diagnosis, pediatric trauma score(PTS), analgesia, numeric rate scale(NRS), drugs administered. Quantitative variables: central and dispersión measures. Inferential statistical análisis: relationship quantitative variables, Student's t test and categorical variables, Chi square. 95% confidence intervals, p<0.05. SPSS 20.

Results Total of 725 patients. Median age was 13 years(IQR 8–15). 70.9% males (514). Critically ill patients constitute 5.8% (42). Children received analgesia: 43.6%(316); <4 years: 17.3% (14), 5 to 11: 36.7% (80) and 12 to 18: 52.1% (222). IV route: 70.8% (240), intranasal: 21.4%(74). Fentanyl was used in 73.4% (232), Paracetamol 23.1%(73), Ketorolac 22.8%(72). IV mean doses: 1.9µgr/Kg, 15.1mg/Kg, 0.34mg/Kg respectively. Analgesia with PTS <9: 76.5% and PTS ≥ 9: 42.8%. NRS used in 12.5%(91); median initial: 8(IQR 7–9) and after analgesia: 3(IQR 2–4).

Conclusion IV opioids are the most widely used. Doses administered by weight are correct. The use of analgesia predominates in critically ill patients although not as high as indicated in international guidelines. We observed undertreatment in the groups of younger children, possibly due to a higher incidence of TBI. Alternative routes to IV administration could increase the use. Although pain scales were seldom used, the results show notable reduction of pain.

Conflict of interest None.

Funding None.

Cardiac arrest

| 270 | MATHEMATICALLY OPTIMISED PUBLIC ACCESS DEFIBRILLATOR PLACEMENT – FAIRNESS OR ACCESSIBILITY? |

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Background Mathematical optimisation can be used to maximise public access defibrillator (PAD) accessibility for out-of-hospital cardiac arrests (OHCA). It is unclear whether enforcing 'fairness' (defined as parity of PAD accessibilty) across city wards would impact resulting PAD accessibility compared to an unconstrained approach.

Method We included all suspected OHCAs responded to by the Scottish Ambulance Service (SAS) in the cities of Glasgow, Edinburgh, Aberdeen, and Dundee between Jan. 2011 – Sept. 2017, and PADs registered with SAS as of Feb. 2020. We computed the accessibility (defined as within 100 m of OHCA) for existing PADs and developed a mathematical model to select locations for additional PADs under two scenarios: (1) select optimal locations across whole cities, and (2) select optimal locations distributed equally between city wards. Up to 20 additional PAD locations per ward were considered. For both scenarios, we compared PAD accessibility on out-of-sample OHCAs using McNemar's test and fairness across wards using the Nash social welfare function.

Results We identified 14,674 OHCA responses and 424 existing PADs. Existing PADs were within range of 1.1% of OHCAs (0.4–2.0% per city). Optimising new PAD locations per city, regardless of wards, increased PAD accessibility to 15.4% of OHCAs (14.9–17.9% per city). Constraining an equal number of PADs in each ward resulted in accessibility loss of 0.2–1.4 percentage points depending on the quantity of PADs placed (P<0.05 for 18 of 20 cases) but improved fairness values by up to 89% for smaller quantities of PADs.

Conclusion Enforcing ward-level parity when selecting optimal new PAD locations results in fairer but less accessible PADs for OHCA.

Conflict of interest None.

Cardiac arrest

| 272 | OPTIMIZING RESIDENTIAL AUTOMATED EXTERNAL DEFIBRILLATOR COVERAGE BY TARGETING SOCIAL HOUSING AREAS |

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Background Strategies for deployment of automated external defibrillators (AEDs) in residential areas are warranted. Social housing is widespread in Europe, has a high frequency of socio-economic predictors for out-of-hospital cardiac arrest, and consists of well-defined units with local leadership[1] [2]. We aimed to optimize AED placement by targeting social housing in Vienna and Copenhagen.

Method Population density was obtained from Urban Atlas[3]; AED and social housing data from Vienna through City of Vienna, and from Copenhagen through the Danish AED Network and the National Building Foundation, respectively. From April 2020, all 24-hour accessible AEDs in residential areas were included. AED coverage was defined as number of inhabitants within 100 meters of an AED. AEDs were randomly distributed in social housing accounting for current AEDs and a density of 0.5 AED/hectare. Current vs. optimized AED coverage were compared in Vienna and Copenhagen.

Results In Vienna vs. Copenhagen, respectively, 25% (n=492,752) vs. 31% (n=304,966) of the population live in social housing areas, characterized by a high average population density: 361 inhabitants/hectare (all residential areas 173) vs. 142 inhabitants/hectare (all residential areas 71). AED density was 0.02 AED/hectare (271 AEDs) vs. 0.12 AED/hectare (1,641 AEDs) for Vienna vs. Copenhagen, and AED coverage was 358 (95%CI:309;414) inhabitants/AED vs. 119 (95%CI:114;128) inhabitants/AED, respectively. Application of the AED optimization model in social housing increased population coverage by nearly 2-fold: Vienna to 661 (95%CI:628;695, p-value<0.0001) inhabitants/AED; Copenhagen to 243 (95%CI:231;255, p-value<0.0001) inhabitants/AED.

Conclusion AED deployment targeting social housing may be a feasible strategy for optimizing coverage of residential out-of-hospital cardiac arrest.

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Dispatch and triage

277 — ABSTRACT WITHDRAWN

Cardiac arrest

278 — USING A VENTILATOR DURING CARDIAC ARREST IMPROVES PCO2. STARTING SYMEVECA STUDY

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Background Ventilation affects the internal environment and intrathoracic pressures. Current recommendations suggest the use of mechanical ventilators in non-traumatic out-of-hospital cardiac arrest (OHCA) but their use is not widespread. We aim to compare gasometric parameters depending on the method for mechanical ventilation during OHCA.
Method Quasi-experimental study including all patients in OHCA attended by an EMS in a 9-month period with persistence of OHCA three minutes after early intubation. Two groups are established according to the mothod of ventilation during OHCA (ventilator in IPPV 500 ml x 12 rpm or resuscitation balloon). Demographic variables, initial rhythm, blood gas parameters 15 minutes after intubation or upon recovery of spontaneous circulation (ROSC) -whatever occurs first- and hospital complications were recorded. Continuous variables as mean ± standard deviation. Statistical analysis: comparisons with parametric techniques. Study approved by our ethics committee.
Results 167 PCEH were registered but 91 were excluded due to very early recovery (35) or violation of analysis protocol (56). Women 21%, age 63 ± 19 years, shockable rhythm 31%. Groups were analyzed according to ventilation: IPPV (32) or resuscitation balloon (44). In patients with an arterial sample: pH 6.99 ± 0.17 vs 6.99 ± 0.16 (p=0.99); pCO2 67.9 ± 18.8 vs 100.8 ± 60.5 mmHg (p=0.13). With a venous sample: pH 7.01 ± 0.17 vs 6.96 ± 0.16 (p=0.28); pCO2 68.6 ± 25.5 vs 86.5 ± 25.0 mmHg (p=0.01), respectively. No direct ventilator-related complications were registered.
Conclusion Ventilation with a mechanical ventilator during OCHA improves ventilatory status compared to the use of a resuscitation balloon. The target sample size has not yet been reached. There were no direct complications. After completing the first phase, a second one will begin, comparing different ventilatory modes.
Conflict of interest None.
Funding None.

Cardiac arrest

279 — DRONE-DELIVERED AUTOMATED EXTERNAL DEFIBRILLATORS FOR OUT-OF-HOSPITAL CARDIAC ARREST. A SCOPING REVIEW

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Background Drone-delivery of automated external defibrillators (AEDs) to out-of-hospital cardiac arrest (OHCA) is increasingly being investigated for early defibrillation.
To obtain an overview of international status and feasibility, we performed a scoping review of the literature concerning drone-AED delivery.
Method Combining search strings of drone with OHCA OR AED in 'MESH' and 'text-word' searches and with synonyms, Embase and PubMed was searched on 29th of December 2021. Peer-reviewed articles, abstracts, editorials, and letters published in English language were included.
Results After duplicate removal, title/abstract screening, and full-text review, a total of 23/122 records were included. Included studies were either test-flights with drone-AED or virtual flight models calculating drone-AED coverage in different ways.
Fifteen studies (from Sweden, Canada, USA (Washington, Virginia, North Carolina, and Utah) France, Germany, Northern Ireland, South Korea, and Austria) concerned location and quantity of drone bases in a virtual drone-flight simulation model. All studies estimated an overall time gain to AED on scene compared with standard Emergency Medical Service (EMS) arrival, with varying proportions of OHCAs covered by drone-AED delivery prior to standard EMS.
Seven studies concerned simulation flights, 4 of these included the human-drone interaction. One study delivered AEDs to real-life suspected OHCA with a delivery success rate of 92%.
All these studies found drone-delivery of AEDs feasible.
Conclusion All 23 investigative studies found drone-delivery of AEDs to suspected OHCA feasible and with an overall estimated time gain compared with standard EMS. Only one study described drone-AED delivery to real-life suspected OHCA.
Conflict of interest None.
Funding Novo Nordisk Foundation.