Remote medical activity over APAN

Chairman of APAN Med WG,
Kyushu University Hospital,
Fukuoka, Japan

Shuji Shimizu, MD, PhD

http://www.apan.net/wg/medical.html
http://www.med.kyushu-u.ac.jp/aqua/
Email: shimizu@surg1.med.kyushu-u.ac.jp

Internet Task Force Meeting 2006.5.24
Today’s menu

- Benefits
- Activities
- Lessons
- Challenges
Conventional telemedicine...

- Radiology & pathology: Still pictures
  - Computed Tomography (CT)
  - Magnetic Resonance (MR)
- Vital signs: Small-size moving images
  - Pulse; Blood pressure
  - Electrocardiogram (ECG)
- Live surgery: Compressed movies

• Limited applications due to narrow-band network
• Telemedicine is not popular due to poor quality.

Telephone line, etc.
Three key elements for telemedicine

**Moving images:**
1. High-quality
2. High-speed
3. Multi-channel

_Broadband network is essential for medical use!_
Korea- Japan Telemedical Network

(Hyeonhae/Genkai Project)

Started in 2002

- Education
- Culture
- Business
- Medicine

Kyushu Univ

KOREA

Seoul

KOREN

Busan

KJCN

Fukuoka

JP

QGPOP

JAPAN

Bandwidth 2G ➞ Big Broadband Network
Korea-Japan Medical Network

Kyushu-Univ.

Korea

Digital Video Transfer System

Korea-Japan Gigabit Network

DVTS

Frame rate 30/sec, Time delay 0.3 sec
Basic instruments: easy & simple

Surgical instrument

DVTS PC

IEEE1394
UTP(Ethernet)

DVTS: free software (http://www.sfc.wide.ad.jp/)
Need only personal equipments

Stable, very broadband network is essential

Internet

>30Mbps
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Kyushu Univ., Fukuoka
[1] Endoscopic surgery

Conventional

Endoscopic
The First Live Surgery

Aug 1, 2003

- Introduced new operation
- Security software; C4-VPN

OR

Surgical movie

Kyushu Univ., Japan

NCC, Korea
[2] Live telementoring for neurosurgery

Dr. Natori (Kyushu U.) ← Dr. Ko (Hanyang U.)

2003.11.25

Animal lab

Kyushu U Hosp

Hanyang U in Seoul

Surgical view

ping: 7msec
DVTS: 0.4sec

2005.3.2
Kyushu-Hanyang

The 1st International Conference on Remote Robotic Surgery

March 2, 2005
HIT 613, Hanyang University, Seoul, Korea

Venue: Hanyang University Hospital, Seoul, Korea - Kyushu University Hospital, Fukuoka, Japan

Sponsor: Korea University, Korea University, Hanyang University, Center for Intelligent Surgery System
March 18, 2005

[4] Multi-station to East Asia in Pancreatic Transplantation Meeting
Whole variety of medical contents

• Surgery
• Endoscopy
• Medical informatics
• Pathology
• Interventional radiology
• Pharmacology
• Nursing, Healthcare
• Tele-consultation
• Bird flu, SARS, etc.
Today’s menu

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Kyushu Univ., Fukuoka
Live surgery with Asia-Pacific regions

- PAL versus NTSC
- Universal security
- More multiple stations to be connected

Fukuoka
Singapore
Adelaide

Nov 16, 2005
Live demonstration of pathology

DV quality is not sufficient for accurate diagnosis.

Even better quality (HD) is awaited.

2004.8.27-28 NCC → Kyushu U
2004.9.30 Japan Cancer Association
Today’s menu

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Kyushu Univ., Fukuoka
Future style of medical network

Doctors join the broadband network at anytime from anywhere.

With high quality!
For Establishment of Telemedical Network in AP

Medical staffs
Engineering team
Government and Companies

Cooperate in harmony!