

## REVISIONS

*El mal pronòstic de les ACR no cardíaques.*

**BMJ Open.** 2014 Dec 22;4(12):e006462. doi: 10.1136/bmjopen-2014-006462.

### **Epidemiology and outcome of adult out-of-hospital cardiac arrest of non-cardiac origin in Osaka: a population-based study.**

Kitamura T1, Kiyohara K2, Sakai T3, Iwami T4, Nishiyama C5, Kajino K6, Nishiuchi T7, Hayashi Y8, Katayama Y3, Yoshiya K3, Shimazu T3.

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#### **Abstract**

**OBJECTIVES:** To evaluate epidemiological characteristics of out-of-hospital cardiac arrests (OHCAs) by detailed non-cardiac cause and factors associated with the outcomes after OHCAs of non-cardiac origin.

**DESIGN:** A prospective, population-based observational study.

**SETTING:** The Utstein Osaka Project.

**PARTICIPANTS:** 14 164 adult patients aged  $\geq 20$  years old with OHCAs due to non-cardiac origin who were resuscitated by emergency-medical-service personnel or bystanders, and then were transported to medical institutions from January 2005 to December 2011.

**PRIMARY OUTCOME MEASURES:** One-month survival after OHCA. Multiple logistic regression analysis was used to assess factors that were potentially associated with the outcome.

**RESULTS:** During the study period, the 1-month survival rate was 5.3% (755/14 164). The proportion of 1-month survival was 6.2% (510/8239) in external causes, 6.5% (94/1148) in respiratory diseases, 0.8% (11/1309) in malignant tumours, 4.9% (55/1114) in strokes and 4.1% (85/2054) in others. As for external causes, the proportion of 1-month survival was 14.3% (382/2670) in asphyxia, 4.2% (84/1999) in hanging, 0.7% (9/1300) in fall, 1.1% (12/1062) in drowning, 1.6% (12/765) in traffic injury, 3.7% (7/187) in drug overuse and 1.6% (4/256) in unclassified external causes. In a multivariate analysis, adults aged  $< 65$  years old with arrests witnessed by bystanders, with normal activities of daily living before the arrests, having ventricular fibrillation arrests, having arrests in public places, intravenous fluid levels and early Emergency Medical Service response time were significant predictors for 1-month outcome after OHCAs of non-cardiac origin. The proportion of 1-month survival of all OHCAs of non-cardiac origin did not significantly increase (from 4.3% (86/2023) in 2005 to 4.9% (105/2126) in 2011) and the adjusted OR for one-increment of year was 1.01 (95% CI 0.97 to 1.06).

**CONCLUSIONS:** From a large OHCA registry in Osaka, we demonstrated that 1-month survival after OHCAs of non-cardiac origin was poor and stable.

#### **HIPOTÈRMIA**

*No hi ha diferències en el pronòstic independentment del tipus de refredament, sigui més o menys pedestre. L'article no està disponible, però l'abstract sembla interesant.*

**Emerg Med J.** 2014 Dec 19. pii: emermed-2014-203811. doi: 10.1136/emered-2014-203811. [Epub ahead of print]

### **Intravascular versus surface cooling speed and stability after cardiopulmonary resuscitation.**

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of Intensive Care, Thoraxcenter, Erasmus University Medical Center, Rotterdam, the Netherlands Department of Cardiology, Thoraxcenter, Erasmus University Medical Center, Rotterdam, the Netherlands.

### **Abstract**

**BACKGROUND AND OBJECTIVE:** Mild therapeutic hypothermia (MTH) is used to limit neurological injury and improve survival after cardiac arrest (CA) and cardiopulmonary resuscitation, but the optimal mode of cooling is controversial. We therefore compared the effectiveness of MTH using invasive intravascular or non-invasive surface cooling with temperature feedback control.

**METHODS:** This retrospective study in post-CA patients studied the effects of intravascular cooling (CoolGard, Zoll, n=97), applied on the intensive care unit (ICU) in one university hospital compared with those of surface cooling (Medi-Therm, Gaymar, n=76) applied in another university hospital.

**RESULTS:** Time to reach target temperature and cooling speeds did not differ between groups. During the maintenance phase, mean core temperature was 33.1°C (range 32.7-33.7°C) versus 32.5°C (range 31.7-33.4°C) at targets of 33.0 and 32.5°C in intravascularly versus surface cooled patients, respectively. The variation coefficient for temperature during maintenance was higher in the surface than the intravascular cooling group (mean 0.85% vs 0.35%, p<0.0001). ICU survival was 60% and 50% in the intravascularly and surface cooled groups, respectively (NS). Lower age (OR 0.95; 95% CI 0.93 to 0.98; p<0.0001), ventricular fibrillation/ventricular tachycardia as presenting rhythm (OR 7.6; 95% CI 1.8 to 8.9; p<0.0001) and lower mean temperature during the maintenance phase (OR 0.52; 95% CI 0.25 to 1.08; p=0.081) might be independent determinants of ICU survival, while cooling technique and temperature variability did not contribute.

**CONCLUSIONS:** In post-CA patients, intravascular cooling systems result in equal cooling speed, but less variation in temperature during the maintenance phase, as surface cooling. This may not affect the outcome.

### **ENTRENAMENT**

*Un model per augmentar la prevalença de RCP pels bystanders*

**Resuscitation.** 2014 Dec 19. pii: S0300-9572(14)00888-0. doi: 10.1016/j.resuscitation.2014.12.006. [Epub ahead of print]

#### **An "Intention-Focused" Paradigm for Improving Bystander CPR performance.**

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### **Abstract**

Despite public education campaigns and a chest compression-only initiative, bystander cardiopulmonary resuscitation (CPR) is provided in approximately 30-40% of out of hospital cardiac arrests in the United States. Bystander CPR rates may not improve without addressing factors influencing bystanders' probability of performing CPR. We propose an "intention-focused" model for the bystander CPR performance utilizing validated behavioral theory. This model describes a framework that may predict CPR performance, with intention as the key determinant of this behavior. This model may provide specific targets for strengthening the intention to perform CPR, which could lead to increased bystander rates.

### **FEEDBACK**

*Com ja hem comprovat nosaltres, la qualitat de la RCP dels professionals és pobre... Tampoc hi ha l'article, però és important que ens fem a la idea de que ho fem malament, si no, no millorarem,*

*JAMA Pediatr.* 2014 Dec 22. doi: 10.1001/jamapediatrics.2014.2616. [Epub ahead of print]

**Improving Cardiopulmonary Resuscitation With a CPR Feedback Device and Refresher Simulations (CPR CARES Study): A Randomized Clinical Trial.**

Cheng A1, Brown LL2, Duff JP3, Davidson J1, Overly F2, Tofil NM4, Peterson DT4, White ML4, Bhanji F5, Bank I5, Gottesman R5, Adler M6, Zhong J7, Grant V1, Grant DJ8, Sudikoff SN9, Marohn K10, Charnovich A11, Hunt EA11, Kessler DO12, Wong H13, Robertson N1, Lin Y1, Doan Q14, Duval-Arnould JM11, Nadkarni VM15; for the International Network for Simulation-Based Pediatric Innovation, Research, & Education (INSPIRE) CPR Investigators.

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**Abstract**

**Importance:** The quality of cardiopulmonary resuscitation (CPR) affects hemodynamics, survival, and neurological outcomes following pediatric cardiopulmonary arrest (CPA). Most health care professionals fail to perform CPR within established American Heart Association guidelines.

**Objective:** To determine whether "just-in-time" (JIT) CPR training with visual feedback (VisF) before CPA or real-time VisF during CPA improves the quality of chest compressions (CCs) during simulated CPA.

**Design, Setting, and Participants:** Prospective, randomized, 2 × 2 factorial-design trial with explicit methods (July 1, 2012, to April 15, 2014) at 10 International Network for Simulation-Based Pediatric Innovation, Research, & Education (INSPIRE) institutions running a standardized simulated CPA scenario, including 324 CPR-certified health care professionals assigned to 3-person resuscitation teams (108 teams).

**Interventions:** Each team was randomized to 1 of 4 permutations, including JIT training vs no JIT training before CPA and real-time VisF vs no real-time VisF during simulated CPA.

**Main Outcomes and Measures:** The proportion of CCs with depth exceeding 50 mm, the proportion of CPR time with a CC rate of 100 to 120 per minute, and CC fraction (percentage CPR time) during simulated CPA.

**Results:** The quality of CPR was poor in the control group, with 12.7% (95% CI, 5.2%-20.1%) mean depth compliance and 27.1% (95% CI, 14.2%-40.1%) mean rate compliance. JIT training compared with no JIT training improved depth compliance by 19.9% (95% CI, 11.1%-28.7%;  $P < .001$ ) and rate compliance by 12.0% (95% CI, 0.8%-23.2%;  $P = .037$ ). Visual feedback compared with no VisF improved depth compliance by 15.4% (95% CI, 6.6%-24.2%;  $P = .001$ ) and rate compliance by 40.1% (95% CI, 28.8%-51.3%;  $P < .001$ ). Neither intervention had a statistically significant effect on CC fraction, which was excellent (>89.0%) in all groups. Combining both interventions showed the highest compliance with American Heart Association guidelines but was not significantly better than either intervention in isolation.

**Conclusions and Relevance:** The quality of CPR provided by health care professionals is poor. Using novel and practical technology, JIT training before CPA or real-time VisF during CPA, alone or in combination, improves compliance with American Heart Association guidelines for CPR that are associated with better outcomes.

*ECMO i ACR per allaus.*

**High Alt Med Biol.** 2014 Dec;15(4):500-3. doi: 10.1089/ham.2014.1066.

**Is extracorporeal rewarming indicated in avalanche victims with unwitnessed hypothermic cardiorespiratory arrest?**

Mair P1, Brugger H, Mair B, Moroder L, Ruttman E.

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**Abstract**

Abstract Mair, Peter, Hermann Brugger, Birgit Mair, Luca Moroder, and Elfriede Ruttman. Is extracorporeal rewarming indicated in avalanche victims with unwitnessed hypothermic cardiorespiratory arrest? High Alt Med Biol 15:500-503, 2014.-International guidelines recommend using extracorporeal rewarming in all hypothermic avalanche victims with prolonged cardiac arrest if they have patent airways and a plasma potassium level  $\leq 12$  mmol/L. The aim of this study was to evaluate outcome data to determine if available experience with extracorporeal rewarming of avalanche victims supports this recommendation. At Innsbruck Medical University Hospital, 28 patients with hypothermic cardiac arrest following an avalanche accident were resuscitated using extracorporeal circulation. Of these patients, 25 were extricated from the snow masses with no vital signs and did not survive to hospital discharge. Three patients had witnessed cardiac arrest after extrication and a core temperature of 21.7°C, 22°C, and 24.0°C, two of whom survived long-term with full neurological recovery. A search of the literature revealed only one asystolic avalanche victim with unwitnessed hypothermic cardiac arrest (core temperature 19°C) surviving long-term. All other avalanche victims in the medical literature surviving prolonged hypothermic cardiac arrest suffered witnessed arrest after extrication with a core temperature below 24°C. Our results suggest that prognosis of hypothermic avalanche victims with unwitnessed asystolic cardiac arrest and a core temperature  $>24^\circ\text{C}$  is extremely poor. Available outcome data do not support the use of extracorporeal rewarming in these patients.

**CASE-REPORT**

*En cas d'ACR en embarassades, la histerectomia d'urgència pot ser l'única opció de salvar mare i fill.*

**Case Rep Emerg Med.** 2014;2014:121562. doi: 10.1155/2014/121562. Epub 2014 Oct 30.

**Out-of-Hospital Perimortem Cesarean Section as Resuscitative Hysterotomy in Maternal Posttraumatic Cardiac Arrest.**

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**Abstract**

The optimal treatment of a severe hemodynamic instability from shock to cardiac arrest in late term pregnant women is subject to ongoing studies. However, there is an increasing evidence that early "separation" between the mother and the foetus may increase the restoration of the hemodynamic status and, in the cardiac arrest setting, it may raise the likelihood of a return of spontaneous circulation (ROSC) in the mother. This treatment, called Perimortem Cesarean Section (PMCS), is now termed as Resuscitative Hysterotomy (RH) to better address the issue of an early Cesarean section (C-section). This strategy is in contrast with the traditional treatment of cardiac arrest characterized by the maintenance of cardiopulmonary resuscitation (CPR) maneuvers without any emergent surgical intervention. We report the case of a prehospital perimortem delivery by Caesarean (C) section of a foetus at 36 weeks of gestation after the mother's traumatic cardiac arrest. Despite the negative outcome of the

mother, the choice of performing a RH seems to represent up to date the most appropriate intervention to improve the outcome in both mother and foetus.

## REVISIONES Y REGISTROS

*Sobre com millorar el pronòstic de les ACR. Un abordatge multidisciplinar.*

**West J Emerg Med.** 2014 Nov;15(7):803-7. doi: 10.5811/westjem.2014.6.21832. Epub 2014 Nov 21.

### **Optimizing neurologically intact survival from sudden cardiac arrest: a call to action.**

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### **Abstract**

The U.S. national out-of-hospital and in-hospital cardiac arrest survival rates, although improving recently, have remained suboptimal despite the collective efforts of individuals, communities, and professional societies. Only until very recently, and still with inconsistency, has focus been placed specifically on survival with pre-arrest neurologic function. The reality of current approaches to sudden cardiac arrest is that they are often lacking an integrative, multi-disciplinary approach, and without deserved funding and outcome analysis. In this manuscript, a multidisciplinary group of authors propose practice, process, technology, and policy initiatives to improve cardiac arrest survival with a focus on neurologic function.

*No esta clar que la IOT millori la supervivència respecte els dispositius supraglòtics*

**West J Emerg Med.** 2014 Nov;15(7):749-757. Epub 2014 Oct 28.

### **Does Pre-hospital Endotracheal Intubation Improve Survival in Adults with Non-traumatic Out-of-hospital Cardiac Arrest? A Systematic Review.**

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### **Abstract**

**INTRODUCTION:** Endotracheal intubation (ETI) is currently considered superior to supraglottic airway devices (SGA) for survival and other outcomes among adults with non-traumatic out-of-hospital cardiac arrest (OHCA). We aimed to determine if the research supports this conclusion by conducting a systematic review.

**METHODS:** We searched the MEDLINE, Scopus and CINAHL databases for studies published between January 1, 1980, and 30 April 30, 2013, which compared pre-hospital use of ETI with SGA for outcomes of return of spontaneous circulation (ROSC); survival to hospital admission; survival to hospital discharge; and favorable neurological or functional status. We selected studies using pre-specified criteria. Included studies were independently screened for quality using the Newcastle-Ottawa scale. We did not pool results because of study variability. Study outcomes were extracted and results presented as summed odds ratios with 95% CI.

RESULTS: We identified five eligible studies: one quasi-randomized controlled trial and four cohort studies, involving 303,348 patients in total. Only three of the five studies reported a higher proportion of ROSC with ETI versus SGA with no difference reported in the remaining two. None found significant differences between ETI and SGA for survival to hospital admission or discharge. One study reported better functional status at discharge for ETI versus SGA. Two studies reported no significant difference for favorable neurological status between ETI and SGA.

CONCLUSION: Current evidence does not conclusively support the superiority of ETI over SGA for multiple outcomes among adults with OHCA.

## ECMO

*Utilització de l'ECMO en pacients ofegats. Una cohort de 11 anys, amb baixa supervivència.*

**Resuscitation.** 2014 Dec 4. pii: S0300-9572(14)00852-1. doi: 10.1016/j.resuscitation.2014.11.023. [Epub ahead of print]

### **Extracorporeal Life Support (ECLS) for refractory cardiac arrest after drowning: An 11-year experience.**

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#### **Abstract**

AIM: Neuroprotective effects of hypothermia may explain surprisingly high survival rates reported after drowning in cold water despite prolonged submersion. We described a cohort of refractory hypothermic cardiac arrests (CA) due to drowning treated by extracorporeal life support (ECLS) and aimed to identify criteria associated with 24-hour survival.

METHODS: Eleven-year period (2002-2012) retrospective study in the surgical intensive care unit (ICU) of a tertiary hospital (European Hospital Georges Pompidou, Paris, France). All consecutive hypothermic patients admitted for refractory CA after drowning in the Seine River were included. Patients with core temperature below 30°C and submersion duration of less than 1hour were potentially eligible for ECLS resuscitation.

RESULTS: Forty-three patients were admitted directly to the ICU during the study period. ECLS was initiated in 20 patients (47%). Among these 20 patients, only 4 (9%) survived more than 24hours. A first hospital core temperature  $\leq 26^{\circ}\text{C}$  and a potassium serum level between 4.2 and 6mM at hospital admission have a sensitivity of 100% [95%CI: 28-100%] and a specificity of 100% [95%CI: 71-100%] to discriminate patients who survived more than 24hours. Overall survival at ICU discharge and at 6-months was 5% [95%CI: 1-16%] (2 patients).

CONCLUSIONS: Despite patient hypothermia and aggressive resuscitation with ECLS, the observed survival rate is low in the present cohort. Like existing algorithms for ECLS management in avalanche victims, we recommend to use first core temperature and potassium serum level to indicate ECLS for refractory CA due to drowning.

## POST CARDIAC ARRETS

*Uno sobre centros resucitadores de Nivel 1. Una propuesta que podríamos hacer nosotros, que seguro lo hacemos mejores que ellos.*

**West J Emerg Med.** 2014 Nov;15(7):758-63. doi: 10.5811/westjem.2014.8.21877. Epub 2014 Sep 19.

### **Availability and utilization of cardiac resuscitation centers.**

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#### Abstract

**INTRODUCTION:** The American Heart Association (AHA) recommends regionalized care following out-of-hospital cardiac arrest (OHCA) at cardiac resuscitation centers (CRCs). Key level 1 CRC criteria include 24/7 percutaneous coronary intervention (PCI) capability, therapeutic hypothermia capability, and annual volume of  $\geq 40$  patients resuscitated from OHCA. Our objective was to characterize the availability and utilization of resources relevant to post-cardiac arrest care, including level 1 CRCs in California.

**METHODS:** We combined data from the AHA, the California Office of Statewide Health Planning and Development (OSHPD), and surveys to identify CRCs. We surveyed emergency department directors and nurse managers at all 24/7 PCI centers identified by the AHA to determine their post-OHCA care capabilities. The survey included questions regarding therapeutic hypothermia use and specialist availability and was pilot-tested prior to distribution. Cases of OHCA were identified in the 2011 OSHPD Patient Discharge Database using a "present on admission" diagnosis of cardiac arrest (ICD-9-CM code 427.5). We defined key level 1 CRC criteria as 24/7 PCI capability, therapeutic hypothermia, and annual volume  $\geq 40$  patients admitted with a "present on admission" diagnosis of cardiac arrest. Our primary outcome was the proportion of hospitals meeting these criteria. Descriptive statistics and 95% CI are presented.

**RESULTS:** Of the 333 acute care hospitals in California, 31 (9.3%, 95% CI 6.4-13%) met level 1 CRC criteria. These hospitals treated 25% (1937/7780; 95% CI 24-26%) of all admitted OHCA patients in California in 2011. Of the 125 hospitals identified as 24/7 PCI centers by the AHA, 54 (43%, 95% CI 34-52%) admitted  $\geq 40$  patients following OHCA in 2011. Seventy (56%, 95% CI 47-65%) responded to the survey; 69/70 (99%, 95% CI 92-100%) reported having a therapeutic hypothermia protocol in effect by 2011. Five percent of admitted OHCA patients (402/7780; 95% CI 4.7-5.7%) received therapeutic hypothermia and 18% (1372/7780; 95% CI 17-19%) underwent cardiac catheterization.

**CONCLUSION:** Approximately 10% of hospitals met key criteria for AHA level 1 CRCs. These hospitals treated one-quarter of patients resuscitated from OHCA in 2011. The feasibility of regionalized care for OHCA requires detailed evaluation prior to widespread implementation.

#### POST CARDIAC ARREST TREATMENT

*Les troponines T s'eleven en l'ACR però no són predictores del risc*

**Crit Care.** 2014 Nov 8;18(6):605. doi: 10.1186/s13054-014-0605-y.

**Prognostic value of high-sensitivity troponin T levels in patients with ventricular arrhythmias and out-of-hospital cardiac arrest: data from the prospective FINNRESUSCI study.**

Røsjø H, Vaahersalo J, Hagve TA, Pettilä V, Kurla J, Omland T; FINNRESUSCI Laboratory Study Group.

#### Abstract

**INTRODUCTION:** Myocardial dysfunction is common after out-of-hospital cardiac arrest (OHCA) and high-sensitivity troponin T (hs-TnT) levels may provide incremental prognostic information to established risk indices.

**METHODS:** A total of 155 patients with OHCA and a shockable rhythm (98% ventricular fibrillation; OHCA-VF/VT) had blood samples drawn within six hours of admission. Blood samples were also available after 24 hours, 48 hours, and 96 hours in subsets of patients. The endpoints of the study were hospital mortality and neurological status and mortality after one year.

**RESULTS:** Admission hs-TnT levels were higher than the 99-percentile of the general population (14 ng/L) in all patients (range 18 to 17837 ng/L). Admission hs-TnT levels were associated with acute coronary artery occlusion, time to return of spontaneous circulation, heart failure, and renal function. Admission hs-TnT levels were higher in one-year non-survivors compared to survivors (median 747 (quartile 1 to 3, 206 to 1061) ng/L versus 345 (184 to 740) ng/L,  $P = 0.023$ ) and in patients with a poor versus a favorable neurological outcome (739 (191 to 1061) ng/L versus 334 (195 to 716) ng/L,  $P = 0.028$ ). However, hs-TnT

measurements did not add prognostic information to established risk variables in multivariate analyses. hs-TnT levels measured during the hospitalization for OHCA-VF/VT correlated closely with admission levels ( $r \geq 0.63$ ) and were inferior to Simplified Acute Physiology Score II (SAPS II) scores for the prediction of events during follow-up. hs-TnT dynamics did not discriminate between survivors and non-survivors or between a poor versus a favorable neurological outcome.

**CONCLUSION:** hs-TnT levels are elevated in critically ill patients with OHCA-VF/VT, but do not improve risk prediction.

### **SEXO (Entendido como género...)**

*Diferències en la supervivència de les ACR extrahospitalàries depenent del sexe. Les dones tenen pitjor pronòstic, però també és cert que surten amb desavantatge (més edat, més temps fins l'arribada dels SEM, menys RCP per testimonis,...). És interessant, però.*

**Acad Emerg Med.** 2014 Dec;21(12):1503-1511. doi: 10.1111/acem.12540.

### **Differential Survival for Men and Women from Out-of-hospital Cardiac Arrest Varies by Age: Results from the OPALS Study.**

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#### **Abstract**

**BACKGROUND:** The effect of sex on survival in out-of-hospital cardiac arrest (OHCA) is controversial. Some studies report more favorable outcomes in women, while others suggest the opposite, citing disparities in care. Whether sex predicts differential age-specific survival is still uncertain.

**OBJECTIVES:** The objective was to study the sex-associated variation in survival to hospital discharge in OHCA patients as well as the relationship between age and sex for predicting survival.

**METHODS:** The Ontario Prehospital Advanced Life Support (OPALS) registry, collected in a large study of rapid defibrillation and advanced life support programs, is Utstein-compliant and has data on OHCA patients (1994 to 2002) from 20 communities in Ontario, Canada. All adult OHCA patients not witnessed by emergency medical services (EMS) and treated during one of the three main OPALS phases were included. Clinically significant variables were chosen a priori (age, sex, witnessed arrest, initial cardiopulmonary resuscitation [CPR], shockable rhythm, EMS response interval, and OPALS study phase) and entered into a multivariable logistic regression model with survival to hospital discharge as the outcome, with sex and age as the primary risk factors. Fractional polynomials were used to explore the relationship between age and survival by sex.

**RESULTS:** A total of 11,479 (out of 20,695) OPALS cases met inclusion criteria and 10,862 (94.6%) had complete data for regression analysis. As a group, women were older than men (median age = 74 years vs. 69 years,  $p < 0.01$ ), had fewer witnessed arrests (43% vs. 49%;  $p < 0.01$ ), had fewer initial ventricular fibrillation/ventricular tachycardia rhythms (24% vs. 42%;  $p < 0.01$ ), had a lower rate of bystander CPR (12% vs. 17%;  $p < 0.01$ ), and had lower survival (1.7% vs. 3.2%;  $p < 0.01$ ). Survival to hospital admission and return of spontaneous circulation did not differ between women and men ( $p > 0.05$ ). The relationship between age, sex, and survival to hospital discharge could not be analyzed in a single regression model, as age did not have a linear relationship with survival for men, but did for women. Thus, age was kept as a continuous variable for women but was transformed for men using fractional polynomials [ $\ln(\text{age}) + \text{age}^3$ ]. In sex-stratified regression models, the adjusted probability of survival for women decreased as age increased (adjusted odds ratio = 0.88, 95% confidence interval = 0.81 to 0.96, per 5-year increase in age) while for men, the probability of survival initially increased with age until age 65 years and then decreased with increasing age. Women had a higher probability of survival until age 47 years, after which men maintained a higher probability of survival.

**CONCLUSIONS:** Overall OHCA survival for women was lower than for men in the OPALS study. Factors related to the sex differences in survival (rates of bystander CPR and shockable rhythms) may be modifiable. The probability of survival differed across age for men and



women in a nonlinear fashion. This differential influence of age on survival for men and women should be considered in future studies evaluating survival by sex in OHCA population.

*Sobre diferències en homes i dones...*

**Acad Emerg Med.** 2014 Dec;21(12):1343-9. doi: 10.1111/acem.12541.

**Sex- and Gender-specific Research Priorities in Cardiovascular Resuscitation: Proceedings from the 2014 Academic Emergency Medicine Consensus Conference Cardiovascular Resuscitation Research Workgroup.**

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**Abstract**

Significant sex and gender differences in both physiology and psychology are readily acknowledged between men and women; however, data are lacking regarding differences in their responses to injury and treatment and in their ultimate recovery and survival. These variations remain particularly poorly defined within the field of cardiovascular resuscitation. A better understanding of the interaction between these important factors may soon allow us to dramatically improve outcomes in disease processes that currently carry a dismal prognosis, such as sudden cardiac arrest. As part of the 2014 Academic Emergency Medicine consensus conference "Gender-Specific Research in Emergency Medicine: Investigate, Understand, and Translate How Gender Affects Patient Outcomes," our group sought to identify key research questions and knowledge gaps pertaining to both sex and gender in cardiac resuscitation that could be answered in the near future to inform our understanding of these important issues. We combined a monthly teleconference meeting of interdisciplinary stakeholders from largely academic institutions with a focused interest in cardiovascular outcomes research, an extensive review of the existing literature, and an open breakout session discussion on the recommendations at the consensus conference to establish a prioritization of the knowledge gaps and relevant research questions in this area. We identified six priority research areas: 1) out-of-hospital cardiac arrest epidemiology and outcome, 2) customized resuscitation drugs, 3) treatment role for sex steroids, 4) targeted temperature management and hypothermia, 5) withdrawal of care after cardiac arrest, and 6) cardiopulmonary resuscitation training and implementation. We believe that exploring these key topics and identifying relevant questions may directly lead to improved understanding of sex- and gender-specific issues seen in cardiac resuscitation and ultimately improved patient outcomes.

**ESTUDIS EXPERIMENTALS**

*Estudi sobre utilitzant una estratègia guiada per la forma d'ona de la FV pot millorar la ROSC. I és que no.*

**J Emerg Med.** 2014 Dec 5. pii: S0736-4679(14)01097-X. doi: 10.1016/j.jemermed.2014.09.057. [Epub ahead of print]

**A Ventricular Fibrillation Waveform Approach to Direct Postshock Chest Compressions in a Swine Model of VF Arrest.**

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**Abstract**

**BACKGROUND:** In retrospective swine and human investigations of ventricular fibrillation (VF) cardiac arrest, the amplitude-spectral area (AMSA), determined from the VF waveform, can predict defibrillation and a return of spontaneous circulation (ROSC).

**OBJECTIVES:** We hypothesized that an algorithm using AMSA in real time to direct postshock chest compression (CC) duration would shorten the time to ROSC and improve neurological outcome in a swine model of VF cardiac arrest with acute myocardial infarction (AMI) or nonischemic myocardium.

**METHODS:** AMI was induced by occlusion of the left anterior descending artery. VF was untreated for 10 min. Animals were randomized to either traditional resuscitation with 2 min of CC after each shock or to an AMSA-guided algorithm where postshock CCs were shortened to 1 min if the preshock AMSA exceeded 20 mV-Hz.

**RESULTS:** A total of 48 animals were studied, 12 in each group (AMI vs. normal, and traditional vs. AMSA-guided). There was a nonsignificant shorter time to ROSC with an AMSA-guided approach in AMI swine ( $17.2 \pm 3.4$  vs.  $18.5 \pm 4.7$  min,  $p = \text{NS}$ ), and in normal swine ( $13.5 \pm 1.1$  vs.  $14.4 \pm 1.2$ ,  $p = \text{NS}$ ). Neurological outcome was similar between traditional and AMSA-guided animals. AMSA predicted ROSC ( $p < 0.001$ ), and a threshold of 20 mV-Hz gave a sensitivity of 89%, with specificity of 29%.

**CONCLUSION:** Although AMSA predicts ROSC in a swine model of VF arrest in both AMI and normal swine, a waveform-guided approach that uses AMSA to direct postshock CC duration does not significantly shorten the time to ROSC or alter neurological outcome.