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Taiwan Pumper Truck Response



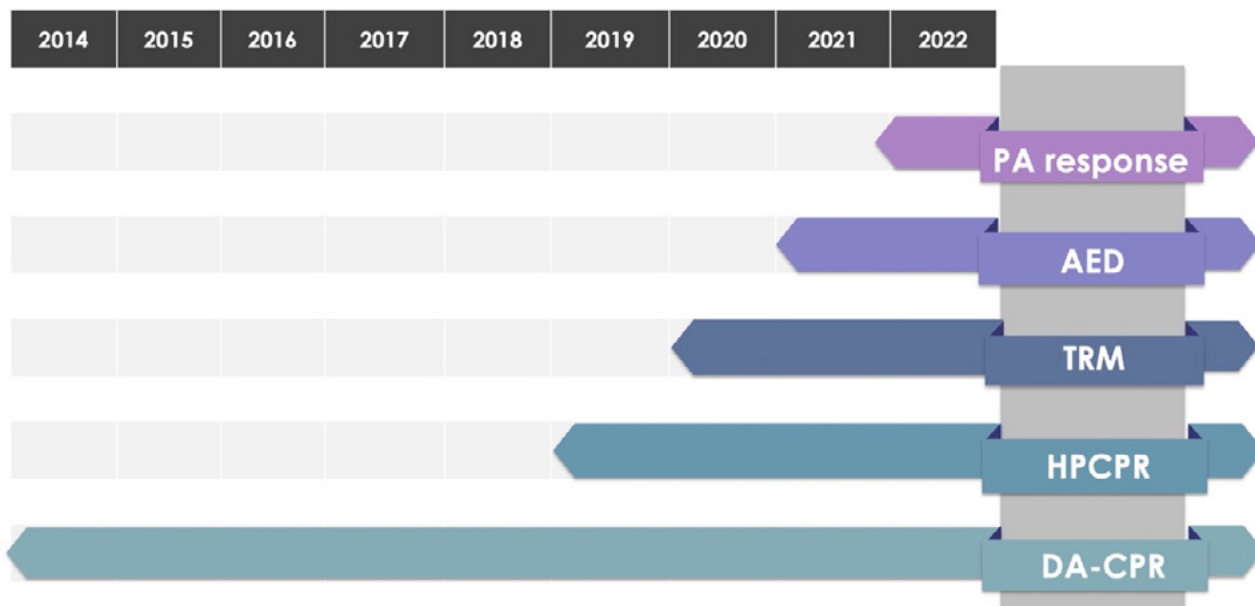
BACKGROUND

The population of Taipei City in Taiwan is 2.7 million in 2022. Average daily 119 response volume is about 300 times. However, during peak hours, the ambulance of the nearest station is often unavailable, and the mission must be passed to the next nearby station. While these extra seconds of delay in response time may not affect patients' outcomes for most of cases, it could mean something to time-critical illnesses, for example, Out-of-Hospital Cardiac Arrest (OHCA). Among OHCA cases in the last three years, only 80% less cases were handled by the nearest ambulance, and the figure has been worsening to lesser than 75% in 2022, owing to the COVID-19 pandemic. For those first-order responses, the average response time was five minutes, and the figure is getting longer as the farther ambulances being summoned. Hence, in December 2022, Taipei Fire Department rolled out the "Pumper-Ambulance response service", which is already executed for years in Japan and USA.

INTERVENTION

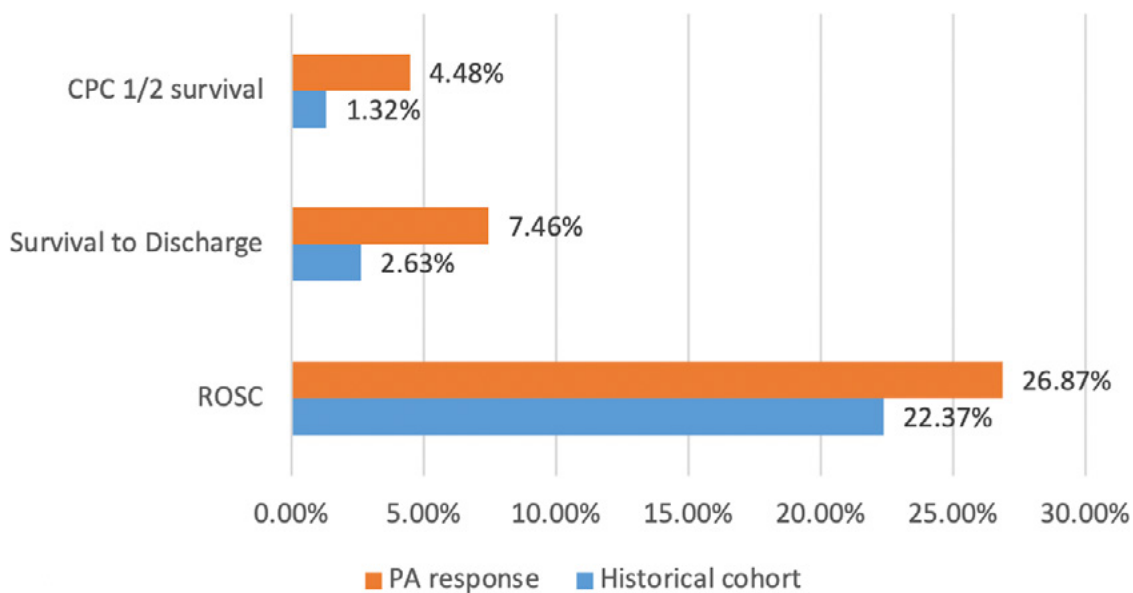
When the nearest ambulance was not available for a non-traumatic OHCA case, the dispatcher sends the nearest pumper truck to the scene instead. The truck is staffed by four firefighters with EMT-II qualification and an AED on board. They serve as first responders and provide basic life support without ventilation. AED is applied as soon as possible, and the patient will be transported by the ambulance arriving later.

The PA response is not a standalone program; rather, it is a bridge between existing dispatcher-assisted CPR (DACPR, also known as telecommunicator CPR) program, HPCPR (High Performance CPR) and TRM (Team Resource Management) programs. These three programs were implemented since 2014, 2019, 2020, respectively. Real-time feedback AED was introduced in 2021, and those retired AEDs were then matched to pumper trucks. The PA response program will not succeed if any of these links failed. With all pieces of the puzzle in place already, the PA program is the very last one that make the system a whole.



RESULTS

From December 2021 to February 2022, PA response service has been successfully dispatched 119 times. When compared to historical cohort (December 2020 to February 2021), the average response time is 1 minute and 33 seconds faster. ROSC rate, survival to discharge and discharged with good neurologic outcome are all increased by 4.50%, 4.83% and 3.16%. In conclusion, the PA response service shortens the response time, and for the period observed, is associated with better resuscitation outcome. With census of 1800 attempted resuscitation, we estimate the impact would be additional 87 survival to discharge annually and 60% of them could achieve good neurological status.



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