

## Cardiac arrest

338 **CARDIO-PULMONARY-RESUSCITATION QUALITY IN OUT-OF-HOSPITAL CARDIAC ARREST – EFFECT OF REAL-TIME FEEDBACK**

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**Background** Out-of-Hospital Cardiac Arrest (OHCA) is a major health problem with low survival. Cardio-Pulmonary-Resuscitation (CPR) quality is associated with survival, and includes chest compression depth (CCD), rate (CCR), and fraction (CCF) within international guideline recommendations<sup>1</sup>. In 2020 overall survival in Denmark reached 16% placing Denmark as one of the leading countries for OHCA survival. The aim of this study was to examine the effect on CPR quality with the introduction of real-time CPR feedback in a high OHCA survival area, as well as the effect of adding post-event clinical debriefings.

**Method** This cohort study collected non-traumatic OHCA data from ambulances within the Capital Region of Denmark using ZOLL X-series defibrillator. Three variables; CCD, CCR and CCF were collected on three consecutive phases: Phase one (no feedback) from October 2018 to May 2019; Phase two (real-time feedback) from May 2019 to February 2020 and phase three (real-time + post-event debriefings) from February 2020 to December 2020. Data were compared against guidelines at each phase.

**Results** We included 1545 patients. Preliminary results revealed guideline compliant CCD in 21.8% of the compressions (no feedback) compared to 30.9% (real-time feedback) and 33.0% (real-time + post-event feedback). For CCR the results were 60.2%/ 74.6%/ 75.1% respectively. Combination of guideline compliant CCD and CCR simultaneously was 13.6%/ 23.3%/ 25.8% respectively. CCF was 76.8%/ 80.9%/ 81.3% respectively.

**Conclusion** Real-time feedback and post-event clinical debriefings have the potential to improve EMS CPR quality in a high survival OHCA area.

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**Conflict of interest** None.

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## Pain and trauma

340 **PREHOSPITAL ADMINISTRATION OF WHOLE BLOOD FOR CIVILIAN TRAUMATIC RESUSCITATION**

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**Background** Hemorrhagic shock is the leading cause of survivable death in trauma patients. Recent guidelines recommend initiation of whole blood transfusion within 30 minutes of injury.<sup>1</sup> Little is known about this emerging practice in the civilian prehospital environment.

**Aim** To describe the process of care for patients who received prehospital low-titer O-positive whole blood (LTOWB).

**Method** This cohort study evaluated injured patients who received prehospital LTOWB in a US city of over 750,000 persons. Criteria for transfusion were systolic blood pressure (SBP)≤70, SBP<90 and heart rate >110, or witnessed traumatic arrest.<sup>2</sup>

**Results** Over 22-months, 57 patients received 74 units of LTOWB. 83% were male, and median age was 34 [IQR 26–46]. The mechanism of injury was 42% from guns, 23% from stabbings, and 35% blunt trauma. Median injury severity score was 26 [IQR 17–41]. Transfusion criteria were SBP≤70 in 35%, SBP<90 and heart rate>110 in 37%, witnessed traumatic arrest in 9%, and none in 19%. Time to blood initiation from the 911 call was 24 minutes [IQR 21–31]. 42% received at least 6 units of additional blood products in the first 4 hours after hospital arrival. Of those not meeting criteria, 73% received additional blood products in the first 4 hours. 98% received surgical intervention in the first 24 hours. Survival to discharge was 65%. Limitations include lack of a comparison group.

**Conclusion** Patients receiving LTOWB were severely injured. The prehospital system succeeded in starting LTOWB within 30 minutes.

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## Cardiac arrest

343 **SENDING CITIZEN RESPONDERS TO PRIVATE APARTMENTS IS SAFE AND NECESSARY**

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**Background** Alerting citizen responders to Out-of-Hospital-Cardiac Arrest (OHCA) increases the rate of bystander-CPR and improves neurological outcome. There is an ongoing discussion, whether to send lay responders to cardiac arrest calls in patients' residences. The smartphone-based dispatch systems for citizen responders in Berlin (KATRETTTER) includes activation of citizen responders to all OHCA with only a few exceptions. This study aims to analyze demographics and

acceptance of citizen responders entering private appartements and safety for both first responders and patients.

**Method** Retrospective analysis of the data from the smart-phone-based dispatch system for citizen responder „KATRETTETTER' and prehospital outcome data from the Berlin EMS including all OHCA-alarms to which a citizen responder was alerted in the period from 28.09.2020 and 28.02.2021.

Results citizen responders were activated to suspected OHCA 4614 times, of these 2305 (=50%) were located in private apartments. Citizen responders arrived on scene at residential locations 1053 times (=45,7%) and prior to EMS in 628 cases (27,3%). There was a significant difference in confirmed OHCA and CPR-attempts between the residential setting (38,9%) and calls in public spaces (14,5%). In 11 cases (1%) citizen responders were not granted access to the private apartment. During the observation period there were no reports of any legal or ethical problems.

**Conclusion** Sending citizens responders to these calls is safe and even necessary, as most of the OHCA occurred in private appartements. Also the absolute number and the ratio of suspected to confirmed OHCA is higher in the residential setting than in public.

**Conflict of interest** None declared.

**Funding** None declared.

## Miscellaneous

### 344 PROGNOSTIC VALUE OF ON-SCENE ANALYTIC PARAMETERS FOR ORGAN VIABILITY IN DCD DONORS

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**Background** An increasing number of Spanish EMS have started Donation after Circulatory Death (DCD) protocols for not Recovery Of Spontaneous Circulation patients (ROSC) (Type IIa donor in the modified Maastricht Classification, Madrid 2011). The decision to proceed with the donation is taken according to established criteria by the transplant coordination and the organ implantation team.

**Method** Analytical observational: Population: Patients in DCD attended by an EMS with no ROSC who complies with criteria to be included in the DCD code (2009 – 2020) Exclusion: Missed in the system, non-clinical criteria excluded.

Independent variables: Epidemiological (age, sex) analytical parameters: (pH, lactate, glucose, BE, PCO<sub>2</sub>, bicarbonate). Variable result: Graft viability. Descriptive analysis: central and quantitative dispersion measures. Qualitative variables percentages. Inferential analysis: Student's T-distribution for quantitative variable, chi-squared for categorical variables. SPSS V17.

**Results** 136 deceased donors included.

Age: 45.89 (±9.56). Organs were viable in the 82.35% (112) of the cases. The 90.44% of the patients (123) were male.

Age: 46.7 (SD-8.5) viable, 41.7 (SD-12.6) non-viable, p=0.017

Lactate: 6.93 (SD- 2.82) viable, 5.93 (SD-2.5) non- viable, p= 0.181

COH3: 23.73 (SD-8.8) viable, 22.91 (SD-4.6) non – viable, p= 0.681

pH: 7.11 (SD- 0.16) viable, 7.06 (SD-0.34) non – viable, p=0.374

Glucose: 166.3 (SD- 83.9) viable, 141.3 (SD – 78.5) non – viable, p=0.243

**Conclusion** The differential tendency towards more pathological values in parameters such as bicarbonate and pH when organs were non-viable for donation could be highly engaging. However, reaching significant statistics data has been unfeasible, most likely to the insufficient number of cases available for study. Consequently, adding more cases and other parameters turns necessary.

**Conflict of interest** None declared.

**Funding** None declared.

## Quality improvement and organization

### 345 THE USE OF COERCION IN THE AMBULANCE SERVICE – A QUALITATIVE STUDY OF A LARGE URBAN AMBULANCE SERVICE

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**Background** Voluntary and informed consent is a fundamental principle of healthcare provision. However, health care laws in some countries allow for exceptions from the consent requirement when patients are not competent to consent or pose a danger to themselves or others. In these cases, the use of coercion may be an alternative to voluntary health care. Ambulance personnel are confronted with patients who need healthcare but refuse it and/or refuse to cooperate. To what extent coercion is used by ambulance personnel in these situations or what constitutes coercion in a pre-hospital setting has not previously been explored. This study therefore examines (i) ambulance personnel's perceptions of coercion, (ii) their experience of the use of coercion, (iii) situations in which they have used coercion, and (iv) forms of coercion they have used.

**Method** We conducted focus group interviews with a group of ambulance personnel from a large Norwegian ambulance service. Digital recordings of the interviews were transcribed verbatim and the transcripts were analysed using Systemic Text Condensation.

**Results** Informants primarily interpreted and described coercion as the use of physical force. Other types of coercion as persuasion, pragmatic force, pharmacological coercion and securing during transport were described.

**Conclusion** The different methods of force/coercion are mainly used in situations where the ambulance personnel consider that healthcare is necessary but the patients refuses. The findings indicate that adherence to emergency law, a duty to help, the welfare of the patient and insecurity or fear promote the use of coercion among ambulance personnel. Insecurity and fear seem to be rooted in: 1) an experienced contradiction between the ambulance service's guidelines and the legislation, 2) fear of breaching guidelines and leaving patients behind because of lack of support from management, and 3) fear of charges of misconduct. The difficulty of applying the law in real-life situations and assessing competence is also a contributory factor.

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