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The Abbreviated Mental Test (AMT) as an Alternative of the Mini-Mental State Examination (MMSE): A Study on their Relationship in Orthogeriatric Patients
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Introduction
The Cantonese Version of Mini-Mental State Examination (MMSE) was commonly used as a screening tool of cognitive function in Hong Kong. Yet, its clinical usage has been limited by the global copyright issue. The Hong Kong version of the Abbreviated Mental Test (AMT) was therefore adopted as one of the alternatives.

Objectives
To investigate the relationship between the AMT and MMSE among orthogeriatric patients in Hong Kong.

Methodology
Elderly patients admitted to Queen Mary Hospital, TWGHs Fung Yiu King Hospital and MacLehose Medical Rehabilitation Centre for orthopaedic problems who were referred for cognitive assessment or managed under multidisciplinary clinical pathways were recruited. The AMT and MMSE were administered and the predictive efficiency of the AMT against MMSE (the proportion of patients whose cognitive status defined by MMSE was accurately classified by the AMT) was evaluated. The positive and negative predictive values, sensitivity and specificity were also calculated (positive predictive value and sensitivity represented abnormal cognitive function and negative predictive value and specificity represented normal cognitive function). Furthermore, association between these two assessments was analyzed.

Result
From January to June 2017, 266 patients were assessed and 77.1% were female. The mean age was 85.05 (range 60-101). The median AMT and MMSE scores were 6 (interquartile range 4-9) and 18 (IQR 11-22), respectively. Cognitive impairment was defined as 5 marks or below in AMT and 17 marks or below in MMSE. A significant

relationship between the cognitive condition determined by the AMT and MMSE was detected (Chi-square = 152.55, df = 1, p <0.001). The predictive efficiency of the AMT was 87.59% (233/266) and the performance indicators of the AMT against MMSE were: positive predictive value 92.92% (105/113), negative predictive value 83.66% (128/153), sensitivity 80.77% (105/130) and specificity 94.12% (128/136). A strong linear relationship between the AMT and MMSE was identified (Somers d statistic = 0.76, p < 0.001) with the simple linear regression predicting the MMSE score from the AMT score defined as MMSE = (2.06xAMT)+4.52. In conclusion, there was a strong relationship between the AMT and MMSE in orthogeriatric patients. The AMT showed predictive value for the cognitive function categorized by MMSE and the possible MMSE score, supporting it as an alternative of MMSE.