

OHCA resuscitation. We investigated the recruiting process and characteristics of the lay volunteers.

Method From September 1st 2017, lay-persons have been able to download the 'HeartRunner'-application and register as a lay volunteer in the Capital Region of Denmark comprising 1.8 million inhabitants. Recruiting strategies included advertisements outdoor and in newspapers, e-information, and through nationwide television coverage.

Results During the first four months, 14 935 people registered as lay volunteers (=820/100,000 inhabitants); 52.3% were male and 28.3% were health care professionals. Median age at registration was 36 years (27–48). In total, 278 suspected OHCA were registered and 3029 lay volunteers were alerted (mean of 11 volunteers per alarm). Of all alerted lay volunteers, 51.3% (n=1,554) responded to the alarm and 56.9% (n=884) accepted the mission. Of them, 53.7% were male, 32.0% were health care professionals, and median age was 38 years (27–49). The most effective recruiting strategy was nationwide television broadcast, which recruited nearly 6000 volunteers in one day.

Conclusion Lay-persons can be recruited through a smartphone application based response system, and a high proportion accepts to volunteer as first responder in OHCA resuscitation.

Conflict of interest None

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82 SPATIOTEMPORAL AED OPTIMISATION IS GENERALIZABLE

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Aim Mathematical optimisation of automated external defibrillator (AED) placements has the potential to improve out-of-hospital cardiac arrest (OHCA) coverage and reverse the negative effects of limited AED accessibility. However, the generalizability of optimisation approaches has not yet been investigated.

Method We examined the performance and generalizability of a spatiotemporal AED placement optimisation methodology, initially developed for Toronto, Canada,¹ to the new study setting of Copenhagen, Denmark. We identified all atraumatic treated public OHCA (1994–2016) and all registered AEDs (2016) in Copenhagen, Denmark. We then calculated the coverage loss associated with limited temporal accessibility of registered AEDs, and used a spatiotemporal optimisation model to quantify the potential coverage gain of optimised AED deployment. Coverage gain of spatiotemporal deployment over a spatial-only solution was quantified through 10-fold cross-validation. Statistical testing was performed using χ^2 and McNemar's tests.

Results We identified 2149 public OHCA and 1573 registered AED locations. Coverage loss was found to be 24.4% (1,104 OHCA covered under assumed 24/7 coverage, and 835 OHCA under actual coverage). The relative coverage gain from using the spatiotemporal model over a spatial-only

approach was 15.3%. Temporal and geographical trends in coverage gain were similar to Toronto.

Conclusion Without modification, a previously developed spatiotemporal AED optimisation approach was applied to Copenhagen, resulting in similar OHCA coverage findings as Toronto, despite large geographic and cultural differences between the two cities. In addition to reinforcing the importance of temporal accessibility of AEDs, these similarities demonstrate the generalizability of optimisation approaches to improve AED placement and accessibility.

REFERENCE

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83 FOR OUT-OF-HOSPITAL CARDIAC ARREST (OHCA) AT PUBLIC LOCATIONS COMMUNITY BYSTANDER DEFIBRILLATION RESCUE HAS BETTER IMPACT ON PATIENT OUTCOMES COMPARED WITH DISPATCHER-ASSISTED TELEPHONE CPR (DATCPR)

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Aim We compared the outcomes between a community-wide bystander defibrillation rescue program and a DATCPR program in patients after out-of-hospital cardiac arrest at public sites.

Method A prospective 2-year community-wide observational database collected from a metropolitan OHCA Web-based Registry was studied, after a citywide bystander defibrillation rescue program had been launched that public accessed AEDs (automated external defibrillators) were strategically implemented in designated locations and electronically registered; and a DATCPR program had been well run in the dispatch centre. The survival outcomes of OHCA at public locations between the two program interventions were compared. Outcomes included 2-hour sustained ROSC (return of spontaneous circulation) at hospital, survival to hospital discharge, and good CPC (Cerebral Performance Category Scale 1 or 2). All patient prehospital characteristics and outcome relations were evaluated and adjusted by regression analysis.

Results The density of public AEDs distribution increased from 3.96 to 6.24 per square kilometres in the studied 2 years. Among a total of 6,356 OHCA, 627 patients occurred at public locations, including 28 patients (male for 82%, witnessed arrest for 79%) received bystander aid by public AEDs plus CPR rescue and 243 patients (male for 64%, witnessed arrest for 61%) received DATCPR intervention. For these 28 patients, 53.6% (15/28) achieved prehospital ROSC at scene or during transport, 71.4% (20/28) achieved sustained ROSC after resuscitation at hospital, 57.1% (16/28) achieved survival-to-discharge and noticeably all those 16 (100%, 16/16) survival-to-discharge patients achieved excellent neurological outcome of CPC 1 (CPC Scale 1). Their outcomes were

significantly better (71.4 vs 43.6%, OR: 3.2 [95% CI: 1.4 to 7.6] for sustained ROSC; 57.1 vs 25.9%, OR: 3.8 [95% CI: 1.7 to 8.5] for survival of discharge; 57.1 vs 16.9%, OR: 6.6 [95% CI: 2.9 to 14.9] for good CPC; and 100 vs 65.1% for good CPC among survival-to-discharge) compared with those 243 patients by DATCPR rescue. In 28 patients by bystander defibrillation rescue only one man without prehospital ROSC still achieved survival-to-discharge and good CPC.

Conclusion For OHCA patients at public locations, we found that a community-wide bystander defibrillation program were associated with excellent neurological outcome of CPC 1 and survival to hospital discharge that were significantly higher than those associated with DATCPR program.

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84 A WORLD RECORD FOR LIFE – A NATIONWIDE CPR INITIATIVE

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Aim Bystander cardiopulmonary resuscitation (CPR) is a cornerstone of improving survival in out-of-hospital cardiac arrests (OHCA).¹ TrygFonden's World Record for Life aimed to show the public how easy it is to perform CPR by setting a world record in the number of people nationwide performing quality chest compression during 12 hours.

Method The record was set for 12 locations in Denmark over a 12 hour period on 22nd of May 2017. Each contribution was defined as 30 s of compression-only CPR on a Laerdal Q-CPR manikin with a Laerdal compression score of $\geq 65\%$.² Compression score was based on compression depth, rate, conflict of interest, hands-off time, and placement of hands. Data was stratified by citizens or by attendees at the Emergency Medical Services Congress 2017 (EMS2017) in Copenhagen, and analysed using Wilcoxon rank test.

Results Out of 6094 participants, 5707 (94%) reached a compression score 65% or more. Participants with a score of under 65% struggled with all components except compression rate compared to participants that reached 65%. Comparing laypersons and EMS2017-attendees, both groups performed within guidelines. The world record reached 12 different TV broadcasts, 11 radio broadcasts, 30 printed newspapers, and 41 web newspapers from 1 st to 26th May 2017. The world record had approximately 3,739,000 views on all platforms during the media coverage period.

Conclusion TrygFonden's World Record for Life showed an entire nation that untrained bystanders are able to provide effective CPR with 5707 reaching a compression score of 65% and 3,739,000 media views.

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85 THE PRE-HOSPITAL MANAGEMENT OF ACUTE HEART FAILURE: A CLINICAL AUDIT OF CURRENT PRACTICE

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Aim There has been a drive towards an increase in community-based management of heart failure. When patients experience acute heart failure (AHF), the complex nature of this condition poses diagnostic uncertainty for first responders. It is widely accepted that all patients should be transferred promptly to hospital, however with the introduction of pre-hospital diuresis, nitrate therapy and more recently non-invasive ventilation (NIV), the debate into the appropriateness and limitations of so-called 'stay-and-play' management strategies for patients in AHF has been re-ignited. We examine the current clinical assessment and management of AHF within the London Ambulance Service.

Method Ambulance Patient Report Forms (PRFs) from cases that were coded with heart failure, shortness of breath, cardiac problem and in cases of GTN administration. These cases were further analysed by a clinical review panel to identify patients with suspected AHF.

Results 182 patients were included in the analysis between April and November 2016. There was a 68% compliance with national guidelines for clinical assessment (history, examination and ECG). 51 (28%) patients presenting with AHF were appropriately identified and given a primary diagnosis of AHF by the attending clinician. 136 (76%) patients in the analysis received sublingual nitrate therapy. 90 (49%) patients received nitrates where there was no clinical indication. No patients in the analysis received NIV.

Conclusion Some aspects of AHF assessment and management are not consistent with national guidelines. Our work has further demonstrated the diagnostic challenges facing pre-hospital clinicians and the potential overuse of nitrate therapy in this patient group.

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86 HAEMODYNAMIC EFFECTS OF THE ENTERAL ADMINISTRATION OF TRANEXAMIC ACID IN AN EXPERIMENTAL MODEL OF HAEMORRHAGIC SHOCK

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Aim Systemic proteolysis has been proposed as part of the complex pathologic events occurring during haemorrhagic shock (HS). Hypoperfusion may increase permeability of the gut mucosa, promoting intestinal proteases translocation into the circulation and multiorgan failure ('autodigestion hypothesis').¹ The interruption of this cascade of events may improve systemic perfusion and organ functions.

Method The present study investigated the effects of the enteral administration of a protease inhibitor, i.e. tranexamic acid (TXA), on hemodynamics in a porcine model of controlled severe acute bleeding, fluid resuscitation and blood transfusion. Six animals underwent HS without any treatment while five animals were treated with enteral TXA.