The Role of Information Technology in Present Day Surgery

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Information Technology and Surgery

Tremendous advances in the field of Surgery, particularly with the use of endoscopes, in the removal of pathologic lesions. Similarly, changes have also been occurring in the dissemination and sharing of information through technology.

Different groups all over the world seized the opportunity to use Information Technology (IT) in spreading and sharing the advantages in Surgery, at the same making it an avenue to educate, train, and help surgeons compare experiences with one another.
Information Technology and Surgery

Medical Working Group (MWG) of the Asia Pacific Advanced Network (APAN), headed by Prof. Shuji Shimizu of Kyushu University, has led the movement of marrying Surgery and IT by systematizing teleconferencing in the Asia Pacific region but in the present time has expanded to Europe and North America.

Need for international exchange of knowledge and experiences

- Differences in medical and surgical standards among countries

- Medical information can be obtained by reading journals and reports while surgical skills have to be watched, to know exactly what is being done in other countries.
Rationale for telemedicine

• For doctors
  • learn new and different procedures by realtime, interactive viewing
  • more can watch on scheduled sessions
  • minimize mistakes in the learning stage
  • tremendous savings in time and expense for travelling

• For patients
  • better and safer medical care

• For global health care
  • standardization and globalization

APAN is an active organization working for the unification of Asia Pacific countries, with big broadband network
Properties of big broadband ideal for telemedicine

- Clarity of images
- Fast
- Multichannel

Medical Working Group of APAN

- Medical network, established in February, 2003, in Asia Pacific region with high quality moving images on a super broadband internet line, broadcasting realtime surgery with high quality videos using Digital Video Transport System (DVTS), were useful in learning surgical techniques and other medical procedures beyond borders.
Medical Working Group of APAN

- Political boundaries made medical communication difficult in the Asia Pacific area, inspite of their close location, but with the use of the new medical network system, communication and exchange of medical information over national borders became easier.

Medical Working Group of APAN

- Surgical teleconferencing, particularly endoscopic surgery, is a suitable content for high quality audio-visual communication. Small blood vessels and fine structures are clearly identified by the remote audience. Any loss of information due to data transmission is not acceptable in medical contents.
Medical Working Group of APAN

• Live, realtime, interactive transmissions to remote countries in the Asia Pacific region were on endoscopic surgery (cholecystectomy, gastrectomy, small bowel, colon), thoracoscopic lung resection, ERCP, and robotic surgery.

Concentrating on Asia 1st

1. Huge population

2. Medical standards are so different due to diversity of cultures, race, and religions

3. Specific diseases in Asia, such as gastric cancer, viruses, SARS, etc.

4. Less time zone difference, less distances between countries making teleconferencing easier
The 29th Meeting of International Fetal Medicine and Surgery Society

Teleconference was organized in the first congress in Asia.
teleconferencing in UPM from 2007, Feb.
since 2010, transmissions were received right in the UPM campus
To establish telemedicine activity in an institution

- Dedicated and passionate medical staff
- Technical IT team
- Government and corporate funding
UPS funding of UPM's PREGINET connection

• [1]. 45 Mbps connection
  
  Cost: PhP 837,000 for one year (excluding commodity Internet access costs)

• A 45 Mbps link between UPM and PREGINET, designed to support the connection

• bandwidth requirements of DVTS sessions between UPM and its partner institutions

UPS funding of UPM's Preginet connection

• [2]. Cisco 7201 multiprotocol router
  
  Cost: PhP 864,551.68

• This router is designed to directly

peer with PREGINET's own router and selectively forward traffic to and

from UPM, its existing commodity Internet connection, and research and

education networks reachable via PREGINET via APAN.
UPS funding of UPM's Preginet connection

- [3]. UPS provided 6 Mbps backup commodity Internet access (shared between UPM, UPLB and UPV Cebu)
- Cost: PhP 1.08M for one year
- UPM was able to access, on average, 1/3 of this shared bandwidth (~2 Mbps), with an equivalent value of PhP360,000 over one year.

UPS total funding for UPM
Php 2,061,551.68
UPM's participation in this endeavor, procured Polycom, 3 remote points HD system, yearly subscription to Preginet.
• TeleRounds in the Division of HBP Surgery, Dept. of Surgery, U.P. Manila
4-16FROA, Cindy 23/F

- Disseminated tuberculosis
- EGD, gastrectomy, biopsy of retrosternal
- Ulcer, Duodenal, goopy, empyema
- AB (S)
- CH sep. 16 pn
- EGO: meval b interrupted at CI junction, narrowed body of stomach, may protruding into pylorus
- Pneumoplastic, existing biopsy

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• TeleOR mentoring in the Dept. of Surgery, Philippine General Hospital, U.P. Manila
Teleconferencing done by other departments

- Dept. of Pediatrics: Remote live lecture from the US to their staff conference at ERC
- Dept. of Anesthesiology: Postgraduate course Ultrasound guided nerve blocks, live, interactive OR demo
- Dept. of Surgery: Postgraduate course and a workshop both on Hernia with live OR demo

IT and Surgery

- My venture into the realm of IT and applying it to Surgery in teaching, learning, disseminating knowledge and skills has started and in place in the Dept. of Surgery, UPM
Maraming salamat sa inyong pakikinig!