Cardiac arrest

257 REDUCTION IN EMS RESPONSE TIMES FOR OUT-OF-HOSPITAL CARDIAC ARREST USING DRONE-LIKE FLYING AMBULANCES IN LARGE URBAN AREAS IN FRANCE AND CANADA: AN INTERNATIONAL, QUASI-EXPERIMENTAL STUDY

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We conducted an international, multicenter, quasi-experimental study on adult, non-traumatic, EMS-assessed, non-EMS witnessed OHCA occurring in the greater Paris (France) and Vancouver (Canada) metropolitan areas, over a 2-year span (2018–2020). Data were drawn from Utstein-style, population-based OHCA registries. VTOL response times were simulated based on prototype specifications. Response times were defined from call reception to arrival at scene. Simulation models considered 1–5 VTOL vehicles placed in optimized locations. We determined the proportion of OHCA’s for which VTOL response times were at least 1-min shorter than historical response from ground-based units.

Results In total, 13,933 cases were included (6,616 in Paris; 7,317 in Vancouver). Simulated VTOL response times were substantially shorter than those of ground-based units, varying from 59% (1 VTOL) to 76% (5 VTOL) in Paris, and 17% (1 VTOL) to 40% (5 VTOL) in Vancouver. In both locations, median response times were reduced by 1–3 minutes, and 90th percentile response times by 1–5 minutes, varying upon model configuration. For OHCA’s with improved response, the median improvement was 3–4 minutes, and 90th percentile improvement was 8–10 minutes in both areas.

Background Shortening EMS response times lead to better outcomes after out-of-hospital cardiac arrest (OHCA). To overcome constraints encountered by ground ambulances, vertical take-off and landing (VTOL) capable flying ambulances are currently being developed. We compared simulated VTOL response to historical ground ambulance response for OHCA’s in two large metropolitan areas in Europe and North America.

Method One-hundred and twenty taxi drivers were CPR and AED trained. They were then assigned to taxis equipped with AEDs, and thereafter alerted to OHCA cases via phone app. A retrospective analysis of this intervention was conducted.

Results From November 2015 to December 2017, 4088 phone alerts were sent out to taxis, 374 accepted the cases, and 127 arrived at scene. Of those who arrived on scene, 18 walked 198.6 metres on average, while 104 drove an average of 891.8 metres; 5 are missing data. Average time for drivers to accept a case when activated was 1 minute, 4 seconds (fastest=0, slowest=13 minutes); from activation to arrival at scene was 6 minutes, 22 seconds (fastest=1, slowest=31 minutes), and from acceptance to arrival at scene was 5 minutes, 19 seconds (fastest=0, slowest=30 minutes). Only two cases resulted in pre-hospital ROSC.

Conclusion Our data shows that taxis with AEDs arrived on scene within 7 minutes on average, which is faster than the average for EMS ambulances. Taxis can get AEDs on scene before an ambulance arrives, however further exploration into reason(s) and solutions for low response is needed.

Conflict of interest None.

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