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Robots in Rehabilitation: Can Robots Restore Independence to Hemiplegic stroke patients? A Half-year experience at Caritas Medical Centre
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Introduction
Robot-aided Rehabilitation has been crowned one gleaming innovative modality of this decade in the field of stroke rehabilitation. Many inspiring results have been reported over different localities worldwide. Locally, the Department of Occupational Therapy of CMC had started incorporating the robotic concept into her stroke rehabilitation model since 2012. From our preliminary experience in local Chinese patients, we hope to explore the extent robot-aided rehabilitation enhances patients' hemiplegic upper limb function after stroke. Moreover, how far such gains can be realized into real world daily living skills and how deep our patients accept this novel concept.

Objectives
This observational pilot study intends to explore the functional outcomes and the acceptance of Chinese stroke patients undergoing robot-aided rehabilitation as a novel modality.

Methodology
Stroke patients from M&G rehabilitation wards, who were mentally and physically capable for robotic training, were recruited. The pre-program and post-program values of Fugl-Meyer Assessment for Upper Extremity(FMA-UE), Functional Test for Hemiparetic Upper Extremity(FTHUE), Modified Barthel Index(MBI) as well as a tailored-made satisfaction questionnaire were analysed to assess the limb motor functions, ADL performances and patient satisfaction respectively.

Result
Results From June to Dec 2012, 22 patients(7 male,15 female), mean age 78.1, were included into the program. 82% of them had their first episode of stroke. The average number of training sessions was 7.8. Four different types of robot-aided equipments(namely ReoGo, Armeo Spring, Handtutor and YouGrapper) were used. Very significant improvement in both the hemiplegic upper limb motor function(FMA-UE score 51.1 to 58.8,p<0.001; FTHUE Level 4 to 5,p<0.001)and ADL performance(MBI 54.0 to 65.9,p<0.001) were demonstrated after undergoing

robot-assisted trainings. All patients were satisfied with the robotic model, 84.2% of which were very satisfied. Conclusions Our pilot study suggests that robot-aided rehabilitation appears well accepted in our local Chinese community. The dramatic augmentation of the hemiplegic limb motor function with corresponding boosting in ADL performance we detected in our patients echoes with findings from many foreign studies. This is an encouraging incentive to both health professionals and stroke patients. We have yet to further unravel the full potentials of robot-aided rehabilitation in stoke and furthermore other fields of rehabilitation as well as its optimal complementation with our current rehabilitation modalities for the maximum benefits for our patients.