57 BYSTANDER CARDIOPULMONARY RESUSCITATION AND LONG-TERM OUTCOMES IN OUT-OF-HOSPITAL CARDIAC ARREST ACCORDING TO LOCATION OF ARREST

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Aim Bystander cardiopulmonary resuscitation (CPR) has increased in several countries following nationwide initiatives to facilitate bystander resuscitative efforts in out-of-hospital cardiac arrest (OHCA). We examined the importance of public or residential location of arrest on temporal changes in bystander CPR and outcomes.

Method From the nationwide Danish Cardiac Arrest Registry, all OHCA from 2001–2014 of presumed cardiac cause and between 18–100 years of age were identified. Arrests witnessed by emergency medical services personnel were excluded.

Results Of 25,505 OHCA, 26.4% (n=6,738) and 73.6% (n=18,767) were in public and residential locations, respectively. Bystander CPR increased during 2001–2014 in both locations: from 36.4% (95% confidence interval [CI] 30.6% to 42.6%) to 83.1% (95% CI: 80.0% to 85.8%) in public (p<0.001) and from 16.0% (95% CI: 13.2% to 19.3%) to 61.0% (95% CI: 58.7% to 63.2%) in residential locations (p<0.001). Concurrently, 30 day survival increased in public from 6.4% (95% CI: 4.0% to 10.0%) to 25.2% (95% CI: 22.1% to 28.7%) (p<0.001), and in residential from 2.9% (95% CI: 1.8% to 4.5%) to 10.0% (95% CI: 8.7% to 11.4%) (p<0.001). Among 2,281 30 day survivors, one-year risk of anoxic brain damage/nursing home admission during 2001–2014 decreased from 18.8% (95% CI: 6.6% to 43.0%) to 6.8% (95% CI: 3.9% to 11.8%) in public (p<0.001), whereas the corresponding change was insignificant in residential locations from 11.8% (95% CI: 3.3% to 34.3) to 17.6% (95% CI: 12.7% to 23.9%) (p=0.52).

Conclusion During 2001–2014, bystander CPR and 30 day survival more than doubled in both public and residential OHCA locations. A significant decrease in anoxic brain damage/nursing home admission was observed among 30 day survivors in public, but not among survivors from residential OHCA.

Conflict of interest None

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58 MIGHT AMBULANCE SERVICE ORGANISATIONAL CULTURE AFFECT AMBULANCE NON CONVEYANCE RATES?

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Aim Ambulance services are experiencing increasing volumes of emergency calls. In response, they have increased the proportion of patients not conveyed to an emergency department (ED).

Alternatives to transporting patients to an ED include the provision of telephone advice only, treatment at the scene, or transport to another facility. Variation in the rates of different types of non-conveyance (NC), and in NC overall, exists between ambulance services in England. We explored variability in perceptions of the organisational culture within each individual ambulance service and show this in the context of NC rates.

Method We undertook 50 qualitative telephone interviews with ambulance service providers and commissioners in the 10 larger ambulance services in England, to identify factors that may explain variation in rates of ambulance NC. Data was analysed using a Framework model.

Results Amongst interviewees there was variation in the perceptions they held regarding the organisational culture of the ambulance service which they were employed by. Recent management restructuring within the ambulance service, perception of management support across the organisation, motivation of the organisation to undertake NC, and perceptions of support for staff undertaking NC varied across the ambulance services. There appeared to be a relationship between some of these factors and NC rates.

Conclusion Organisational culture is a complex issue but one which is potentially modifiable. Building a greater understanding of ambulance service organisational culture and how this relates to ambulance NC may help identify ways of improving service delivery across all ambulance services.

Conflict of interest None

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59 AMBULANCE OVER-CONVEYANCE TO THE EMERGENCY DEPARTMENT: A LARGE DATA ANALYSIS OF AMBULANCE JOURNEYS

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Aim Over-conveyance by the ambulance service is a compounding factor of emergency department (ED) crowding. Previous solutions have focused on specific patient groups which have a limited impact when compared to the whole urgent and emergency care system. This study aims to analyse non-urgent conveyances by the ambulance service that could be suitable for discharge on-scene.

Results We analysed a dataset of 1,312,539 patient episodes which linked all pre-hospital emergency and urgent calls to subsequent ED attendance in 2014. The study was set in a large region in England (total population 5.3 million). As well as proportion of avoidable conveyances we also examined the association with patient age, time of arrival, re-attendance and initial triage code from ambulance dispatch.

Results There were 4 04 348 (30.8%) patients transported to ED by ambulance and of these 66 220 (16.4%) were considered potentially avoidable. There were significantly increased odds of a non-urgent conveyance out of hours (OR 1.44, 95% CI: 1.41 to 1.46). Patients aged 16–34 had the largest proportion of avoidable conveyances with 24 500 (37%). There were 13 625 (21%) episodes that were received from another healthcare professional or urgent telephone number. When analysing ED diagnosis, the highest proportion were attending with minor injury and illness, and alcohol intoxication.

Conclusion One in six ambulance conveyances to ED were deemed non-urgent. The younger population had the largest amount of preventable conveyance by ambulance with diagnoses which could be treated and discharged on-scene. Pathways and interventions would provide a larger patient benefit if they were designed around patient populations as opposed to disease specific.

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CPR IN HOSPITAL – IS IT GOOD ENOUGH?

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Aim Data from the past three years from defibrillators located at the Odense University Hospital (OUH) indicate below standard performance of CPR by service assistants external to the emergency department (ED). ED service assistants (EDs) are trained in CPR several times a year, however CPR is also delegated to external service assistants (non-EDs) who only participate in OUH's mandatory training once every three years, besides having to pass an e-learning resuscitation program once every year.

Method To assess the quality of CPR performed at the OUH in relation to the level of training, by evaluating CPR data readouts from a test taken by OUH service assistants. Performances were evaluated in adherence to ERC guidelines (100–120 presses/min, compression depth 5–6 cm and reConflict of interest position), furthermore participants filled out an accompanying questionnaire.

Results Nine ED service assistants and thirty-eight non-ED service assistants participated. Among EDs the pressing frequency was correct in 100% of cases, among non-EDs 55%. In the ED group the applied compression was correct in 78% versus 49% of cases, while there was full reConflict of interest in 45% versus 54% of cases. Surprisingly, it was found that a large proportion of all service assistants had not completed the mandatory e-learning program.

Conclusion Non-EDs who only receive practical training once every 3 years frequently did not perform CPR to the standards of the ERC guidelines. This indicates that experience and frequent practical instruction would increase the quality of CPR at the OUH.

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AED ACCESSIBILITY AND BYSTANDER DEFIBRILLATION IN OUT-OF-HOSPITAL CARDIAC ARREST

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Aim Inaccessibility of publicly available automated external defibrillators (AEDs) is an issue recently emphasised;^{1,2} however, knowledge of the impact of inaccessibility on bystander defibrillation remains sparse.

Method We identified all public out-of-hospital cardiac arrests (OHCAs) registered by the Copenhagen Mobile Emergency Care Unit physicians (2008–2016), and all publicly available AEDs in Copenhagen (2007–2016) from the Danish AED Network. All recorded OHCAs and AEDs were geocoded, and the true route distances between OHCAs and AEDs were calculated. A covered OHCA was defined as an OHCA with an AED located ≤ 200 m and AED accessibility was assessed for every AED at the exact time of OHCA.

Results In total, 1,830 AEDs were registered in Copenhagen. Out of 643 public OHCAs, 261 (40.6%) were covered by a registered AED ≤ 200 m (median distance: 107.6 m (interquartile range [IQR]: 58.6–146.7)). Of the covered OHCAs, 156 (59.8%) occurred ≤ 200 m of an accessible AED, and in 105 OHCAs (40.2%) the AED was inaccessible. Compared with OHCAs near an inaccessible AED, OHCAs near an accessible AED were more likely to receive bystander defibrillation (25.0% vs 13.3%, $p=0.02$) and achieve 30 day survival (49.7% vs 38.0%, $p=0.08$).

Conclusion The chances of receiving bystander defibrillation nearly doubled if the OHCA was covered by an accessible AED ≤ 200 m, and the proportion of cases that achieved 30 day survival tended to be higher compared to OHCA cases covered by an inaccessible AED.

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THINKING ON SCENE: USING VIGNETTES TO ASSESS THE ACCURACY AND RATIONALE OF PARAMEDIC DECISION MAKING

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Aim Paramedics make important decisions on-scene as to whether a patient requires transport to hospital, referred, or discharged on scene. Research shows that nearly 20% of patients brought to ED by ambulance, could be treated elsewhere. This study aims to investigate the accuracy of conveyance decisions made by on-scene paramedics.

Method Individual real-patient vignettes were created using linked ambulance, ED and GP data and used in an online survey to paramedics in Yorkshire. Half the vignettes were categorised as clinically necessary attendances at the ED and the other half were categorised as clinically unnecessary. Vignettes were validated by a small expert panel. Participants were asked to determine the appropriate conveyance decision and to explain the rationale behind their decisions using a free text box.