

régression logistique multivariée ajustant pour les variables sociodémographiques et cliniques pertinentes. **Results:** Un total de 1751 patients (1173 hommes et 578 femmes) d'un âge moyen de 69 ans ( $\pm 16$ ) ont été inclus dans l'analyse principale, parmi lesquels 603 (34%) avaient un RD. Un total de 663 autres patients ont vu leur ACEH témoigné directement par les paramédics. Un plus court délai avant l'initiation des manœuvres est associé à la présence d'un RD (rapport de cotes ajusté = 0,97 [intervalle de confiance à 95% 0,94-0,99],  $p = 0,016$ ). Cependant, cette relation n'est pas linéaire et la proportion de RD ne diminue pas avant notablement jusqu'à ce que 15 minutes s'écoulent avant le début de la réanimation (0 min = 35%, 1-5 min = 37%, 5-10 min = 35%, 10-15 min = 34%, +de 15 min = 16%). **Conclusion:** Bien que la proportion de patients avec un RD diminue lorsque le délai augmente avant l'initiation des manœuvres, cette relation ne semble pas linéaire. La baisse principale de la proportion de patients avec RD semble se produire suite à la quinzième minute de délai avant le début de la réanimation.

**Keywords:** cardiac rhythm, no-flow time, out-of-hospital cardiac arrest

#### LO07

##### Double sequential external defibrillation improves termination of ventricular fibrillation and return of spontaneous circulation in shock-refractory out-of-hospital cardiac arrest

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**Introduction:** Despite significant advances in resuscitation efforts, there are some patients who remain in ventricular fibrillation (VF) after multiple shocks during out-of-hospital cardiac arrest (OHCA). Double sequential external defibrillation (DSED) has been proposed as a treatment option for patients in shock refractory VF. We sought to compare DSED to standard therapy with regards to VF termination and return of spontaneous circulation (ROSC) for patients presenting in shock refractory VF. **Methods:** We performed a retrospective review of all treated adult OHCA who presented in VF and received a minimum of three successive shocks over a two year period beginning on Jan 1, 2015 in four Canadian EMS agencies. Using ambulance call reports and defibrillator files, we compared VF termination (defined as the absence of VF at the rhythm check following defibrillation and 2 minutes of CPR) and VF termination into a perfusing rhythm with ROSC between patients who received standard therapy (CPR, defibrillation, epinephrine and antiarrhythmics) and those who received DSED (after on-line medical consultation) for shock refractory VF. Cases of traumatic cardiac arrest and those who presented in VF but terminated VF prior to 3 successive shocks were excluded. **Results:** Among 197 patients who met the study criteria for shock refractory VF, 161 (81.7%) patients received standard therapy and 36 (18.3%) received DSED. For the primary outcome, VF termination was significantly higher for DSED compared to standard therapy (63.9% vs 18.0%;  $\Delta 45.9\%$ ; 95% CI: 28.3 to 60.5). For the secondary outcome of VF termination into ROSC, DSED was associated with significantly higher ROSC compared to standard care (33.3% vs 13%;  $\Delta 20.3\%$ ; 95% CI: 13.0 to 33.3). The median (IQR) number of failed standard shocks prior to DSED was 8 (6, 10). When DSED terminated VF, it did so with a single DSED shock in 69.6% of cases. **Conclusion:** Our observational findings suggest improved VF termination and ROSC are associated with DSED compared to standard therapy for shock refractory VF. An

appropriately powered randomized controlled trial is required to assess the impact of DSED on patient-important outcomes.

**Keywords:** cardiopulmonary resuscitation, double sequential external defibrillation, refractory ventricular fibrillation

#### LO08

##### Defibrillation energy dose during pediatric cardiac arrest: systematic review of human and animal model studies

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**Introduction:** Prompt defibrillation is critical during paediatric cardiac arrest. The main objective of this systematic review was to determine the initial defibrillation energy dose for ventricular fibrillation (VF) or pulseless ventricular tachycardia (pVT) that is associated with sustained return of spontaneous circulation (ROSC) during paediatric cardiac arrest. Associations between initial defibrillation energy dose with any ROSC, survival and defibrillation-induced complications were also assessed. **Methods:** A systematic review was performed using four databases (Medline, Embase, Web of Science, Cochrane Library) (PROSPERO: CRD42016036734). Human studies (cohort studies or controlled trials) and animal model studies (controlled trials) of pediatric cardiac arrest involving assessment of external defibrillation energy dosing were considered. The primary outcome was sustained ROSC. Two researchers independently reviewed all the titles and abstracts of the retrieved citations, selected the studies and extracted the data using a standardized template. Risk of bias of human non-randomised studies were assessed using the ROBIN-I tool (formerly ACROBAT-NRSI) tool proposed by the Cochrane Collaboration group. **Results:** The search strategy identified 14,471 citations of which 232 manuscripts were reviewed. Ten human and 10 animal model studies met the inclusion criteria. Human studies were prospective ( $n = 6$ ) or retrospective ( $n = 4$ ) cohort studies and included between 11 and 266 patients (median = 46 patients). Sustained ROSC rates ranged from 0 to 61% ( $n = 7$ ). No studies reported a statistically significant association between the initial defibrillation energy dose and the rate of sustained ROSC ( $n = 7$ ) or survival ( $n = 6$ ). No human studies reported defibrillation-induced complications. Meta-analysis was not considered appropriate due to clinical heterogeneity. The overall risk of bias was moderate. All animal studies were randomized controlled trials with 8 and 52 (median = 27) piglets. ROSC was frequently achieved (more than 85%) with energy dose ranging from 2 to 7 joules/kg ( $n = 7$ ). The defibrillation threshold varied according to the body weight and appears to be higher in infant models. **Conclusion:** Defibrillation energy doses and thresholds varied according to the body weight and trended higher for infants. No definitive association between initial defibrillation doses and the outcomes of sustained ROSC or survival could be demonstrated.

**Keywords:** cardiac arrest, defibrillation, pediatric

#### LO09

##### Variation entre les taux de retour de circulation spontané pré-hospitalier et les délais de réanimation avant ceux-ci en fonction du rythme initial chez les patients souffrant d'un arrêt cardiaque extrahospitalier

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