

Implementation of Ambulance Hotspot Strategy in Reducing Ambulance Response Time

ABSTRACT

Introduction: Ambulance response time (ART) has an inseparable relationship with mortality rates and therefore is important to be reduced. However, an unprecedented increase in road traffic congestion has led to longer ART, especially during peak hours. To reduce ART despite congested traffic, a pre-dispatched ambulance is deployed at hotspot locations during peak hours. This study aims to determine if the hotspot strategy is able to reduce ART in an Urban Emergency Medical Services system.

Methods: This is an intervention study at the Emergency and Trauma Department, Sabah Women and Children Hospital (SWACH). Since January 2017, ambulance temporary stations were set up at two hotspot locations. The pre-dispatched ambulance is deployed at hotspots during peak hours (8 – 10 a.m., 4 – 6 p.m.). Information on ambulance runs departed from mobile locations was collected from January to December 2017. Ambulance runs which departed from the hospital in the year 2016 were taken as the control group. A total of 312 runs were enrolled, only runs during peak hours on weekdays were included. The main outcome measure is ART. Mann-Whitney test was used to compare the response time of ambulance runs before and after the establishment of the hotspot strategy.

Results: Results show a significant decrease in average ART from 17.31 minutes to 12.23 minutes with the hotspot strategy. When separated, both pre-travel delay times and travel times experienced significant reduction of 2.35 minutes and 2.75 minutes respectively. Meanwhile, travel distances show no significant difference between pre- and post-strategy periods ($p = 0.196$).

Conclusion: The present study shows that the hotspots strategy has successfully reduced ART at SWACH. However, the “ping” time problem from the GPS detection could affect the accuracy in calculating the travel distances. Further studies are suggested to overcome the “ping” time to increase the accuracy level. Overall, this study ascertains the potential benefits of ambulance hotspot strategy.