Development of TeleStroke in Hong Kong

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Stroke is the leading cause of adult disability worldwide and leading cause of death in China. Despite the long-proven benefit of thrombolytic therapy in ischaemic stroke, the narrow therapeutic time window (<4.5 hours of onset) and lack of neurologists has led to wide service gap in Hong Kong. Hence, for most hospitals, the treatment is only available during working hours when on-site neurologists are available.

Through hub-and-spoke model, TeleStroke has helped extend acute stroke service to rural hospitals in many western countries. Stroke patients who presented to the spoke hospitals within time window for thrombolysis can be evaluated remotely by hub hospitals where in-house stroke specialists are available round-the-clock. For TeleStroke in the western countries, teleconsultations are hence performed within the hospital area where stable internet or wifi connection and sophisticated workstations are optimized for the high speed data transfer required in teleradiology and video conference. In Hong Kong, TeleStroke model is very much different from that in the west. Due to shortage of neurologists in Hong Kong, none of the hospitals in Hong Kong have 24-hour on-site neurologists. Therefore, when on-site neurologists are not available during non-working hours, potential thrombolysis candidates are evaluated by off-site neurologists through telemedicine. Compared with in-house teleconsultation, performing teleconsultation outside the hospital area is technically difficult as mobile network signal is location-dependent. Also, TeleStroke softwares are not readily available for portable devices (e.g. tablets) and extra security measures are needed to protect patients' personal information.

Since 2012, Prince of Wales Hospital has pioneered Telestroke (Telemedicine in stroke care) in Hong Kong to provide 24-hour thrombolysis using SEMIDS (Security-enhanced Mobile Imaging Distribution System). The technology has increased the administration of thrombolytic therapy to stroke patients by more than 3 folds. The efficacy and safety outcomes of patients treated with TeleStroke are comparable to that treated by on-site neurologists.

In countries in short of neurologists, TeleStroke with off-site teleconsultation is pivotal in facilitating development of 24-hour thrombolysis. Development of softwares for TeleStroke with portable devices is urgently needed for secured and efficient off-site teleconsultations.