

Using 3G Mobile Phone for Videoconferencing: Rapid Access to Specialists During Critical Care

Tepei Tang¹, Chelung Su², Zheng Gu³, Eaden Saw⁴

1 National Pingtung Hospital, Taiwan; 2 Tajen University, Taiwan; 3 E.King Group Inc., Taiwan; 4 R.F. Matrix, Taiwan

Introduction: Patient suffering from multiple organ failure needs to be treated aggressively by professional team. However many hospitals in Taiwan lack adequate specialists for patients suffering such a critical condition. We thus envisioned that the entire Taiwan, a small island by size, can be easily covered by third generation (3G) network so that physicians in ICU can readily consult specialists in real time via 3G mobile videophone. Teleconsultation via videoconferencing can be processed between 3G mobile videophones and personal computers. To this end, every specialist is to be equipped with a 3G mobile phone, thereby allowing the use of phone itself or nearby computers to receive videophone calls. The purpose of this study was to examine this idea by combining specialists in consultation for critical patients promptly. **Method:** Twelve patients with multiple organ failure were serviced by this technology. We reached specialists via videoconferencing call when patient's condition worsened or the physician in charge hesitated on his/her diagnosis. We employed 3G PDA phone with Eyetel messenger® to transmit patient's gross appearance, monitoring system images and X-ray images to consulted specialist's 3G PDA phone and/or to their personal computer. Standards based H.264 offers good video resolution (640 x 480 pixels at 24 frames per second) at call speeds of 300 Kbps. To further improve the diagnosis, we used the same system to connect the physician in charge with two or more associated specialists among the allied hospitals in real time. **Results:** We found that the average time to get second opinion was shortened from 6 hours to 12 minutes and the consulting frequencies were increased from 3 times to 15 times. The frequency of revising the diagnosis was 58.33% (7/12). Finally, although the survival rate of the patient was found to be equivalent to that of the previous data, but the cost of admission decreased by 14.12% and the health-related quality of life has been improved by 13.42%. **Conclusion:** An edged version of telemedicine was used to treat patients in critical conditions. This technology proved to dramatically improve the mobility, the speed of diagnosis and prescription, and the expertise supports for a physician in charge. Although the mortality rate did not improve markedly, the technology benefited the survivors in terms of quality of life, allocation of hospital resources in mobile network and reduction of admission cost.

Keywords: 3G mobile phone 1, videoconferencing 2, multiple organ failure 3, H.264 4