

ACUTE ISCHAEMIC STROKE RECOGNITION ACCURACY BY MEDICAL EMERGENCY COORDINATION CENTRE - AN EMERGENCY DEPARTMENT QUALITY MEASURES IMPROVEMENT (ARMED-QI)

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INTRODUCTION

Stroke is Malaysia third cause of death with Acute Ischaemic Stroke (AIS) the majority. Hyperacute stroke management leads to improved outcomes but begins with accurate Medical Emergency Coordination Centre (MECC) recognition. Utilisation of Pre-Hospital Stroke Scale Stroke Diagnostic Tool (PSS-SDT) by Emergency Medical Dispatchers (EMD) and Emergency Medical Responders (EMR) in MECC, and continuous medical education (CME) on its usage is recommended to improve AIS recognition.

OBJECTIVES

To measure MECC online stroke recognition accuracy with compliance to Medical Priority Dispatch System (MPDS) PSS-SDT and EMR on-field stroke recognition accuracy using Balance, Eyes, Face, Arms, Speech and Time (BEFAST) PSS-SDT. Effect of CME on MECC AIS recognition accuracy were also measured.

METHODS

Prospective observational study conducted at Emergency and Trauma Department of Hospital Seberang Jaya (ETDHSJ) from January 2023 until December 2023 via cohort of Malaysian Emergency Response Service (MERS) 999 acute stroke activation. AIS recognition accuracy analysis for EMD and EMR with compliance to MPDS and BEFAST use were conducted in pre-intervention, post-intervention and overall period. Comparison made with final hospital diagnosis from Neuromedical Department as gold standard.

RESULTS

ETDHSJ received 640 acute stroke activation cases with 192 via MERS 999 activation. 130 cases confirmed as AIS with 111 (85.3%) accurately recognised by MECC. EMR recorded better performance compared to EMD for overall sensitivity (91.8% vs 46.2%), Positive Predictive Value (PPV) (89.4% vs 84.5%), and accuracy (83.3% vs 46.4%). EMR BEFAST use recorded improved accurate diagnostic odd ratio (OR) with 6.8 (95% CI (1.172,30.29)) ($p = 0.034$) while EMD MPDS use recorded OR of 0.434 (95% CI (-4.488, 2.817)) ($p = 0.654$). Stroke CME intervention recorded improved diagnostic OR for both EMD (OR 1.104, 95% CI (0.821, 1.483)) ($p = 0.515$) and EMR (OR 2.690, 95% CI (1.495, 4.841)) ($p < 0.001$) during post-intervention period.

CONCLUSIONS

This ARMED-QI study demonstrates MOH design with 2-tiers MECC responders consisting both EMD and EMR ensures high diagnostic performance for AIS recognition. Utilisation of PSS-SDT by MECC increased diagnostic OR for accurate AIS recognition with CME on its usage resulted in improved diagnostic performance of the PSS-SDT.

KEYWORDS

Medical emergency coordination centre, acute stroke, continuous medical education