. We believe that telemedicine has the potential to not only increase knowledge between the learners, but also to set up life long links for these future professionals to continue their contact with each other. Then, throughout each of their professional careers, many of the residents may chose to work or volunteer at these remote sites.

Telemedicine Defined

Just as Skyping and other forms of real time transmission of information and images is readily available through the internet, this capability has been extended to include the transmission of medically related materials and information. That is, health care problems, information and rounds, such as those addressing morbidity and mortality can be exchanged from one site to another via electronic communications. Telecommunication systems have been shown to have the ability to improve patient assessment and treatment. Videoconferencing, transmission of still images and real time images, e-health including patient portals, remote monitoring of vital signs, continuing medical education and nursing call centers are all part of these IT generated advances.

Telemedicine Delivery

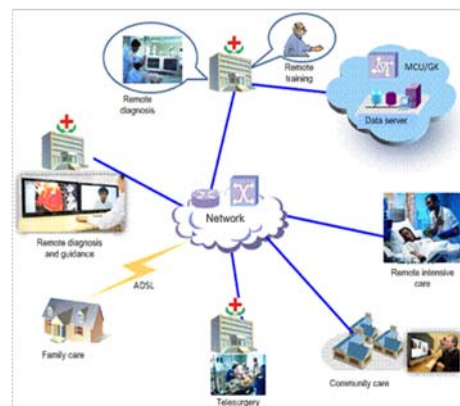
Networked programs link tertiary care hospitals and clinics with outlying clinics and community health centers in rural or suburban areas. The links may use dedicated high-speed lines or the Internet for telecommunication links between sites. Studies by the several agencies within the U.S. Department of Health and Human Services, private vendors and assessments by ATA of its membership place the number of existing telemedicine networks in the United States at roughly 200. These programs involve close to 2,000 medical institutions throughout the country. Of these programs, it is estimated that about half (100) are actively providing patient care services on a daily basis. The others are only occasionally used for patient care and are primarily for administrative or educational use.

Point-to-point connections using private networks are used by hospitals and clinics that deliver services directly or contract out specialty services to independent medical service providers at ambulatory care sites. Radiology, mental health and even intensive care services are being provided under contract using telemedicine to delivery the services.

Methods

One method of training medical and surgical residents is through journal club. At journal clubs dedicated to medical and surgical specialties, select peer reviewed articles are assigned for reading by all participants. One resident, however, is specifically assigned to each article that will be discussed. This resident is expected to not only review the new information in the article, but also to discuss the methods used in the generation of the data and to outline both the strengths and weakness of the research itself and the interpretation of the results. The next step was to take telemedicine and connect residents at a distant site with residents here through journal club.

This year, the concept of connecting residents remotely for journal club was accomplished. A 2 hour urology journal club between our US site and a site in India was organized and took place. The residents studying urology at the Manipal University chose an article to discuss that was published in an Indian medical journal, whereas the US residents chose an article that was published in a US journal. There was a lively discussion between the two groups, which because of the live streaming did not get diminished by the miles separating each conference room. It is hoped that in the future there will not only be more journal clubs between the two groups of residents, but also visiting by each set of residents to the others institution. In addition, since Manipal University has 24 professional institutions, it is hoped that learners in the other fields such as nursing and physical therapy may communicate by telemedicine in the future.



http://www.telepresenceoptions.com/images/zte_telemedicine_architecture.gif



Telemedicine History

Although hard to believe, telemedicine is over 100 years old! "The term telemedicine was coined in the 1970s by the American Thomas Bird and, literally translated, means "healing at a distance" (from Latin "medicus" and Greek "tele"). However, the origins of this evolving technology date back to the early 20th century, when Willem Einthoven, a Dutch physiologist, developed the first electrocardiograph in his laboratory in Leiden. With the use of a string galvanometer and telephone wires, he recorded the electrical cardiac signals of patients in a hospital 1½ km away. He stated: "Where there is a link, actual and figurative, between laboratory and hospital, and collaboration between physiologist and clinician, each remaining master in his territory, there one may fruitfully utilize these new electrical methods of research". Einthoven's electrocardiograph was very large but over the years was transformed into a mobile or even portable monitoring device. Nevertheless, he can be regarded as the first clinician scientist to develop and systematically apply a technique that is very similar to telemedicine in the modern sense. The results of his experiments were published in 1906. During the 1920s, Norwegian doctors provided advice for sick ship crew members at sea via radio link. In 1967, Bird and colleagues established an audiovisual microwave circuit between the Massachusetts General Hospital in Boston, USA, and the nearby Logan Airport. They conducted and evaluated >1000 medical consultations for airport employees and travelers who were ill. Since then, the number of scientific studies relating to telehealth has steadily increased, and many countries have launched their own electronic health programs, which combine medical informatics, public health and business. Telemedicine is particularly suitable for large geographical areas with a sparse, underserved population."

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2082971/>

Summary

The use of telemedicine to connect learners is an excellent way to promote the practice of medicine and global health. This system is not only cost effective, but also allows for learners to get introduced to medical data from other countries, exposure they may not necessarily have during their training. This exchange of data internationally will also further advances in the health care field.

Conclusion

At our academic health center we have introduced an innovative way to use telemedicine in training our residents in the scientific study of their discipline with residents studying in another country.