Impact of a Multidisciplinary Stroke Green Channel on Time-Efficiency and Clinical Outcomes in Acute Stroke Care

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Objectives

Tuen Mun Hospital (TMH) has launched Stroke Green Channel (SGC) in June 2024. This protocol integrates emergency medicine, radiology, neurology, neurointervention, and nursing teams into a coordinated 24/7 rapid-response pathway. Designed to bridge critical interdepartmental gaps, the SGC targets sustained improvement in key performance indicators: median door-to-needle time (DNT) ≤45 minutes for thrombolysis and door-to-puncture time (DPT) ≤90 minutes for endovascular thrombectomy (EVT). This article aims to evaluate the SGC's effectiveness in reducing treatment delays and improving functional outcomes for acute stroke patients.

37%↓

DNT Reduction

Median DNT time dropped from 54 to **34 minutes** ($p<0.001$)

18%↓

DPT Reduction

Median DTP time reduced from 106 to **87 minutes** ($p=0.005$)

3-fold↑

Target Compliance

DNT≤45min compliance rose from 23.8% to **77.8%** ($p<0.001$)

Clinical outcome Patients achieving **mRS ≤2 at 90-day**: 37.8%→**51.7%** ($p=0.17$)

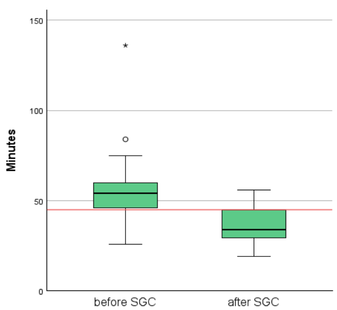

Figure 1. Comparison of DNT before and after implementation of SGC, median from 54 to 34 minutes ($p<0.001$).

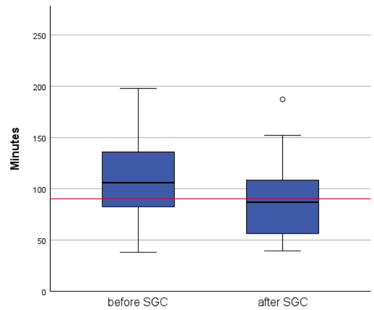

Figure 2. Comparison of DPT before and after implementation of SGC, median from 106 to 87 minutes ($p=0.005$).

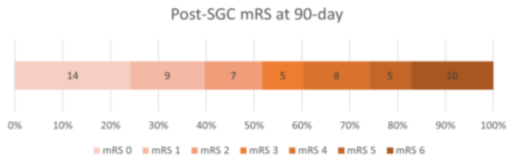

Figure 3. Post EVT clinical outcome at 90-day (n=62).

Materials & Methods:

Design: Single-centre retrospective study

Period: Pre-SGC (Jun 2023-Jun 2024) vs Post-SGC (Jun 2024-Jun 2025)

Inclusion: Age ≥18, acute anterior circulation LVO on CTA, EVT eligibility

Exclusion: Transfer-in patients with imaging performed elsewhere

Analysis: Mann-Whitney U and chi-square tests

Primary outcomes: median DNT and DPT

Secondary outcome: 90-day good clinical outcome (modified Rankin Scale score ≤2)

Results:

A total of 45 patients were included pre-implementation and 62 post-implementation. The median DNT after SGC implementation decreased from 54 [IQR: 44.5–63] to 34 [IQR: 28–45] minutes ($p<0.001$) (Figure 1) and the target compliance of DNT≤45min rose from 23.8% to 77.8% ($p<0.001$). Median DPT reduced from 106 [IQR: 78–136.5] to 87 [IQR: 55.5–108.5] minutes ($p=0.005$) (Figure 2). 50% (31/62) of the EVT cases occurred during non-office hours, with 32.3% (10/31) of these presenting after midnight.

An increase in proportion of patients achieving a good clinical outcome was observed (37.8% to 51.7%; $p=0.17$) (Figure 3), but this analysis did not adjust for multiple potential confounding factors.

Conclusion:

The implementation of the multidisciplinary SGC significantly accelerated acute stroke care processes. It drastically reduced median DNT and DPT, and substantially increased the proportion of patients meeting critical treatment time targets. A positive trend toward improved clinical outcomes was observed, though this requires further investigation accounting for potential confounders.

References:

1. "The Power of Stroke Green Channel: A Cultural Transformation Driving Breakthroughs in Acute Stroke Care." Karin Chow et. Al. *New Territories West Cluster poster presentation. 2024.*

Essentials for Stroke Green Channel[1]

1. Rapid Activation of the green channel, transition from a serial to a **parallel workflow model**
2. Establish a distinct and exclusive **"green channel" designation**
3. **"One Call Reach All"** – MDT approach with prompt decision making
4. Integrated teamwork and collaborations across physicians, nurses and healthcare workers with **time metrics measurement**
5. Streamline necessary examinations into a single, centralized process (e.g. **CTB-CTA coupling**)
6. Simplify and prioritize essential testing procedures
7. Combination of physical examination, diagnostic evaluation and treatment into a seamless process
8. **Protocol-driven** diagnostic and treatment workflows
9. Informed consent between diagnostics and treatment
10. Advancement of thrombolysis treatment locations (e.g. CT suite)
11. Initiate Pre-procedural preparation steps for neurointervention in advance
12. Utilize the benefits from **Pre-hospital stroke notification program**
13. Essential medications in place