This week's PubMed 15th – 21st January 2023: articles of interest n = 50

CPR AND COVID-19

1. Int J Environ Res Public Health. 2023 Jan 8;20(2):1104. doi: 10.3390/ijerph20021104.
The Impact of COVID-19 on Pediatric Cardiac Arrest Outcomes: A Systematic Review and Meta-Analysis.
Navolokina A(1), Smereka J(2)(3), Böttiger BW(4), Pruc M(3), Juárez-Vela R(5), Rahnama-Hezavah M(6), Rafique Z(7), Peacock FW(7), Safiejko K(8), Szarpak L(7).
ABSTRACT
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) caused a global pandemic, required the donning of personal protective equipment during clinical contact, and continues to be a significant worldwide public health concern. Pediatric cardiac arrest is a rare but critical condition with a high mortality rate, the outcomes of which may be negatively affected by donning personal protective equipment. The aim of this study is to perform a systematic review and meta-analysis of the impact of the COVID-19 pandemic on pediatric cardiac arrest outcomes. We conducted a systematic review with meta-analysis in the following databases: PubMed, EMBASE, Scopus, Web of Science, and Cochrane Library from their inception to 1 October 2022. We included studies published in English on pediatric patients with cardiac arrest, dichotomized by the pre- and during-COVID-19 periods and then stratified by COVID-19 positive or negative status, to evaluate clinical outcomes associated with cardiac arrest. Six studies were included in the meta-analysis. In witnessed out-of-hospital cardiac arrest patients, there were no differences between the pandemic and pre-pandemic periods for witnessed cardiac arrest (28.5% vs. 28.7%; odds ratio (OR) = 0.99; 95% confidence interval (CI): 0.87 to 1.14; p = 0.93), administration of bystander cardiopulmonary resuscitation (61.5 vs. 63.6%; OR = 1.11; 95%CI: 0.98 to 1.26; p = 0.11), bystander automated external defibrillator use (both 2.8%; OR = 1.00; 95%CI: 0.69 to 1.45; p = 0.99), return of spontaneous circulation(8.4 vs. 8.9%; OR = 0.93; 95%CI: 0.47 to 1.88; p = 0.85), survival to hospital admission (9.0 vs. 10.2%, OR = 0.81; 95%CI: 0.45 to 1.44; p = 0.47), or survival to hospital discharge (13.4 vs. 12.4%; OR = 0.62; 95%CI: 0.22 to 1.72; p = 0.35). COVID-19 did not change pediatric cardiac arrest bystander interventions or outcomes.

2. Healthcare (Basel). 2023 Jan 8;11(2):189. doi: 10.3390/healthcare11020189.
Out-of-Hospital Cardiac Arrest during the COVID-19 Pandemic: A Systematic Review.
Husain AA(1), Rai U(1), Sarkar AK(2), Chandrasekhar V(3), Hashmi MF(4).
ABSTRACT
Objective: Out-of-hospital cardiac arrest (OHCA) is a prominent cause of death worldwide. As indicated by the high proportion of COVID-19 suspicion or diagnosis among patients who had OHCA, this issue could have resulted in multiple fatalities from coronavirus disease 2019 (COVID-19) occurring at home and being counted as OHCA. Methods: We used the MeSH term "heart arrest" as well as non-MeSH terms "out-of-hospital cardiac arrest, sudden cardiac death, OHCA, cardiac arrest, coronavirus pandemic, COVID-19, and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)." We conducted a literature search using these search keywords in the Science Direct and PubMed databases and Google Scholar until 25 April 2022. Results: A systematic review of observational studies revealed OHCA and mortality rates increased considerably during the COVID-19 pandemic compared to the same period of the previous year. A temporary two-fold rise in OHCA incidence was detected along with a drop in survival. During the pandemic, the community's response to OHCA changed, with fewer bystander cardiopulmonary resuscitations (CPRs), longer emergency medical service (EMS) response times, and worse OHCA survival rates. Conclusions: This

study's limitations include a lack of a centralised data-gathering method and OHCA registry system. If the chain of survival is maintained and effective emergency ambulance services with a qualified emergency medical team are given, the outcome for OHCA survivors can be improved even more.

CPR/MECHANICAL CHEST COMPRESSION

No articles identified.

REGISTRIES, REVIEWS AND EDITORIALS

1. Am J Emerg Med. 2023 Jan 13;66:22-30. doi: 10.1016/j.ajem.2023.01.003. Online ahead of print.
A novel cardiac arrest severity score for the early prediction of hypoxic-ischemic brain injury and in-hospital death.
Bang HJ(1), Oh SH(2), Jeong WJ(3), Cha K(4), Park KN(5), Youn CS(6), Kim HJ(7), Lim JY(8), Kim HJ(9), Song H(10); Behalf of the Korean Hypothermia Network Investigators.
ABSTRACT
INTRODUCTION: Out-of-hospital cardiac arrest (OHCA) outcomes are unsatisfactory despite postcardiac arrest care. Early prediction of prognoses might help stratify patients and provide tailored therapy. In this study, we derived and validated a novel scoring system to predict hypoxic-ischemic brain injury (HIBI) and in-hospital death (IHD). METHODS: We retrospectively analyzed Korean Hypothermia Network prospective registry data collected from in Korea between 2015 and 2018. Patients without neuroprognostication data were excluded, and the remaining patients were randomly divided into derivation and validation cohorts. HIBI was defined when at least one prognostication predicted a poor outcome. IHD meant all deaths regardless of cause. In the derivation cohort, stepwise multivariate logistic regression was conducted for the HIBI and IHD scores, and model performance was assessed. We then classified the patients into four categories and analyzed the associations between the categories and cerebral performance categories (CPCs) at hospital discharge. Finally, we validated our models in an internal validation cohort. RESULTS: Among 1373 patients, 240 were excluded, and 1133 were randomized into the derivation (n = 754) and validation cohorts (n = 379). In the derivation cohort, 7 and 8 predictors were selected for HIBI (0-8) and IHD scores (0-11), respectively, and the area under the curves (AUC) were 0.85 (95% CI 0.82-0.87) and 0.80 (95% CI 0.77-0.82), respectively. Applying optimum cutoff values of ≥6 points for HIBI and ≥7 points for IHD, the patients were classified as follows: HIBI (-)/IHD (-), Category 1 (n = 424); HIBI (-)/IHD (+), Category 2 (n = 100); HIBI (+)/IHD (-), Category 3 (n = 21); and HIBI (+)/IHD (+), Category 4 (n = 209). The CPCs at discharge were significantly different in each category ($p < 0.001$). In the validation cohort, the model showed moderate discrimination (AUC 0.83, 95% CI 0.79-0.87 for HIBI and AUC 0.77, 95% CI 0.72-0.81 for IHD) with good calibration. Each category of the validation cohort showed a significant difference in discharge outcomes ($p < 0.001$) and a similar trend to the derivation cohort. CONCLUSIONS: We presented a novel approach for assessing illness severity after OHCA. Although external prospective studies are warranted, risk stratification for HIBI and IHD could help provide OHCA patients with appropriate treatment.

2. Intensive Care Med Exp. 2023 Jan 20;11(1):4. doi: 10.1186/s40635-022-00489-w.
Electroencephalographic monitoring of brain activity during cardiac arrest: a narrative review.
Roberti E(#)(1)(2), Chiarini G(#)(3), Latronico N(4)(3), Adami EC(5), Plotti C(4)(6), Bonetta E(4)(6), Magri F(4)(6), Rasulo FA(4); Coma following Cardiac ArreST study group (COAST).
ABSTRACT

BACKGROUND: To date cardiac arrest (CA) remains a frequent cause of morbidity and mortality: despite advances in cardiopulmonary resuscitation (CPR), survival is still burdened by hypoxic-ischemic brain injury (HIBI), and poor neurological outcome, eventually leading to withdrawal of life sustaining treatment (WLST). The aim of CPR is cardiac pump support to preserve organ perfusion, until normal cardiac function is restored. However, clinical parameters of target organ end-perfusion during CPR, particularly brain perfusion, are still to be identified. In this context, electroencephalography (EEG) and its derivatives, such as processed EEG, could be used to assess brain function during CA. OBJECTIVES: We aimed to review literature regarding the feasibility of EEG and processed or raw EEG monitoring during CPR. METHODS: A review of the available literature was performed and consisted of mostly case reports and observational studies in both humans and animals, for a total number of 22 relevant studies. RESULTS: The research strategy identified 22 unique articles. 4 observational studies were included and 6 animal testing studies in swine models. The remaining studies were case reports. Literature regarding this topic consists of conflicting results, containing studies where the feasibility of EEG during CPR was positive, and others where the authors reached opposite conclusions. Furthermore, the level of evidence, in general, remains low. DISCUSSION: EEG may represent a useful tool to assess CPR effectiveness. A multimodal approach including other non-invasive tools such as, quantitative infrared pupillometry and transcranial Doppler, could help to optimize the quality of resuscitation maneuvers.

3. Resusc Plus. 2023 Jan 6;13:100347. doi: 10.1016/j.resplu.2022.100347. eCollection 2023 Mar.
Current summary of the evidence in drone-based emergency medical services care.
Roberts NB(1), Ager E(1), Leith T(2), Lott I(2), Mason-Maready M(3), Nix T(4), Gottula A(1)(5), Hunt N(1), Brent C(1).
ABSTRACT
Interventions for many medical emergencies including cardiac arrests, strokes, drug overdoses, seizures, and trauma, are critically time-dependent, with faster intervention leading to improved patient outcomes. Consequently, a major focus of emergency medical services (EMS) systems and prehospital medicine has been improving the time until medical intervention in these time-sensitive emergencies, often by reducing the time required to deliver critical medical supplies to the scene of the emergency. Medical indications for using unmanned aerial vehicles, or drones, are rapidly expanding, including the delivery of time-sensitive medical supplies. To date, the drone-based delivery of a variety of time-critical medical supplies has been evaluated, generating promising data suggesting that drones can improve the time interval to intervention through the rapid delivery of automatic external defibrillators (AEDs), naloxone, antiepileptics, and blood products. Furthermore, the improvement in the time until intervention offered by drones in out-of-hospital emergencies is likely to improve patient outcomes in time-dependent medical emergencies. However, barriers and knowledge gaps remain that must be addressed. Further research demonstrating functionality in real-world scenarios, as well as research that integrates drones into the existing EMS structure will be necessary before drones can reach their full potential. The primary aim of this review is to summarize the current evidence in drone-based Emergency Medical Services Care to help identify future research directions.

4. N Engl J Med. 2023 Jan 19;388(3):284. doi: 10.1056/NEJMc2215179.
Blood-Pressure Targets in Comatose Survivors of Cardiac Arrest.
Chudeau N(1), Guitton C(1), Cariou A(2).
NO ABSTRACT AVAILABLE

5. N Engl J Med. 2023 Jan 19;388(3):285-286. doi: 10.1056/NEJMc2215179.
Blood-Pressure Targets in Comatose Survivors of Cardiac Arrest. Reply.
Kjaergaard J(1), Møller JE(2), Hassager C(3).
NO ABSTRACT AVAILABLE

6. Crit Care. 2023 Jan 17;27(1):22. doi: 10.1186/s13054-023-04314-y.
Response to: In-hospital cardiac arrest: evidence and specificities of perioperative cardiac arrest.
Penketh J(1), Nolan JP(2)(3).
NO ABSTRACT AVAILABLE

7. Resuscitation. 2023 Jan 13:109693. doi: 10.1016/j.resuscitation.2023.109693. Online ahead of print.
Clinical outcomes following out-of-hospital cardiac arrest: the minute-by-minute impact of bystander cardiopulmonary resuscitation.
Cournoyer A(1), Grunau B(2), Cheskes S(3), Vaillancourt C(4), Segal E(5), de Montigny L(6), de Champlain F(7), Alexandros Cavayas Y(8), Albert M(8), Potter B(9), Paquet J(10), Lessard J(8), Chauny JM(8), Morris J(8), Lamarche Y(11), Marquis M(10), Cossette S(11), Castonguay V(8), Daoust R(8).
ABSTRACT
AIMS: The time-dependent prognostic role of bystander cardiopulmonary resuscitation (CPR) for out-of-hospital cardiac arrest (OHCA) patients has not been described with great precision, especially for neurologic outcomes. Our objective was to assess the association between bystander CPR, emergency medical service (EMS) response time, and OHCA patients' outcomes. METHODS: This cohort study used the Resuscitation Outcomes Consortium Cardiac Epidemiologic Registries. Bystander-witnessed adult OHCA treated by EMS were included. The primary outcome was survival to hospital discharge and secondary outcome was survival with a good neurologic outcome (modified Rankin scale 0-2). Multivariable logistic regression models were used to assess the associations and interactions between bystander CPR, EMS response time and clinical outcomes. RESULTS: Out of 229,637 patients, 41,012 were included (18,867 [46.0%] without bystander CPR and 22,145 [54.0%] with bystander CPR). Bystander CPR was independently associated with higher survival (adjusted odds ratio [AOR]=1.70 [95%CI 1.61-1.80]) and survival with a good neurologic outcome (AOR=1.87 [95%CI 1.70-2.06]), while longer EMS response times were independently associated with lower survival to hospital discharge (each additional minute of EMS response time: AOR=0.92 [95%CI 0.91-0.93], p<0.001) and lower survival with a good neurologic outcome (AOR=0.88 [95%CI 0.86-0.89], p<0.001). There was no interaction between bystander CPR and EMS response time's association with survival (p=0.12) and neurologic outcomes (p=0.65). CONCLUSIONS: Although bystander CPR is associated with an immediate increase in odds of survival and of good neurologic outcome for OHCA patients, it does not influence the negative association between longer EMS response time and survival and good neurologic outcome.

8. Interv Cardiol. 2022 Nov 10;17:e17. doi: 10.15420/icr.2022.25. eCollection 2022 Jan.
British Cardiovascular Interventional Society Consensus: a Huge Step Towards Standardised Care for Out-of-hospital Cardiac Arrest in the UK.
Noc M(1), Mehran R(2).
NO ABSTRACT AVAILABLE

9. Am J Emerg Med. 2023 Feb;64:195. doi: 10.1016/j.ajem.2022.10.049. Epub 2022 Nov 9.
The authors respond to favorable outcomes of early conversion to shockable rhythm in OHCA patients.

Tsai MF(1), Shih HM(2).
NO ABSTRACT AVAILABLE

IN-HOSPITAL CARDIAC ARREST

1. Crit Care. 2023 Jan 20;27(1):32. doi: 10.1186/s13054-023-04306-y.
Prognostic models for outcome prediction following in-hospital cardiac arrest using pre-arrest factors: a systematic review, meta-analysis and critical appraisal.
Grandbois van Ravenhorst C(1), Schluep M(2), Endeman H(3), Stolker RJ(2), Hoeks SE(2).
ABSTRACT
BACKGROUND: Several prediction models of survival after in-hospital cardiac arrest (IHCA) have been published, but no overview of model performance and external validation exists. We performed a systematic review of the available prognostic models for outcome prediction of attempted resuscitation for IHCA using pre-arrest factors to enhance clinical decision-making through improved outcome prediction. METHODS: This systematic review followed the CHARMS and PRISMA guidelines. Medline, Embase, Web of Science were searched up to October 2021. Studies developing, updating or validating a prediction model with pre-arrest factors for any potential clinical outcome of attempted resuscitation for IHCA were included. Studies were appraised critically according to the PROBAST checklist. A random-effects meta-analysis was performed to pool AUROC values of externally validated models. RESULTS: Out of 2678 initial articles screened, 33 studies were included in this systematic review: 16 model development studies, 5 model updating studies and 12 model validation studies. The most frequently included pre-arrest factors included age, functional status, (metastatic) malignancy, heart disease, cerebrovascular events, respiratory, renal or hepatic insufficiency, hypotension and sepsis. Only six of the developed models have been independently validated in external populations. The GO-FAR score showed the best performance with a pooled AUROC of 0.78 (95% CI 0.69-0.85), versus 0.59 (95%CI 0.50-0.68) for the PAM and 0.62 (95% CI 0.49-0.74) for the PAR. CONCLUSIONS: Several prognostic models for clinical outcome after attempted resuscitation for IHCA have been published. Most have a moderate risk of bias and have not been validated externally. The GO-FAR score showed the most acceptable performance. Future research should focus on updating existing models for use in clinical settings, specifically pre-arrest counselling.

2. Resusc Plus. 2023 Jan 6;13:100349. doi: 10.1016/j.resplu.2022.100349. eCollection 2023 Mar.
A descriptive study of the multidisciplinary healthcare experiences of inpatient resuscitation events.
Varner-Perez SE(1)(2)(3), Mathis KAL(1), Banks SK(1), Burke ES(2), Slaven JE(4), Morse GJ(1), Whitaker MK(1), Cottingham AH(5)(6), Ahmed RA(7).
ABSTRACT
BACKGROUND: In-hospital resuscitation events have complex and enduring effects on clinicians, with implications for job satisfaction, performance, and burnout. Ethically ambiguous cases are associated with increased moral distress. We aim to quantitatively describe the multidisciplinary resuscitation experience. METHODS: Multidisciplinary in-hospital healthcare professionals at an adult academic health center in the Midwestern United States completed surveys one and six weeks after a resuscitation event. Surveys included demographic data, task load (NASA-TLX), overall and moral distress, anxiety, depression, and spiritual peace. Spearman's rank correlation was computed to assess task load and distress. RESULTS: During the 5-month study period, the study included 12 resuscitation events across six inpatient units. Of 82 in-hospital healthcare professionals eligible for recruitment, 44 (53.7%) completed the one-week post-resuscitation event survey. Of those, 37 (84.1%) completed the six-week survey. Highest median task load burden at one week was seen for temporal demand, effort, and mental demand. Median moral distress scores were low, while "at peace" median scores tended to be high. There were no significant non-zero changes in task load or

distress scores from weeks 1-6. Mental demand ($r = 0.545$, $p < 0.001$), physical demand ($r = 0.464$, $p = 0.005$), performance ($r = -0.539$, $p < 0.001$), and frustration ($r = 0.545$, $p < 0.001$) significantly correlated with overall distress. Performance ($r = -0.371$, $p = 0.028$) and frustration ($r = 0.480$, $p = 0.004$) also significantly correlated with moral distress. CONCLUSIONS: In-hospital healthcare professionals' experiences of resuscitation events are varied and complex. Aspects of task load burden including mental and physical demand, performance, and frustration contribute to overall and moral distress, deserving greater attention in clinical contexts.

INJURIES AND CPR

No articles identified.

CAUSE OF THE ARREST

1. Nutrients. 2023 Jan 14;15(2):436. doi: 10.3390/nu15020436.

Do Body Mass Index and Nutritional Risk Score 2002 Influence the In-Hospital Mortality of Patients Following Cardiac Arrest?

Fehler P(1)(2), Zielińska M(2)(3), Uchmanowicz B(4), Juárez-Vela R(5), Lewandowski Ł(6), Zieliński S(2)(3), Czapla M(1)(5)(7).

ABSTRACT

BACKGROUND: Contemporarily, cardiac arrest (CA) remains one of the leading causes of death. Poor nutritional status can increase the post-CA mortality risk. The aim of this study was to determine the relationship between body mass index (BMI) and Nutritional Risk Score 2002 (NRS 2002) results and in-hospital mortality in patients admitted to the intensive care unit (ICU) after in-hospital and out-of-hospital cardiac arrest. METHODS: A retrospective study and analysis of medical records of 161 patients admitted to the ICU of the University Clinical Hospital in Wrocław (Wrocław, Poland) was conducted. RESULTS: No significant differences in body mass index (BMI) and nutritional risk score (NRS 2002) values were observed between non-survivors and survivors. Non-survivors had significantly lower albumin concentration ($p = 0.017$) and total cholesterol (TC) ($p = 0.015$). In multivariate analysis BMI and NRS 2002 scores were not, per se, associated with the in-hospital mortality defined as the odds of death (Model 1: p: 0.700, 0.430; Model 2: p: 0.576, 0.599). Univariate analysis revealed significant associations between the hazard ratio (HR) and TG ($p \approx 0.017$, HR: 0.23) and hsCRP ($p \approx 0.018$, HR: 0.34). In multivariate analysis, mortality risk over time was influenced by higher scores in parameters such as BMI ($HR = 0.164$; $p = 0.048$) and hsCRP ($HR = 1.006$, $p = 0.002$). CONCLUSIONS: BMI and NRS 2002, on their own (unconditionally - in the whole study group) did not alter the odds of mortality in patients admitted to the intensive care unit (ICU) after in-hospital and out-of-hospital cardiac arrest. The risk of in-hospital mortality (expressed as hazard ratio - the risk over the time period of the study) increased with an increase in BMI but not with NRS 2002.

2. Resuscitation. 2023 Jan 12:109692. doi: 10.1016/j.resuscitation.2023.109692. Online ahead of print.

Characteristics of patients resuscitated after burn related out-of-hospital cardiac arrest.

Hoshino T(1), Enomoto Y(2), Inoue Y(2).

ABSTRACT

AIM: This study's objective was to describe the characteristics of burn injury patients who were resuscitated after burn related out-of-hospital cardiac arrest (OHCA). METHOD: We conducted a retrospective cohort study and examined characteristics of burn related OHCA using data from a

Japanese nationwide burn registry that was collected between April 1, 2011 and March 31, 2020. First, we compared the characteristics of burn patients with and without OHCA. Second, among burn patients with OHCA, we compared the characteristics of survivors with non-survivors. RESULTS: In the database, there were 16,995 hospitalised burn patients and 256 burn related OHCA. Thirty-two of the 256 burn patients (13%) survived after admission. Among patients with burns who also had OHCA, flames were the most common injury mechanism (74%); in comparison to all other injury mechanisms, the rate of flame burn was significantly higher in burn patients with OHCA than in burn patients without OHCA. The most common cause of death for burn related OHCA is carbon-monoxide poisoning (46%). Compared with survivors, non-survivors had a larger burn area, greater age and more complications. such as inhalation injuries and perineal burn injuries. Compared to other mechanisms of burn injury, electrical burn injuries were more common among survivors. In twelve patients with electrical burns, eight patients survived (67%) OHCA; of those eight patients, six (50%) could be discharged home. CONCLUSION: Patients with burn related OHCA have a poor prognosis; however, patients who sustain electrical shock injuries may do better.

END-TIDAL CO_2

No articles identified.

ORGAN DONATION

No articles identified.

FEEDBACK

No articles identified.

DRUGS

1. J Clin Med. 2023 Jan 6;12(2):481. doi: 10.3390/jcm12020481.

How Epinephrine Administration Interval Impacts the Outcomes of Resuscitation during Adult Cardiac Arrest: A Systematic Review and Meta-Analysis.

Wongtanasarasin W(1)(2), Srisurapanont K(1), Nishijima DK(2).

ABSTRACT

Current guidelines for treating cardiac arrest recommend administering 1 mg of epinephrine every 3-5 min. However, this interval is based solely on expert opinion. We aimed to investigate the impact of the epinephrine administration interval (EAI) on resuscitation outcomes in adults with cardiac arrest. We systematically reviewed the PubMed, EMBASE, and Scopus databases. We included studies comparing different EAIs in adult cardiac arrest patients with reported neurological outcomes. Pooled estimates were calculated using the IVhet meta-analysis, and the heterogeneities were assessed using Q and I2 statistics. We evaluated the study risk of bias and overall quality using validated bias assessment tools. Three studies were included. All were classified as "good quality" studies. Only two reported the primary outcome. Compared with a recommended EAI of 3-5 min, a favorable neurological outcome was not significantly different in patients with the other frequencies: for <3 min, odds ratio (OR) 1.93 (95% CI: 0.82-4.54); for >5 min, OR 1.01 (95% CI: 0.55-1.87). For survival to hospital discharge, administering epinephrine for less than 3 min was not

associated with a good outcome (OR 1.66, 95% CI: 0.89-3.10). Moreover, EAI of >5 min did not pose a benefit (OR 0.87, 95% CI: 0.68-1.11). Our review showed that EAI during CPR was not associated with better hospital outcomes. Further clinical trials are necessary to determine the optimal dosing interval for epinephrine in adults with cardiac arrest.

2. J Clin Med. 2023 Jan 6;12(2):460. doi: 10.3390/jcm12020460.
Dextrose Administration and Resuscitation Outcomes in Patients with Blood Sugar Less Than 150 mg/dL during Cardiopulmonary Resuscitation: An Observational Data Analysis.
Wongtanasarasin W(1)(2), Phinyo P(3)(4)(5).
ABSTRACT
Low blood sugar is commonly found during cardiopulmonary resuscitation (CPR). However, current guidelines do not mention the importance of glucose testing and acute management for hypoglycemia during CPR. We intended to investigate the association between dextrose administration and resuscitation outcomes in patients with blood sugar less than 150 mg/dL during cardiac arrest in the emergency department (ED). We conducted a retrospective cohort study at a tertiary hospital between 2017 and 2020, including patients with intra-arrest blood glucose <150 mg/dL. Logistic regression with inverse probability treatment weighting (IPTW) was used. The primary outcome was the return of spontaneous circulation (ROSC). Secondary outcomes included survival to hospital admission and hospital discharge and favorable neurological outcomes at discharge. A total of 865 patients received CPR at the ED during the study period. Of these, 229 with low blood sugar were included (60 in the treatment group and 169 in the non-treatment group). The mean age was 59.5 ± 21.4 years. After IPTW, dextrose administration during CPR was not associated with ROSC (adjusted OR [aOR] 1.44, 95% CI 0.30-0.69), survival to hospital admission (aOR 1.27, 95% CI 0.54-3.00), survival to hospital discharge (aOR 0.68, 95% CI 0.20-2.29), and favorable neurological status (aOR 2.21, 95% CI 0.23-21.42). Our findings suggested that dextrose administration during CPR at the ED might not lead to better or worse resuscitation outcomes. Owing to the design limitations and residual confounding factors, strong recommendations for dextrose administration could not be formulated. Further evidence is needed from prospective trials to confirm the efficacy of dextrose during CPR.

3. Eur J Med Res. 2023 Jan 12;28(1):24. doi: 10.1186/s40001-022-00974-8.
Therapeutic and adverse effects of adrenaline on patients who suffer out-of-hospital cardiac arrest: a systematic review and meta-analysis.
Zhong H(#)(1)(2), Yin Z(#)(3), Kou B(#)(1), Shen P(#)(1), He G(1), Huang T(1), Liang J(1), Huang S(1), Huang J(1), Zhou M(4)(5), Deng R(6).
ABSTRACT
OBJECTIVE: The efficacy and safety of epinephrine in patients with out-of-hospital cardiac arrest (OHCA) remains controversial. The meta-analysis was used to comprehensively appraise the influence of epinephrine in OHCA patients. METHODS: We searched all randomized controlled and cohort studies published by PubMed, EMBASE, and Cochrane Library from the inception to August 2022 on the prognostic impact of epinephrine on patients with OHCA. Survival to discharge was the primary outcome, while the return of spontaneous circulation (ROSC) and favorable neurological outcome were secondary outcomes. RESULTS: The meta-analysis included 18 studies involving 863,952 patients. OHCA patients with adrenaline had an observably improved chance of ROSC (RR 2.81; 95% CI 2.21-3.57; P = 0.001) in randomized controlled studies, but the difference in survival to discharge (RR 1.27; 95% CI 0.58-2.78; P = 0.55) and favorable neurological outcomes (RR 1.21; 95% CI 0.90-1.62; P = 0.21) between the two groups was not statistically significant. In cohort studies, the rate of ROSC (RR 1.62; 95% CI 1.14-2.30; P = 0.007) increased significantly with the adrenaline group,

while survival to discharge (RR 0.73; 95% CI 0.55-0.98; P = 0.03) and favorable cerebral function (RR 0.42; 95% CI 0.30-0.58; P = 0.001) were lower than the non-adrenaline group. CONCLUSION: We found that both the randomized controlled trials (RCTs) and cohort studies showed that adrenaline increased ROSC in OHCA patients. However, they were unable to agree on a long-term prognosis. The cohort studies showed that adrenaline had an adverse effect on the long-term prognosis of OHCA patients (discharge survival rate and good neurological prognosis), but adrenaline had no adverse effect in the RCTs. In addition to the differences in research methods, there are also some potential confounding factors in the included studies. Therefore, more high-quality studies are needed to fully confirm the effect of adrenaline on the long-term results of OHCA.

4. Am J Emerg Med. 2023 Feb;64:46-50. doi: 10.1016/j.ajem.2022.11.019. Epub 2022 Nov 17.
Esmolol, vector change, and dose-capped epinephrine for prehospital ventricular fibrillation or pulseless ventricular tachycardia.
Stupca K(1), Scaturo N(2), Shomo E(2), King T(3), Frank M(4).
ABSTRACT
BACKGROUND: Refractory ventricular fibrillation (VF) and pulseless ventricular tachycardia (pVT) cardiac arrest describes a subset of patients who do not respond to standard Advanced Cardiac Life Support (ACLS) interventions and are associated with poor outcomes. Esmolol administration and vector change defibrillation have shown promise in improving outcomes in these patients, however evidence is limited. OBJECTIVES: This study compares clinical outcomes between patients with prehospital refractory VF/pVT who received an Emergency Medical Service (EMS) bundle, comprised of esmolol administration, vector change defibrillation, and dose-capped epinephrine at 3 mg, to patients who received standard ACLS interventions. METHODS: This multicenter, retrospective, cohort study evaluated medical records between October 18, 2017 and March 15, 2022. Patients were enrolled if they experienced a prehospital cardiac arrest with the rhythm VF or pVT, had received at least three standard defibrillations, at least 3 mg of epinephrine, and 300 mg of amiodarone. Patients who received the EMS bundle after its implementation were compared to patients who received standard ACLS interventions prior to its implementation. The primary outcome was sustained return of spontaneous circulation (ROSC), defined as ROSC lasting 20 min without recurrence of cardiac arrest. Secondary outcomes included the incidence of any ROSC, survival to hospital arrival, survival at hospital discharge, and neurologically intact survival at hospital discharge. RESULTS: Eighty-three patients were included in the study. Thirty-six were included in the pre-EMS bundle group and 47 patients were included in the post-EMS bundle group. Patients in the pre-EMS bundle group achieved significantly higher rates of sustained ROSC (58.3% vs 17%, $p < 0.001$), any ROSC (66.7% vs 19.1%, $p < 0.001$), and survival to hospital arrival (55.6% vs 17%, $p < 0.001$). The rates of survival to hospital discharge (16.7% vs 6.4%, $p = 0.17$) and neurologically intact survival at hospital discharge (5.9% vs 4.3%, $p = 1.00$) were not significantly different between groups. CONCLUSIONS: Patients who received the EMS bundle achieved sustained ROSC significantly less often and were less likely to have pulses at hospital arrival. The incidence of neurologically intact survival was low and similar between groups.

TRAUMA

No articles identified.

VENTILATION

1. Resuscitation. 2023 Jan 18:109696. doi: 10.1016/j.resuscitation.2023.109696. Online ahead of print.

Measuring Ventilation during Out-of-Hospital Cardiac Arrest: PART of the Equation.

Counts CR(1), Johnson NJ(2).

NO ABSTRACT AVAILABLE

2. Children (Basel). 2023 Jan 12;10(1):148. doi: 10.3390/children10010148.

Effect of Intermediate Airway Management on Ventilation Parameters in Simulated Pediatric Out-of-Hospital Cardiac Arrest: Protocol for a Multicenter, Randomized, Crossover Trial.

Stuby L(1), Mühlemann E(2), Jampen L(2), Thurre D(3), Siebert JN(4), Suppan L(5).

ABSTRACT

Most pediatric out-of-hospital cardiac arrests (OHCAs) are caused by hypoxia, which is generally consecutive to respiratory failure. To restore oxygenation, prehospital providers usually first use basic airway management techniques, i.e., bag-valve-mask (BVM) devices. These devices present several drawbacks, most of which could be avoided using supraglottic airway devices. These intermediate airway management (IAM) devices also present significant advantages over tracheal intubation: they are associated with higher success and lower complication rates in the prehospital setting. There are, however, few data regarding the effect of early IAM in pediatric OHCA. This paper details the protocol of a trial designed to evaluate the impact of this airway management strategy on ventilation parameters through a simulated, multicenter, randomized, crossover trial. The hypothesis underlying this study protocol is that early IAM without prior BVM ventilations could improve the ventilation parameters in comparison with the standard approach, which consists in BVM ventilations only.

3. Prehosp Emerg Care. 2023 Jan 18:1-13. doi: 10.1080/10903127.2023.2169422. Online ahead of print.

A Retrospective Nationwide Comparison of the iGel and King Laryngeal Tube Supraglottic Airways for Out-of-Hospital Cardiac Arrest Resuscitation.

Smida T(1)(2), Menegazzi J(3), Crowe R(4), Scheidler J(2), Salcido D(3), Bardes J(2)(5).

ABSTRACT

INTRODUCTION: While various supraglottic airway devices are available for use during out-of-hospital cardiac arrest (OHCA) resuscitation, comparisons of patient outcomes by device are limited. In this study, we aimed to compare outcomes of OHCA patients who had airway management by emergency medical services (EMS) with the iGel or King-LT. METHODS: We used the 2018-2021 ESO Data Collaborative public use research datasets for this retrospective study. All patients with non-traumatic OHCA who had iGels or King-LTs inserted by EMS were included. Our primary outcome was survival to discharge to home, and secondary outcomes included first-pass success, return of spontaneous circulation (ROSC), and prehospital rearrest. We examined the association between airway device and each outcome using two-level mixed effects logistic regression with EMS agency as the random effect, adjusted for standard Utstein variables and failed intubation prior to supraglottic airway insertion. Average treatment effects were calculated through propensity score matching. RESULTS: A total of 286,192 OHCA patients were screened, resulting in 93,866 patients eligible for inclusion in this analysis. A total of 9,456 transported patients (59.8% iGel) had associated hospital disposition data. Use of the iGel was associated with greater survival to discharge to home (aOR:1.36[1.06, 1.76]; ATE:2.2%[+0.5, +3.8];n = 7,576), first pass airway success (aOR:1.94[1.79, 2.09];n = 73,658), and ROSC (aOR:1.19[1.13, 1.26];n = 73,207) in comparison to airway management with the King-LT. iGel use was associated with lower odds of experiencing a rearrest (aOR:0.73[0.67, 0.79];n = 20,776).Among patients who received a supraglottic device as a primary airway, use of the iGel was not associated with significantly greater survival to discharge to home (aOR:1.26[0.95, 1.68]). Among patients who received a supraglottic device as a rescue airway

following failed intubation, use of the iGel was associated with greater odds of survival to discharge to home (aOR:2.16[1.15, 4.04]). CONCLUSION: In this dataset, use of the iGel during adult OHCA resuscitation was associated overall with better outcomes compared to use of the King-LT. Subgroup analyses suggested that use of the iGel was associated with greater odds of achieving the primary outcome than the King-LT when used as a rescue device but not when used as the primary airway management device.

4. Resusc Plus. 2023 Jan 5;13:100350. doi: 10.1016/j.resplu.2022.100350. eCollection 2023 Mar.
Improved simulated ventilation with a novel tidal volume and peak inspiratory pressure controlling bag valve mask: A pilot study.
Merrell JG(1)(2), Scott AC(2), Stambro R(3), Boukai A(4), Cooper DD(3)(5).
ABSTRACT
INTRODUCTION: The dangers of hyperventilation during resuscitation are well known. Traditional bag valve mask (BVM) devices rely on end users to control tidal volume (Vt), rate, and peak inspiratory pressures (PIP) of ventilation. The Butterfly BVM (BBVM) is a novel device intending to give greater control over these parameters. The objective of this pilot study was to compare the BBVM against a traditional device in simulated resuscitations. METHODS: Senior emergency medicine residents and fellows participated in a three-phase simulation study. First, participants used the Ambu Spur II BVM in adult and pediatric resuscitations. Vt, PIP, and rate were recorded. Second, participants repeated the resuscitations after a brief introduction to the BBVM. Third, participants were given a longer introduction to the BBVM and were tested on their ability to adjust its various settings. RESULTS: Nineteen participants were included in the adult arm of the study, and 16 in the pediatric arm. The BBVM restricted Vt delivered to a range of 4-8 ml/kg vs 9 ml/kg and 13 ml/kg (Ambu adult and Ambu pediatric respectively). The BBVM never exceeded target minute ventilations while the Ambu BVMs exceeded target minute ventilation in 2 of 4 tests. The BBVM failed to reliably reach higher PIP targets in one test, while the pediatric Ambu device had 76 failures of excessive PIP compared to 2 failures by the BBVM. CONCLUSION: The BBVM exceeded the Ambu Spur II in delivering appropriate Vts and in keeping PIPs below target maximums to simulated adult and pediatric patients in this pilot study.

CERERBRAL MONITORING

No articles identified.

ULTRASOUND AND CPR

1. Resuscitation. 2023 Jan 13:109695. doi: 10.1016/j.resuscitation.2023.109695. Online ahead of print.
Doppler Ultrasound Peak Systolic Velocity versus End Tidal Carbon Dioxide during Pulse Checks in Cardiac Arrest1.
Haddad G(1), Margius D(2), Cohen AL(2), Gorlin M(3), Jafari D(4), Li T(2), Owens C(5), Becker L(6), Rolston DM(4).
ABSTRACT
BACKGROUND: An accurate, non-invasive measure of return of spontaneous circulation (ROSC) is needed to improve management of cardiac arrest patients. OBJECTIVES: During a pulse check in Emergency Department (ED) cardiac arrest patients, we compared the correlation between 1) end tidal carbon dioxide (ETCO2) and systolic blood pressure (SBP), and 2) Doppler ultrasound peak systolic velocity (PSV) and SBP. Additionally, we assessed the accuracy of PSV ≥20 cm/sec in comparison to previously suggested ETCO2 ≥20 or ≥25 mmHg thresholds to predict ROSC with SBP ≥60 mmHg. METHODS: This was a secondary analysis of a previously published prospective

observational study of ED cardiac arrest patients with an advanced airway and femoral arterial line in place. During each pulse check, highest SBP, highest PSV, and ETCO2 at the end of the pulse check were recorded. Spearman correlation coefficients were calculated and compared using a Fisher Z-transformation. Accuracy of previously determined PSV and ETCO2 thresholds for detecting ROSC with SBP ≥60 mmHg were compared using McNemar's tests. RESULTS: Based on data from 35 patients with 111 pulse checks, we found a higher correlation between PSV and SBP than ETCO2 and SBP (0.71 vs. 0.31; p<0.001). Diagnostic accuracy of PSV ≥20 cm/sec for detecting ROSC with SBP ≥60 mmHg was 89% (95% CI: 82%-94%) versus 59% (95% CI: 49%-68%) and 58% (95% CI: 48%-67%) for ETCO2 ≥20 and ≥25 mmHg, respectively. CONCLUSIONS: During a pulse check, Doppler ultrasound PSV outperformed ETCO2 for correlation with SBP and accuracy in detecting ROSC with SBP ≥60 mmHg.

ORGANISATION AND TRAINING

1. J Clin Med. 2023 Jan 13;12(2):643. doi: 10.3390/jcm12020643.

The Epidemiology of Pre-Hospital EMS Treatment of Geriatric Patients in the City of Vienna-An Overview.

Krammel M(1)(2), Drahohs V(3), Hamp T(2)(4), Lemoyne S(5), Grassmann D(1)(2), Schreiber W(1)(6), Sulzgruber P(1)(7), Schnaubelt S(1)(5)(6).

ABSTRACT

Background: The city of Vienna, Austria, has a gradually aging population. Elderly people, over 65 years old and living at home or in nursing homes, frequently use Emergency Medical Services (EMS). However, there is no previous data comparing the EMS utilization of elderly- and non-elderly patients in Vienna. Methods: We retrospectively analyzed all EMS incidents in Vienna from 2012 to 2019. Transport- and emergency physician treatment rates, annual fluctuations, and the number of non-transports were compared between elderly (≥65 years) and non-elderly (18-64 years) patients. Results: Elderly people accounted for 42.6% of the total EMS responses in adult patients, representing an annual response rate of 223 per 1000 inhabitants ≥ 65 years. Compared to 76 per 1000 inhabitants in patients 18-64 years old, this results in an incidence rate ratio (IRR) of 2.93 [2.92-2.94]. Elderly people were more likely (OR 1.68 [1.65-1.70]) to need emergency physicians, compared to 18-64 year-olds. Nursing home residents were twice (OR 2.11 [2.06-2.17]) as likely to need emergency physicians than the rest of the study group. Non-transports were more likely to occur in patients over 65 years than in non-elderlies (14% vs. 12%, p < 0.001). Conclusions: The elderly population ≥ 65 years in Vienna shows higher EMS response rates than younger adults. They need emergency physicians more often, especially when residing in nursing homes. The economical and organizational strain this puts on the emergency response system should trigger further research and the development of solutions, such as specific response units dedicated to elderly people.

2. JMIR Med Inform. 2023 Jan 20;11:e38590. doi: 10.2196/38590.

Dealing With Missing, Imbalanced, and Sparse Features During the Development of a Prediction Model for Sudden Death Using Emergency Medicine Data: Machine Learning Approach.

Chen X(#)(1), Chen H(#)(2), Nan S(1), Kong X(3), Duan H(1)(4), Zhu H(2)(5).

ABSTRACT

BACKGROUND: In emergency departments (EDs), early diagnosis and timely rescue, which are supported by prediction modes using ED data, can increase patients' chances of survival. Unfortunately, ED data usually contain missing, imbalanced, and sparse features, which makes it challenging to build early identification models for diseases. OBJECTIVE: This study aims to propose a

systematic approach to deal with the problems of missing, imbalanced, and sparse features for developing sudden-death prediction models using emergency medicine (or ED) data. METHODS: We proposed a 3-step approach to deal with data quality issues: a random forest (RF) for missing values, k-means for imbalanced data, and principal component analysis (PCA) for sparse features. For continuous and discrete variables, the decision coefficient R2 and the κ coefficient were used to evaluate performance, respectively. The area under the receiver operating characteristic curve (AUROC) and the area under the precision-recall curve (AUPRC) were used to estimate the model's performance. To further evaluate the proposed approach, we carried out a case study using an ED data set obtained from the Hainan Hospital of Chinese PLA General Hospital. A logistic regression (LR) prediction model for patient condition worsening was built. RESULTS: A total of 1085 patients with rescue records and 17,959 patients without rescue records were selected and significantly imbalanced. We extracted 275, 402, and 891 variables from laboratory tests, medications, and diagnosis, respectively. After data preprocessing, the median R2 of the RF continuous variable interpolation was 0.623 (IQR 0.647), and the median of the κ coefficient for discrete variable interpolation was 0.444 (IQR 0.285). The LR model constructed using the initial diagnostic data showed poor performance and variable separation, which was reflected in the abnormally high odds ratio (OR) values of the 2 variables of cardiac arrest and respiratory arrest (201568034532 and 1211118945, respectively) and an abnormal 95% CI. Using processed data, the recall of the model reached 0.746, the F1-score was 0.73, and the AUROC was 0.708. CONCLUSIONS: The proposed systematic approach is valid for building a prediction model for emergency patients.

3. Stat Med. 2023 Jan 19. doi: 10.1002/sim.9612. Online ahead of print.
Marginal structural models with monotonicity constraints: A case study in out-of-hospital cardiac arrest patients.
Starkopf L(1), Rajan S(2), Lange T(1), Gerds TA(1).
ABSTRACT
This paper deals with estimating the probability of a binary counterfactual outcome as a function of a continuous covariate under monotonicity constraints. We are motivated by the study of out-of-hospital cardiac arrest patients which aims to estimate the counterfactual 30-day survival probability if either all patients had received, or if none of the patients had received bystander cardiopulmonary resuscitation (CPR), as a function of the ambulance response time. It is natural to assume that the counterfactual 30-day survival probability cannot increase with increasing ambulance response time. We model the monotone relationship with a marginal structural model and B-splines. We then derive an estimating equation for the parameters of interest which however further relies on an auxiliary regression model for the observed 30-day survival probabilities. The predictions of the observed 30-day survival probabilities are used as pseudo-values for the unobserved counterfactual 30-day survival status. The methods are illustrated and contrasted with an unconstrained modeling approach in large-scale Danish registry data.

4. Resusc Plus. 2023 Jan 6;13:100352. doi: 10.1016/j.resplu.2022.100352. eCollection 2023 Mar.
Assessing the weak links - Necessity and impact of regional cardiac arrest awareness campaigns for laypersons.
Orlob S(1), Grundner S(1)(2), Wittig J(3)(4), Eichinger M(1), Pucher F(5), Eichlseder M(1), Lingitz R(6), Rief M(1), Palt N(1)(4), Hartwig C(1), Zangl G(7), Haar M(8), Manninger M(9)(10), Rohrer U(9), Scherr D(9), Zirlik A(9), Prause G(1), Zweiker D(9)(11).
ABSTRACT
INTRODUCTION: Public knowledge of out-of-hospital cardiac arrest (OHCA), and initiation of basic life support (BLS) is crucial to increase survival in OHCA. METHODS: The study analysed the

knowledge and willingness to perform BLS of laypersons passing an AED at a public train station. Interviewees were recruited at two time points before and after a four year-long structured regional awareness campaign, which focused on call, compress, shock in a mid-size European city (270,000 inhabitants). Complete BLS was defined as multiple responses for call for help; initiation of chest compressions; and usage of an AED, without mentioning recovery position. Minimal BLS was defined as call for help and initiation of chest compressions. RESULTS: A total of 784 persons were interviewed, 257 at baseline and 527 post-campaign. Confronted with a fictional OHCA, at baseline 8.5% of the interviewees spontaneously mentioned actions for complete BLS and 17.9% post-campaign ($p = 0.009$). An even larger increase in knowledge was seen in minimal BLS (34.6% vs 60.6%, $p < 0.001$). CONCLUSION: After a regional cardiac arrest awareness campaign, we found an increase in knowledge of BLS actions in the lay public. However, our investigation revealed severe gaps in BLS knowledge, possibly resulting in weak first links of the chain of survival.

5. Emerg Med J. 2023 Jan 17:emermed-2022-212622. doi: 10.1136/emermed-2022-212622. Online ahead of print.

Determining the top research priorities in UK prehospital critical care: a modified Delphi study.

Ramage L(1)(2), McLachlan S(2)(3), Williams K(4)(5); PreHOspital Trainee Operated research Network (PHOTON).

ABSTRACT

BACKGROUND: Prehospital critical care is a rapidly evolving field. There is a paucity of evidence relating to its practice, with limited progress in answering those research questions identified over a decade ago. It is vital that evidence gaps are identified and addressed. This study aimed to define the current research priorities in UK prehospital critical care. METHODS: This modified national Delphi study was coordinated by the Pre-HOspital Trainee Operated research Network and conducted in four rounds between October 2021 and April 2022. Rounds 1 and 2 were conducted online with clinicians involved in prehospital critical care delivery and non-clinical prehospital researchers. Rounds 3 and 4 were completed online by a subject matter expert (SME) panel. RESULTS: In round 1, 78 participants submitted 394 research questions relating to prehospital critical care delivery in the UK. These were refined and categorised into 192 questions, which were scored for importance in round 2. Fifty questions were discussed and scored by the SME panel in round 3. Round 4 created a ranked top 20 list. The top research priority was 'Which cardiac arrest patients should critical care teams be dispatched to; how do we identify these patients during the emergency call?'. Other priorities included dispatch optimisation, out-of-hospital medical cardiac arrest management, optimising resuscitation in haemorrhagic shock, improving traumatic brain injury outcomes and optimising management of traumatic cardiac arrest. CONCLUSIONS: This modified Delphi study identified 20 research priorities where efforts should be concentrated to develop collaborative prehospital critical care research within the UK over the next 5 years.

6. Interv Cardiol. 2022 Nov 10;17:e18. doi: 10.15420/icr.2022.09. eCollection 2022 Jan.

British Cardiovascular Interventional Society Consensus Position Statement on Out-of-Hospital Cardiac Arrest 1: Pathway of Care.

Pareek N(1)(2), Rees P(3)(4), Quinn T(5), Vopelius-Feldt JV(6), Gallagher S(7), Mozid A(8), Johnson T(9), Gudde E(10)(11), Simpson R(10)(11), Glover G(12), Davies J(10)(11), Curzen N(13)(14), Keeble TR(10)(11).

ABSTRACT

Out-of-hospital cardiac arrest (OHCA) affects 80,000 patients per year in the UK; despite improvements in care, survival to discharge remains lower than 10%. NHS England and several

societies recommend all resuscitated OHCA patients be directly transferred to a cardiac arrest centre (CAC). However, evidence is limited that all patients benefit from transfer to a CAC, and there are significant organisational, logistic and financial implications associated with such change in policies. Furthermore, there is significant variability in interventional cardiovascular practices for OHCA. Accordingly, the British Cardiovascular Interventional Society established a multidisciplinary group to address variability in practice and provide recommendations for the development of cardiac networks. In this position statement, we recommend: the formal establishment of dedicated CACs; a pathway of conveyance to CACs; and interventional practice to standardise our approach. Further research is needed to understand the role of CACs and which interventions benefit patients with OHCA to support wide-scale changes in networks of care across the UK.

7. Interv Cardiol. 2022 Nov 10;17:e19. doi: 10.15420/icr.2022.08. eCollection 2022 Jan.
British Cardiovascular Intervention Society Consensus Position Statement on Out-of-hospital Cardiac Arrest 2: Post-discharge Rehabilitation.
Mion M(1)(2), Simpson R(1)(2), Johnson T(3), Oriolo V(3)(4), Gudde E(1)(2), Rees P(5), Quinn T(6), Vopelius-Feldt VJ(7), Gallagher S(8), Mozid A(9), Curzen N(10)(11), Davies J(1)(2), Swindell P(12), Pareek N(13)(14), Keeble TR(1)(2).
ABSTRACT
Out-of-hospital cardiac arrest (OHCA) is a major public health issue that poses significant challenges both in immediate management and long-term follow-up. Survivors of OHCA often experience a combination of complex medical, physical and psychological needs that have a significant impact on quality of life. Guidelines suggest a multi-dimensional follow-up to address both physical and non-physical domains for survivors. However, it is likely that there is substantial unwarranted variation in provision of services throughout the UK. Currently, there is no nationally agreed model for the follow-up of OHCA survivors and there is an urgent need for a set of standards and guidelines in order to ensure equal access for all. Accordingly, the British Cardiovascular Interventional Society established a multi-disciplinary working group to develop a position statement that summarises the most up-to-date evidence and provides guidance on essential and desirable services for a dedicated follow-up pathway for survivors of OHCA.

8. J Healthc Eng. 2023 Jan 5;2023:9936114. doi: 10.1155/2023/9936114. eCollection 2023.
Knowledge regarding Basic Life Support among Health Care Workers of the Hospital of Nepal.
Chaudhary GP(1), Sah K(2), Malla J(2), Das N(2), Chaudhary S(2), Chaudhary I(2), Pandey J(1).
ABSTRACT
Basic life support refers to a sequence of care provided to patients who are experiencing respiratory arrest, cardiac arrest, or airway obstruction. It is a specific level of prehospital medical care provided by the trained responders, including emergency medical technicians, in the absence of advanced medical care to maintain the patient's life. BLS course trains participants to promptly recognize several life-threatening emergencies, give high-quality chest compressions, deliver appropriate ventilations, and provide early use of an AED. According to American Heart Association (AHA) guidelines, every missed minute in applying defibrillation in a cardiac arrest decreases the survival rate by 70%-10%. According to European Resuscitation Council (ERC), early resuscitation and prompt defibrillation (within 1-2 minutes) can result in >60% survival. A quantitative, descriptive study design is used in this study. A purposive sampling technique was used, and the sample size was 95. A self-structuredclose-ended questionnaire was used to assess the level of knowledge of the participants. The finding revealed that among 95 participants, only 12% had adequate, 55% had moderate, and 32% had inadequate knowledge about Basic Life Support. The study showed that

knowledge among healthcare workers about basic life support is insufficient for the majority of participants. There is a significant association between dependent and independent variables.

9. Eur Heart J. 2023 Jan 14;44(3):176-177. doi: 10.1093/eurheartj/ehac699.
The '10 commandments' for the 2022 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death.
Tfelt-Hansen J(1)(2), Winkel BG(1), de Riva M(3), Zeppenfeld K(3).
NO ABSTRACT AVAILABLE

10. Healthcare (Basel). 2023 Jan 4;11(2):158. doi: 10.3390/healthcare11020158.
Challenges for Optimum Cardiopulmonary Resuscitation in the Emergency Departments of Limpopo Province: A Qualitative Study.
Muthelo L(1), Seimela HM(1), Mbombi MO(1), Malema R(2), Phukubye A(1), Tladi L(1).
ABSTRACT
AIM: To describe the challenges for optimum resuscitation processes in Emergency Departments in Limpopo Province, South Africa. DESIGN: A qualitative explorative research approach was adopted to explore the resuscitation team's experiences in Emergency Departments. METHOD: Five medical doctors and twelve professional nurses were purposively sampled to participate in the study. The depth of the information obtained from the participants determined the sample size. Data collected from semi-structured individual interviews were analyzed using thematic analysis. Data quality was ensured by applying four elements: credibility, transferability, dependability, and confirmability. RESULTS: The study findings indicated diverse challenges for optimum resuscitation processes that include: A general shortage of emergency personnel, the lack of material resources and the unavailability of funds for payment of national and international trauma symposiums, the poor maintenance of emergency equipment, the lack of a continuous training program and the resuscitation team receiving different instructions from various team leaders about the standardized procedures and policies of the resuscitation process. The team leaders and managers often blamed, depreciated and disregarded the resuscitation team for failed resuscitation efforts. Public contribution: The study findings are a point of reference for the emergency resuscitation team and the department of health policymakers. Trained and well-equipped emergency resuscitation teams can improve the quality of life for patients with cardiac arrest.

11. Children (Basel). 2022 Dec 27;10(1):58. doi: 10.3390/children10010058.
Compression-Only Cardiopulmonary Resuscitation and Automated External Defibrillator Course for Primary School Students: A Malaysian Pilot Study.
Fariduddin MN(1), Mohamed M(1), Jaafar MJ(2), Baharin K(3), Siau CS(4), Bashah K(5).
ABSTRACT
The Malaysian national school curriculum currently lacks resources and tools to enforce CPR education. The aim of this study was to investigate the efficacy of a compression-only cardiopulmonary resuscitation and automated external defibrillator course among primary school students to increase their knowledge and technical skills and improve their attitudes. A quasi-experimental study was conducted using a pre-post non-equivalent design involving 38 students aged 10-12. Cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) knowledge, technical skills, and attitude towards CPR were assessed in a post test with three-month follow-up. Results of the MANOVA analysis showed significant differences in the level of knowledge ($F = 10.29$, $p < 0.001$) and attitude ($F = 13.87$, $p < 0.001$) based on the students' age group at the time of the post test. The proportion of students who passed the technical skills component differed significantly by age ($\chi2 = 12.12$; $p = 0.002$) and BMI ($\chi2 = 6.34$; $p = 0.041$). No significant decay was

reported in the total mean scores for knowledge, technical skills, and attitude (F = 0.727, p = 0.54) at 3-month follow-up. The course helped students perform CPR and utilize AED effectively while promoting a positive attitude with up to 3 months of retention, demonstrating the feasibility of extending the course within the Malaysian primary school curriculum.

POST-CARDIAC ARREST TREATMENTS

No articles identified.

TARGETED TEMPERATURE MANAGEMENT

1. Am Heart J. 2023 Feb;256:73-84. doi: 10.1016/j.ahj.2022.11.005. Epub 2022 Nov 11.
Effect of cooling methods and target temperature on outcomes in comatose patients resuscitated from cardiac arrest: Systematic review and network meta-analysis of randomized trials.
Matsumoto S(1), Kuno T(2), Mikami T(3), Takagi H(4), Ikeda T(1), Briasoulis A(5), Bortnick AE(6), Sims D(6), Katz JN(7), Jentzer J(8), Bangalore S(9), Alviar CL(9).
ABSTRACT
BACKGROUND: Targeted temperature management (TTM) has been recommended after cardiac arrest (CA), however the specific temperature targets and cooling methods (intravascular cooling (IVC) versus surface cooling (SC)) remain uncertain. METHODS: PUBMED and EMBASE were searched until October 8, 2022 for randomized clinical trials (RCTs) investigating the efficacy of TTM after CA. The randomized treatment arms were categorized into the following 6 groups: 31..C to 33..C IVC, 31..C to 33..C SC, 34..C to 36..C IVC, 34..C to 36..C SC, strict normothermia or fever prevention (Strict NT or FP), and standard of care without TTM (No-TTM). The primary outcome was neurological recovery. P-score was used to rank the treatments, where a larger value indicates better performance. RESULTS: We identified 15 RCTs, involving 5,218 patients with CA. Compared to No-TTM as the reference, the other therapeutic options significantly improved neurological outcomes (vs No-TTM; 31..C to 33..C IVC: RR = 0.67, 95% CI 0.54 to 0.83; 31..C to 33..C SC RR = 0.73, 95% CI 0.61 to 0.87; 34..C to 36..C IVC: RR = 0.66, 95% CI 0.51 to 0.86; 34..C to 36..C SC: RR = 0.73, 0.59 to 0.90; Strict NT or FP: RR = 0.75, 95% CI 0.62 to 0.90). Overall, 31-33..C IVC had the highest probability to be the best therapeutic option to improve outcomes (the ranking P-score of 0.836). As a subgroup analysis, the ranking P-score showed that IVC might be a better cooling method compared to SC (IVC vs SC P-score: 0.960 vs 0.670). CONCLUSIONS: Hypothermia (31..C to 36..C IVC and SC) and active normothermia (Strict-NT and Strict-FP) were associated with better neurological outcomes compared to No-TTM, with IVC having a greater probability of being the better cooling method than SC.

ELECTROPHYSIOLOGY AND DEFIBRILLATION

1. Eur Heart J. 2023 Jan 20:ehad002. doi: 10.1093/eurheartj/ehad002. Online ahead of print.
A new defibrillation strategy for refractory ventricular fibrillation during out-of-hospital cardiac arrest: are two better than one?
Narducci ML(1), Pedicino D(1).
NO ABSTRACT AVAILABLE

PEDIATRICS AND CHILDREN

1. Pediatr Res. 2023 Jan 16. doi: 10.1038/s41390-022-02462-5. Online ahead of print.
Global burden of out-of-hospital cardiac arrest in children: a systematic review, meta-analysis, and meta-regression.
Abate SM(1), Nega S(2), Basu B(3), Mesfin R(3), Tadesse M(4).
ABSTRACT
The incidence of out-of-hospital cardiac arrest (OHCA) and its mortality among children decreased globally over the years. However, the incidence, mortality, and its determinants are heterogeneous globally. The current study was designed to investigate the incidence of OHCA, mortality, and its determinants based on a systematic review of published literature. A comprehensive search was conducted in PubMed/Medline; Science Direct, Cochrane Library, Hinari, and LILACS without language and date restrictions. The data were extracted with two independent authors in a customized format. The methodological quality of the included studies was evaluated using the Newcastle-Ottawa appraisal tool. A total of 2526 articles were identified from different databases with an initial search. Forty-eight articles with 138.3 million participants were included in the systematic review. The meta-analysis showed that the pooled rate of mortality was found to be 70% (95% CI: 57-81%, 42 studies, 28,345 participants). The incidence of OHCA and mortality among children was very high among children with significant regional disparity. Those children with cardiovascular causes of arrest, and initial nonshockable rhythm were independent predictors of OHCA-related mortality. This systematic review and meta-analysis is registered in Prospero (CRD42022316602). IMPACT: This systematic review addresses a significant health problem in a global context from 1995 to 2022. The meta-regression revealed that the incidence of OHCA and mortality of children decline over the years in high-income countries despite regional dispraises among individual studies. Body of evidence on the incidence of OHCA and mortality is lacking in low- and middle-income countries.

2. Perfusion. 2023 Jan;38(1):109-114. doi: 10.1177/02676591211041229. Epub 2021 Sep 2.
Outcomes of extracorporeal membrane oxygenation and cardiopulmonary bypass in children after drowning-related resuscitation.
Gottschalk U(1), Köhne M(2), Holst T(2), Hüners I(2), von Stumm M(3), Müller G(1), Stark V(1), van Rüth V(2), Kozlik-Feldmann R(1), Singer D(4), Sachweh JS(2), Biermann D(2).
ABSTRACT
Drowning is one of the leading causes of accidental deaths in children worldwide. However, the use of long-term extracorporeal life support (ECLS) in this setting is not widely established, and rewarming is often achieved by short-term cardiopulmonary bypass (CPB) treatment. Thus, we sought to add our experience with this means of support as a bridge-to-recovery or to-decision. This retrospective single-center study analyzes the outcome of 11 children (median 23 months, minimum-maximum 3 months-6.5 years) who experienced drowning and subsequent cardio-pulmonary resuscitation (CPR) between 2005 and 2016 and who were supported by veno-arterial extracorporeal membrane oxygenation (ECMO), CPB, or first CPB then ECMO. All but one incident took place in sweet water. Submersion time ranged between 10 and 50 minutes (median 23 minutes), water temperature between 2°C and 28°C (median 14°C), and body core temperature upon arrival in the emergency department between 20°C and 34°C (median 25°C). Nine patients underwent ongoing CPR from the scene until ECMO or CPB initiation in the operating room. The duration of ECMO or CPB before successful weaning/therapy withdrawal ranged between 2 and 322 hours (median 19 hours). A total of four patients (36%) survived neurologically mildly or not affected after 4 years of follow-up. The data indicate that survival is likely related to a shorter submersion time and lower water temperature. Resuscitation of pediatric patients after drowning

has a poor outcome. However, ECMO or CPB might promote recovery in selected cases or serve as a bridge-to-decision tool.

EXTRACORPOREAL LIFE SUPPORT

1. Physiol Res. 2022 Dec 31;71(S2):S163-S178.
Ten years of our translational research in the field of veno-arterial extracorporeal membrane oxygenation.
Kittnar O(1).
ABSTRACT
Extracorporeal life support is a treatment modality that provides prolonged blood circulation, gas exchange and can substitute functions of heart and lungs to provide urgent cardio-respiratory stabilization in patients with severe but potentially reversible cardiopulmonary failure refractory to conventional therapy. Generally, the therapy targets blood pressure, volume status, and end-organs perfusion. As there are significant differences in hemodynamic efficacy among different percutaneous circulatory support systems, it should be carefully considered when selecting the most appropriate circulatory support for specific medical conditions in individual patients. Despite severe metabolic and hemodynamic deterioration during prolonged cardiac arrest, venoarterial extracorporeal membrane oxygenation (VA ECMO) can rapidly revert otherwise fatal prognosis, thus carrying a potential for improvement in survival rate, which can be even improved by introduction of mild therapeutic hypothermia. In order to allow a rapid transfer of knowledge to clinical medicine two porcine models were developed for studying efficiency of the VA ECMO in treatments of acute cardiogenic shock and progressive chronic heart failure. These models allowed also an intensive research of adverse events accompanying a clinical use of VA ECMO and their possible compensations. The results indicated that in order to weaken the negative effects of increased afterload on the left ventricular function the optimal VA ECMO flow in cardiogenic shock should be as low as possible to allow adequate tissue perfusion. The left ventricle can be also unloaded by an ECG-synchronized pulsatile flow if using a novel pulsatile ECMO system. Thus, pulsatility of VA ECMO flow may improve coronary perfusion even under conditions of high ECMO blood flows. And last but not least, also the percutaneous balloon atrial septostomy is a very perspective method how to passively decompress overloaded left heart.

2. Resuscitation. 2023 Jan 13:109694. doi: 10.1016/j.resuscitation.2023.109694. Online ahead of print.
Clinical characteristics and outcomes after extracorporeal cardiopulmonary resuscitation in out-of-hospital cardiac arrest patients with an initial asystole rhythm.
Shirasaki K(1), Hifumi T(2), Goto M(1), Shin K(1), Horie K(1), Isokawa S(1), Inoue A(3), Sakamoto T(4), Kuroda Y(5), Imai R(6), Otani N(1); SAVE-J II study group Investigation Supervision.
ABSTRACT
AIM: This study aimed to describe the characteristics of cases of out-of-hospital cardiac arrest (OHCA) with an initial asystole rhythm in which extracorporeal cardiopulmonary resuscitation (ECPR) was introduced and discuss the clinical indications for ECPR in such patients. METHODS: This was a secondary analysis of the SAVE-J II study, a retrospective, multicentre, registry study involving 36 participating institutions in Japan. Patients with an initial asystole rhythm were selected. Favourable neurological outcomes (cerebral performance categories 1-2) constituted the primary outcome. RESULTS: In total, 202 patients met the inclusion criteria, with favourable neurological outcomes at hospital discharge in 12 patients (5.9%). Causes of cardiac arrest with favourable neurological outcomes were hypothermia (7 cases), acute coronary syndrome (2 cases), arrhythmia (2 cases), and pulmonary embolism (1 case). Among patients with non-hypothermia (temperature ≥32°C) on hospital arrival with the cardiac rhythm of asystole or pulseless electrical activity (PEA) on arrival, all 107 patients (66 asystole, 41 PEA) who lacked one or more of the requirements (witness; bystander

CPR; signs of life or pupil < 5 mm) had unfavourable neurological outcomes. All 5 cases with favourable neurological outcomes, except for 1 case with a short duration of no-flow time that was highly suspected based on the patient's history, met all the requirements on hospital arrival. CONCLUSIONS: A total of 202 ECPR cases with an initial asystole rhythm, including 12 patients with favourable neurological outcomes, were described. Even if the initial cardiac rhythm is asystole, ECPR could be considered if certain conditions are met.

3. Curr Probl Cardiol. 2023 Jan 18:101600. doi: 10.1016/j.cpcardiol.2023.101600. Online ahead of print.

Prehospital physician presence for patients with out-of-hospital cardiac arrest undergoing extracorporeal cardiopulmonary resuscitation: a multicenter, retrospective, nationwide observational study in Japan (the JAAM-OHCA registry).

Nakajima S(1), Matsuyama T(2), Watanabe M(1), Komukai S(3), Kandori K(4), Okada A(4), Okada Y(5), Kitamura T(6), Ohta B(1).

ABSTRACT

BACKGROUND: The effectiveness of the presence of a prehospital physician for patients with out-of-hospital cardiac arrest (OHCA) undergoing extracorporeal cardiopulmonary resuscitation (ECPR) remains unknown. METHODS: In this multicenter, retrospective, observational study, we enrolled patients aged ≥18 years who developed OHCA and received ECPR. The primary outcome was the 1-month favorable neurological outcome. We estimated the impact of the presence of a prehospital physician on outcomes using a propensity score analysis with inverse probability weighting. RESULT: We enrolled 1,269 patients. favorable neurological outcomes occurred in 25 of 316 (7.9%) patients with prehospital physicians and 94 of 953 (9.9%) patients without prehospital physicians. In the propensity score analysis, favorable neurological outcomes did not differ between two groups (odds ratio = 0.72; 95% confidence interval: 0.44-1.17). CONCLUSIONS: The 1-month favorable neurological outcome was not associated with the presence of a prehospital physician for patients with OHCA who underwent EPCR.

4. Life (Basel). 2023 Jan 5;13(1):157. doi: 10.3390/life13010157.

ECMO Retrieval Program: What Have We Learned So Far.

Krasivskyi I(1), Großmann C(1), Dechow M(1), Djordjevic I(1), Ivanov B(2), Gerfer S(1), Bennour W(1), Kuhn E(1), Sabashnikov A(1), Mader N(1), Eghbalzadeh K(1), Wahlers T(1).

ABSTRACT

Veno-arterial extracorporeal membrane oxygenation (VA-ECMO) is increasingly used for patients with cardiogenic shock or cardiac arrest. However, survival rates remain low. It is unclear to what extent ECMO patients benefit from the ECMO team learning curve. Therefore, we aimed to analyze our mobile ECMO program patients from the past seven years to evaluate if a learning curve benefits patients' outcomes. We analyzed 111 patients from our databank who were supported with a VA-ECMO and brought to our hospital from January 2015 to December 2021. Patients were divided into two groups: survival (n = 70) and non-survival (n = 41). As expected, complications after ECMO implantation were more severe in the non-survivor group. The incidence of thromboembolic events (p = 0.002), hepatic failure (p < 0.001), renal failure (p = 0.002), dialysis (p = 0.002) and systemic inflammatory response syndrome (SIRS, p = 0.044) occurred significantly more often compared with the survivor group. We were able to show that despite our extensive experience in terms of ECMO retrieval program the high mortality and morbidity rates stay fairly the same over the years. This displays that we have to focus even more on patient selection and ECMO indication.

5. Drugs Context. 2023 Jan 4;12:2022-7-7. doi: 10.7573/dic.2022-7-7. eCollection 2023.

Emerging concepts in heart failure management and treatment: circulatory support with extracorporeal membrane oxygenation (ECMO).

Swedzky F(1), Barbagelata A(2)(3), Perrone S(2)(4), Kaplinsky E(5), Ducharme A(1).

ABSTRACT

Circulatory support with extracorporeal membrane oxygenation (ECMO) is being increasingly used in several critical situations but evidence of its impact on outcomes is inconsistent. Understanding of the specific indications and appropriate timing of implantation of this technology might lead to improved results. Indeed, the line between success and futility may be sometimes very thin when facing a patient in critical condition. New techniques with lighter, simpler and effective devices are being developed. Hence, ECMO has become an accessible technology that is being increasingly used outside of the operating room by heart failure specialists, critical care cardiologists and intensivists. Proper timing of utilization and choice of device may lead to better outcomes. We herein aim to improve this knowledge gap by conducting a literature review to provide simple information, evidence-based indications and a practical approach for cardiologists who may encounter acutely ill adult patients that may be ECMO candidates. This article is part of the Emerging concepts in heart failure management and treatment Special Issue: https://www.drugsincontext.com/special_issues/emerging-concepts-in-heart-failure-management-and-treatment.

6. Emerg Med Australas. 2023 Feb;35(1):173-175. doi: 10.1111/1742-6723.14100. Epub 2022 Oct 10.
Role of the emergency department in implementing an extracorporeal membrane oxygenation cardiopulmonary resuscitation.
Gilbert F(1)(2), Mitchell G(1)(2)(3), Townsend S(2)(4), Dhanani J(4)(5)(6), Sng N(1)(2).
ABSTRACT

The Royal Brisbane and Women's Hospital has introduced an extracorporeal membrane oxygenation (ECMO) cardiopulmonary resuscitation (E-CPR) service with collaboration between ED and ICU teams for refractory cardiac arrest patients. E-CPR is potentially beneficial to patients who do not gain return of spontaneous circulation after conventional advanced cardiac life support treatments, provided specific demographic and biochemical inclusion criteria are met. A joint ICU and ED decision is reached to commence ECMO flow. We discuss our rationale to use the ED and the emergency physician role in leading the multidisciplinary team, with ICU leading the cannulation team. The development of ED processes and the increased availability of this intervention can significantly impact the survivability of refractory cardiac arrest with good neurological outcomes.

EXPERIMENTAL RESEARCH

No articles identified.

CASE REPORTS

1. Anatol J Cardiol. 2023 Jan;27(1):E3-E4. doi: 10.14744/AnatolJCardiol.2022.2416.
Left Ventricular Ring Calcification in a Patient with Sudden Cardiac Arrest and Q-wave ST Elevation.
Polat F(1), Haspolat A(1), Ateş İ(1).
NO ABSTRACT AVAILABLE

2. IDCases. 2023 Jan 9;31:e01686. doi: 10.1016/j.idcr.2023.e01686. eCollection 2023.
Acute myocardial infarction caused by coronary mucormycotic embolism.
Kitazawa S(1), Kitazawa R(2).
ABSTRACT

Described here is a rare cardiac complication attributed to mucormycosis in a 63-year-old woman who developed sudden cardiac arrest and pulmonary insufficiency in the course of being treated for

acute monocytic leukemia (acute myelogenous leukemia, AML M5a). At autopsy, fresh thrombi were noted in the left pulmonary artery and the left atrium. Postmortem coronary angiography revealed complete occlusion of the circumflex branch of the left coronary artery, and histological examination showed a mucormycotic embolism in the corresponding portion. Multiple small mucormycotic thrombi were also noted in both coronary and pulmonary arteries with hemorrhagic infarction in the corresponding areas.

3. Cardiol Res. 2022 Dec;13(6):393-397. doi: 10.14740/cr1437. Epub 2022 Dec 1.
Rare Occurrence of Apical Hypertrophic Cardiomyopathy Among Hispanics.
Abdalla MS(1), Pudasainee P(1), Ramachandran A(1), Akbar MS(1).
ABSTRACT
Apical hypertrophic cardiomyopathy (ApHCM), also known as Yamaguchi syndrome represents an uncommon morphologic variant of hypertrophic cardiomyopathy (HCM) in which the myocardial hypertrophy predominantly involves the apex of the left ventricle (LV). It is exemplified by "giant" negative precordial T-waves on electrocardiography and a peculiar "spade-like" configuration of LV cavity on ventriculography historically, and more recently, on echocardiography with use of image enhancing agents. The disease entity was first described in 1976. Available literature reveals that it is prevalent largely among the East-Asian population but is rare among non-Asians. Here, we report a case of a 66-year-old Hispanic male with multiple cardiac histories including persistent atrial fibrillation, non-ST-elevation myocardial infarction (NSTEMI), and ventricular fibrillation cardiac arrest with multiple inconclusive evaluations, who later in life was found to have ApHCM. This case highlights the rare incidence of the disease among the Hispanic population and underlines the challenging diagnosis that requires a high index of suspicion in patients with cardiac symptoms, as ApHCM can masquerade as ischemic coronary heart disease. Our case also describes an unusual clinical course for ApHCM presenting with extreme clinical features, including ventricular arrhythmias and cardiac arrest, unlike the usual benign natural history of this disease.

4. Cureus. 2022 Dec 16;14(12):e32604. doi: 10.7759/cureus.32604. eCollection 2022 Dec.
A Rare Case of Lance-Adams Syndrome: Status Post-Successful Cardiopulmonary Resuscitation.
Rahman A(1), Alqaisi S(2), Helfman B(3).
ABSTRACT
Lance-Adams syndrome (LAS), also known as chronic post-hypoxic myoclonus (PHM), is a rare condition that may present with intention myoclonus in a patient who has regained consciousness after cardiorespiratory arrest. This case report describes a patient who received successful cardiopulmonary resuscitation (CPR) after going into cardiac arrest. And regaining consciousness, the patient developed myoclonic jerks diagnosed as LAS. The patient responded well to treatment with clonazepam and physical rehabilitation.

5. J Int Med Res. 2023 Jan;51(1):3000605221148618. doi: 10.1177/03000605221148618.
Prolonged asystole induced by trigeminocardiac reflex accompanied with abnormal heart rate variability during percutaneous balloon compression: a case report.
Zhang H(1), He J(1), Du Y(1), Liu M(1), Li J(1).
ABSTRACT
Trigeminocardiac reflex (TCR) can result in bradycardia and even cardiac arrest, and is reversible with elimination of the stimulus. Here, we report the case of a 68-year-old man who experienced cardiac arrest during percutaneous balloon compression for the treatment of trigeminal neuralgia. In this patient, sinus rhythm did not recover after stimulation removal, causing us to successfully perform cardiopulmonary resuscitation (CPR). The patient regained a sinus rhythm and was pretreated with

atropine 0.5 mg, allowing the operation to be started again. The operation was completed successfully and the patient experienced no complications. Subsequent heart rate variability (HRV) analysis showed that parasympathetic activity predominated before anesthesia induction and after tracheal intubation. It further elevated during foramen ovale puncture, leading to prolonged asystole. Fortunately, sympathetic activity predominated after atropine was administered, which manifested as an increase in sympathetic activity and a decrease in parasympathetic activity. This could be beneficial for patients with TCR. This case indicates that TCR-related cardiac arrest might not be reversed with stimulus cessation, and atropine played a key role in preventing TCR. Moreover, HRV analysis might be essential for preoperative screening for high-risk patients. We also reviewed the literature for cases of TCR with prolonged asystole.