Introduction
An upper limb rehabilitation program utilizing Transcranial Direct Current Stimulation (tDCS) for stroke patients was developed in Tuen Mun Hospital (TMH). The previous program evaluation showed that combined tDCS and physiotherapy treatment have positive effect on enhancing upper limb functional recovery in stroke patients. The present program utilized Upper-Extremity Fugl-Meyer Scale and a control intervention to further review the effects of tDCS on enhancing upper limb functions of stroke patients.

Objectives
To examine the effects of tDCS on enhancing upper limb functional recovery in stroke patients.

Methodology
Patients diagnosed with Cerebrovascular Accident (CVA) were recruited from the Rehabilitation Stroke Unit of TMH. Patients with wrist and finger control of Oxford Scale Grade 2 or above were recruited. Patients with unstable medical conditions, diagnosed with transient ischemic attack or having contraindications to tDCS were excluded. Patients were assigned to an intervention or a control group. For the intervention group, anodal (excitatory) stimulation by tDCS was conducted to hand area of primary motor cortex (M1) of the affected hemisphere through the electrode placed over C3/C4, while the cathodal electrode was placed over the contralateral supraorbital area. Patient received 1mA tDCS for 20 minutes. Five consecutive sessions of tDCS together with intensive physiotherapy upper limb training were given. For the control group, five consecutive sessions of intensive physiotherapy upper limb training were given. The upper-extremity section of the Fugl-Meyer Scale (UE-FM) is easily applicable and is one of the most established and commonly used outcome measures in stroke rehabilitative trials. Assessments were done before the first session of treatment and after the last session of treatment. Wilcoxon Signed Ranks Test and Mann-Whitney U Test were used for comparing the differences in UE-FM before and after the intervention.

Result
Fourteen stroke patients (9 female and 5 male) were assigned to the intervention (n=9) and control (n=5) group. The mean age was 68.9 ± 10.1 years old and the mean time between stroke onset and the first UE-FM assessment was 10.6 ± 5.01 days. For the intervention group, the mean score of UE-FM increased from 32.7 ± 8.94 to 49.8 ± 10.3 (Z = -2.67, p = 0.008). No adverse effects of tDCS were reported. For the control group, the mean score of UE-FM increased from 35.0 ± 8.94 to 46.6 ± 11.5 (Z = -2.03, p = 0.042). For between-group comparison, the changes in mean score of UE-FM in intervention group (17.1 ± 4.93) were significantly larger than that in control group (11.6 ± 3.36) (U = 7, p = 0.037). Findings of the present study showed that tDCS could augment physiotherapy treatment in enhancing upper limb motor functional...
recovery in stroke patients. Since tDCS is safe, non-expensive and easily applicable, it could be an adjuvant therapy for upper limb rehabilitation in stroke patients in future.