Experiment of internet-based Tele-medicine in Amami Rural Islands

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Backgrounds and Area of the Experiment

Amami Ohshima
Main Island

Kakeromajima
Island

Yorojima
Island

Setouchi
clinic

Ukejima Island

WLAN-based
network

Doctors,
beds,
medical devices

Nurse

11.3 km
Backgrounds and Area of the Experiment

Yorojima:
- 89 families
- 159 people
- 49% of senior citizens *1
  (citizens of more than 65 years old)

Ukejima:
- 110 families
- 208 people
- 53% of senior citizens *1

*1: Japan’s average is 14%.

A combined elementary and junior high school with about 10 pupils.

Yorojima Island with Japan’s most beautiful Coral Leaf
Wireless LAN Network
Wireless LAN at Clinics

Yorojima Clinic (nurse)

Wireless LAN antennas

Setouchi Clinic (doctors, bed, etc.)
PC-based video-telephony

- MPEG4-based coding
- Resilience for errors specific to wireless LANs, e.g., miss order of packets, duplication of packets
- Flexible rates from ISDN dial-up to LANs, i.e., 16-4096 kbps of video, up to 30 frames/sec, up to 640x480 pixels/picture, and 16-256 kbps of audio.
- Capturing a still image at the remote end

Doctors and nurses use PCs for their routine work everyday, and can simply initiate video-telephony software when it is needed.

This project aims to evaluate how common products and technologies of the Internet, rather than specific medical equipment, can be utilized in tele-medicine applications.
Considerations on tele-medicine

1. Ethernet LAN is very useful

Sharing the files and images

Windows PC in Setouchi Clinic (Doctor)

Windows PC in Yorojima/Ukejima Clinic (Nurse)
Considerations on tele-medicine

2. Video-telephony over Windows PC is useful

A doctor using video-telephony over Windows PC for medical care, between Setouchi clinic and Yorojima clinic.

A nurse taking a still image with QualityMeeting during care.
Considerations on tele-medicine

3. Digital camera pictures are useful

Digital camera picture

1. pierced the insect

Still picture by QM remote control

2. Tinea of left axillary's skin
Considerations on tele-medicine

4. Preventive medicine is more important rather than clinical medicine

Dental clinic in Kagoshima

Senior citizens hearing a lecture from Kagoshima on dental care.

Yorojima clinic
Considerations on tele-medicine

5. Portability is important in tele-medicine

A nurse (left) visiting a patient (right) who communicates with a doctor via portable video-telephony.

An important task for a nurse in Yorojima/Ukejima is making home visits to senior patients.
Summary on tele-medicine

1. Ethernet LAN is useful than a router network.
2. Video-telephony over Windows PC is useful.
3. Even digital camera pictures can be used.
4. Preventive medicine is more important rather than clinical medicine.
5. Portability is important in tele-medicine.
Conclusions

Internet technologies, instead of professional medical equipment, are useful and effective for supporting medical care in rural islands.

In Japan, there are more than 200 islands:
- about 80 islands have less than 300 people.
- about 60 islands have no clinic.

It is hoped that the result of this experiment will help advance medical and healthcare in rural islands.