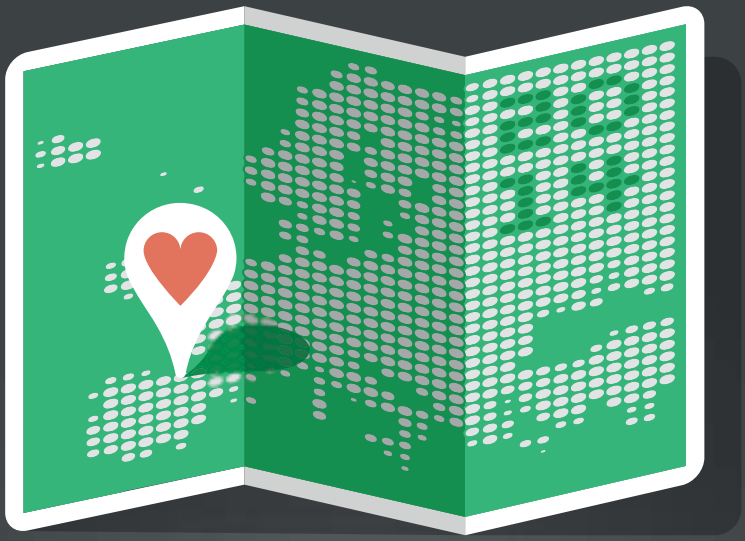

RESUSCITATION 2014

The pathway to new Guidelines

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European Resuscitation Council

Interdisciplinary Council for Resuscitation Medicine and Emergency Medical Care

Mission Statement

To preserve human life by making high quality resuscitation available to all.

The core activities of the ERC are:

- To produce resuscitation guidelines for Europe, in co-operation with the International Liaison Committee on Resuscitation (ILCOR).
- To facilitate resuscitation courses for lay and professional rescuers.
- To organise scientific congresses.
- To promulgate research into resuscitation matters and publish the findings through the peer reviewed scientific journal Resuscitation

Memberships

When registering as a free guest member on the ERC site, you can access the following benefits:

- participation in ERC forums
- download the 2010 Guidelines, ERC posters, presentations
- stay updated with our ERC Newsletter

By becoming a full member of the ERC, you will enjoy these additional benefits:

- subscription to Resuscitation, the official Journal of the ERC
- online access to Resuscitation (also earlier issues and articles in press)
- 10 % reduction in the ERC Web shop
- special registration rates at ERC congresses

ERC V-card

info@erc.edu - www.erc.edu

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Heart of England NHS Foundation Trust, Birmingham, United Kingdom

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ILCOR Evidence reviewer (ERC), London, United Kingdom

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University of Neuchâtel, Neuchâtel, Switzerland

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University of Athens, Greece

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School of Clinical and Experimental Medicine, University of Birmingham, United Kingdom

David Zideman
First Aid task Force Co-Chair, ILCOR

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Dominique Biarent
Monika Grünfeld
Violetta Raffay
Robin Davies
Silvija Hunyadi-Antičević
Elizabeth M. Norris
Ferenc Sari
Joachim Schlieber
Anatolij Truhlář
Patrick Van de Voorde

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Resuscitation 2014 - The Pathway to new Guidelines

Welcome to Resuscitation 2014!

This year's conference promises to be one of the most exciting to date.
The conference will focus on the pathway to new Guidelines.

Come and hear about the hottest controversies in resuscitation science, education and implementation, and gain an insight into how these controversies may be resolved to produce the new resuscitation Guidelines due for publication in 2015.

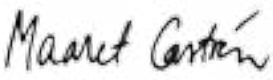
At the same time, why not try your hand at one or more of the advanced skill workshops, or enter a team for the 2014 International CPR Competition? Seize the opportunity to network with international experts and present your research to key opinion leaders.

Our Educational Programme "Resuscitation 2014" was awarded 16.00 CME credits by the EBAC Board.

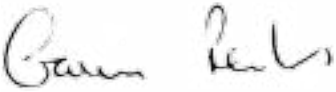
All registered congress participants will be granted free entrance to the Guggenheim Museum, courtesy of the Foral Council of Biscay.

We sincerely hope you enjoy the Bilbao Congress and wish you a successful meeting!

Dr Jan Bahr
Chair Organising Committee
ERC Director of congresses



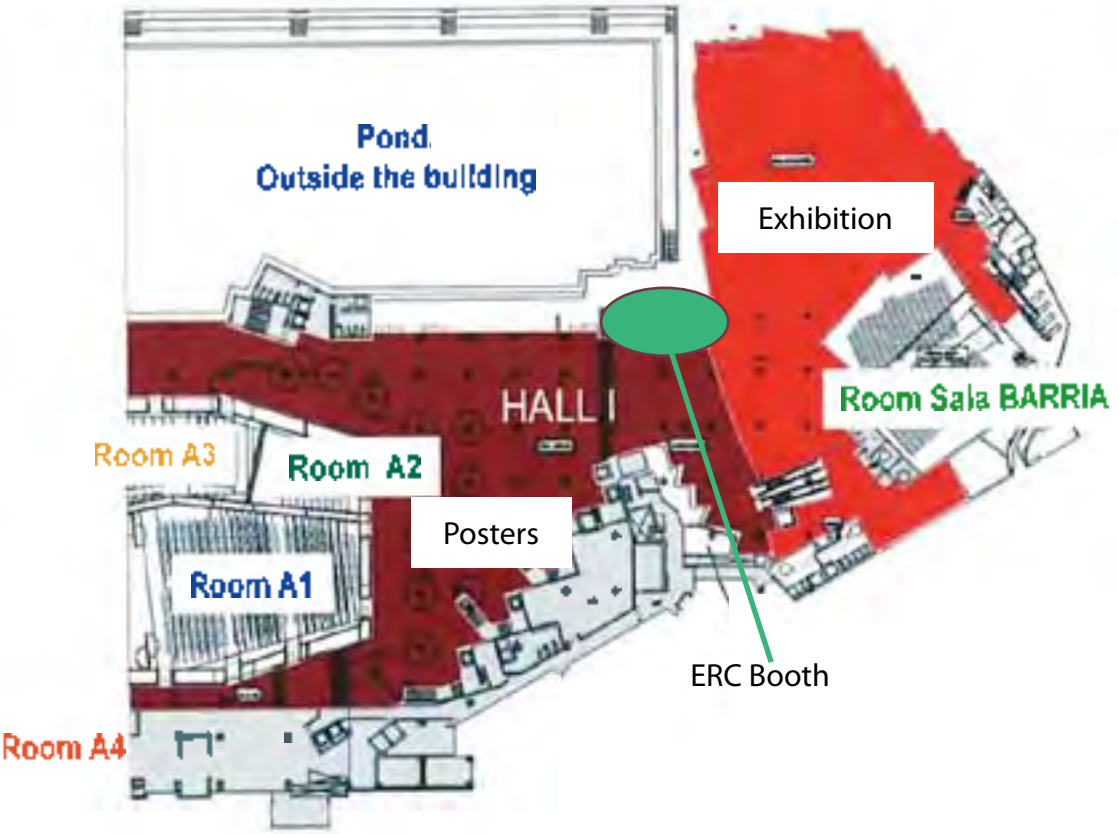
Dr Maaret Castrén
Chair of the board of the ERC



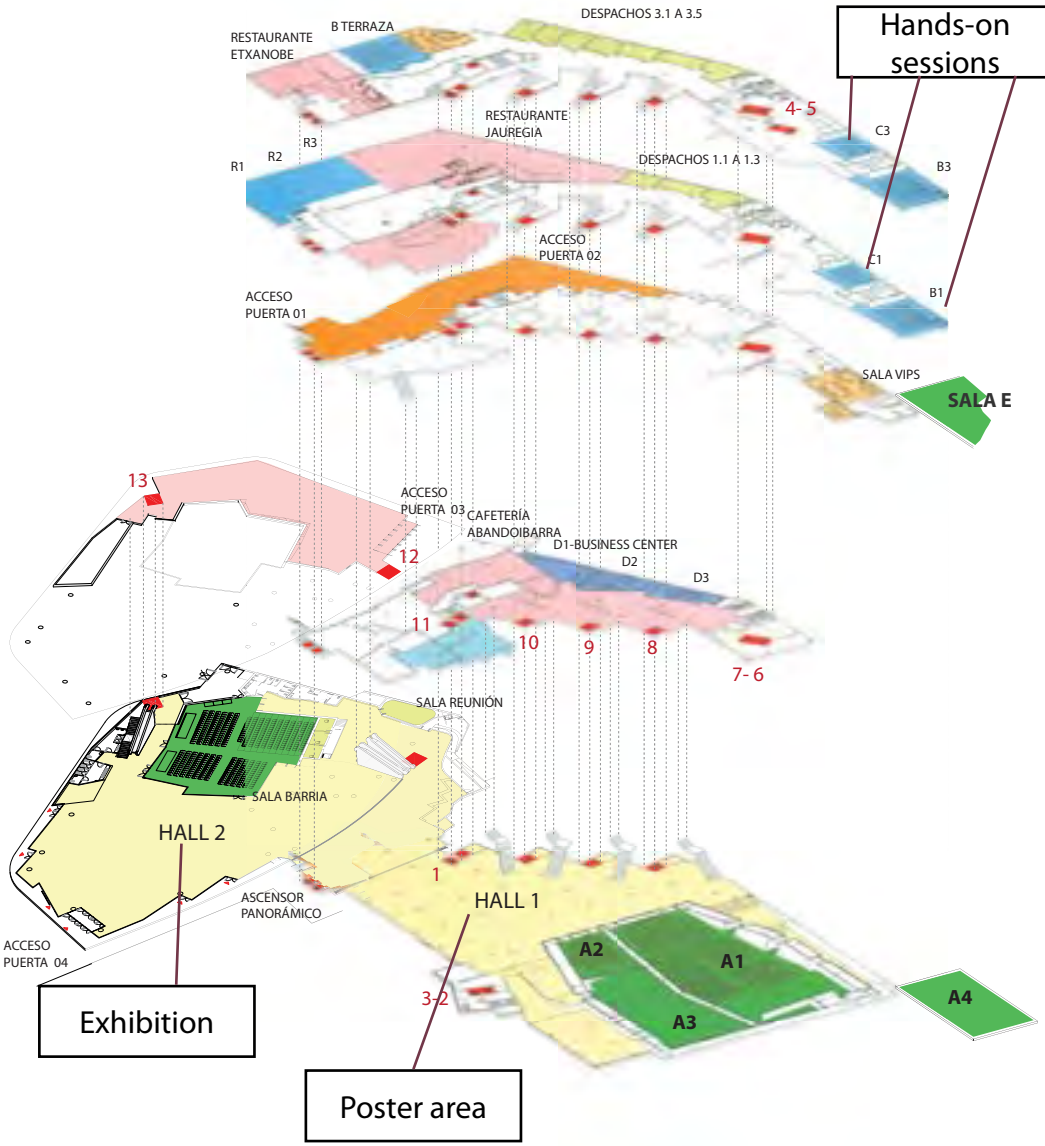
Prof. Dr Gavin Perkins
Chair Scientific Committee

Dr Carlos Urkia
Vice- Chair and acting president of
the Spanish Resuscitation Council

Lay -out
Floor -2



Lay -out
Overview



EUROPEAN RESUSCITATION COUNCIL

Resuscitation 2015: New Science - New Guidelines

Come to Resuscitation 2015 in **Prague** and become one of the first to learn about the science behind the guidelines from the authors of the **2015 Resuscitation Guidelines.**

Put the algorithms into practice through state-of-the-art hands-on sessions. Network with the experts through tutorials, seminars and interactive sessions. Learn how to put the guidelines into practice through the new European Resuscitation Council courses.

All this plus the opportunity to show your skills through the annual European CPR competition, and share your work with others through the oral and poster presentations.

Resuscitation 2015 promises to deliver an exciting update on all aspects of resuscitation science, guidelines and practice.

New Honorary Members 2014

Dominique Biarent

Dominique Biarent and I first met more than a decade ago, when she chaired the Paediatric Working Group of the European Resuscitation Council.

It was immediately clear to me that she was on a mission and she had a strong will to succeed. She created the European Paediatric Life Support (EPLS) course, which has become a standard all over Europe and far beyond.

To achieve this, Dominique introduced and directed more than 100 Paediatric Life Support courses in numerous countries, but she also taught many instructors the art of teaching. She is truly the mother of EPLS.

During her career in the ERC, Dominique held numerous leading positions such as Honorary Secretary of the ERC, Chair of the EPLS International Course Committee and of the Paediatric Working Group, Chair of the Paediatric Task Force of the International Liaison Committee on Resuscitation.

In the early days, she was often the only woman in the Board of the ERC, but she always forcefully voiced her opinion and helped us (men) finding the right direction on many occasions.

In 2010 she was awarded the Fellowship of the ERC.

During her daily work, Dominique Biarent saved the lives of many children as the director of the Paediatric Intensive Care Unit and the Emergency Department of the University Children's Hospital "Reine Fabiola" in Brussels. But through her commitment with the ERC, without any doubt, she has saved countless more.

That was her vision when we first met, and she has made it come true. I am extremely happy for Dominique Biarent to receive the Honorary Membership of the European Resuscitation Council.

Laudatio by Koen Monsieurs

Professor Charles Deakin

Charles Deakin is a consultant in cardiac anaesthesia and intensive care at Southampton University Hospital in the United Kingdom. He is Professor of Resuscitation and Pre-Hospital Emergency Medicine at the University of Southampton.

Charles has made substantial contributions to resuscitation science and education at national and international levels. Charles has worked tirelessly for the European Resuscitation Council (ERC) for more than 10 years: he was a member of the Board of the ERC from 2001 to 2012 and was Chair of the ERC Advanced Life Support Working Group for the vast majority of this time - he remains the Deputy chair of this working group. He was a leading author for both the 2005 and 2010 ERC ALS Guidelines. Charles has been the ERC representative for the European Trauma Course International Working Group since 2004 and has been the Vice Chair of this group since 2010.

Charles has also been a very active member of the International Liaison Committee on Resuscitation (ILCOR). He served as an ILCOR delegate for 10 years from 2002 and was co-chair of the ILCOR ALS Task Force throughout this time. In this role, he facilitated the consensus on science and treatment recommendations for ALS in both 2005 and 2010.

Charles has contributed not just to the review of resuscitation science and to guidelines but has also published over 115 peer-reviewed papers himself. He has made particularly important contributions to the science of defibrillation and continues to be very active in this field. He is one of the top-performing reviewers for Resuscitation and has contributed several excellent editorials to the journal.

There are few people in the world as committed to resuscitation as Charles Deakin and I am absolutely delighted that he has been awarded with an Honorary Membership of the European Resuscitation Council.

Laudatio by Jerry Nolan

Karl Kern

Karl Kern, Professor of Medicine at the University of Arizona, immediate Past Chief of Cardiology, and Co-Director of the Sarver Heart Center has been one of the most influential leaders in Resuscitation over many years.

Karl is an interventional cardiologist who has always found time for research: we are fortunate that the target of most of it has been resuscitation medicine. He has played a major role with other distinguished colleagues in the Heart Center in Tucson, that is renowned not only for the originality and excellence of its published work but also for its refreshing willingness to challenge dogma where good grounds have existed for doubt about current practice. It will be no surprise, to those privileged to know him, that Karl has also received numerous teaching awards throughout his career and has an enviable reputation as a caring and wise physician.

I was fortunate indeed to meet Karl when we were both at a conference in South America. I was captivated by his talk and indeed I still use some of the slides that he showed at that meeting because after many years they have not lost their relevance. I was delighted shortly afterwards when an opportunity presented that enabled me to invite both Karl and his then-boss, Gordon Ewy, to a meeting in the United Kingdom. With his usual generosity of spirit, Karl then agreed to spend periods with me in Cardiff where I was at the time involved in resuscitation research; we benefitted hugely from Karl's involvement.

Our beloved European Resuscitation Council can count itself fortunate to have Karl as an Honorary Member. Karl, you are more than welcome. It is my sadness that I am not able to be here in person to help greet you! All my colleagues surely will!

Laudatio by Douglas Chamberlain

Laerdal
helping save lives

When it comes to CPR, Quality Counts

In the last decade, a large body of research has identified the quality of CPR performance and the biggest determinant of survival and high quality CPR as the foundation of successful resuscitation. Quite simply, the quality of CPR can mean the difference can mean the difference between life and death.

Laerdal's new manikin line with QCPR is designed to measure the core components of CPR skills.

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Simultaneous Congress of the Spanish Resuscitation Council Thursday May 15

All lectures are in Spanish only without simultanious translation.

09.00-09.15

Acto inaugural.
Opening act.

Room A1

09.15-10.15

RCP Pediátrica en España
CPR in paediatrics in Spain.

Room A1

Dr. Julio López-Bayón Bilbao

Formación en RCP pediátrica en España.¿Qué hemos conseguido y hacia dónde vamos?
Paedriatic CPR in Spain. What have we achieved and what are we heading to?
Dr. Ignacio Manrique. (Valencia)

Colaboración en la formación y la investigación en RCP pediátrica entre España y Latinoamérica.
Spanish and Latin American cooperation in paediatric CPR research.
Dr. Angel Carrillo (Madrid)

Coffee break
10.30 - 11.00

10.30-12.00

Estado actual de la Resucitación en España.
Current condition of resuscitation in Spain

Room A1

Dr. Juan Lopez Messa. Palencia

La parada cardiaca en las calles españolas ¿qué está sucediendo realmente en 2013?
Cardiac arrest in the Spanish street. What is really happening in 2013?
Dr. Fernando Rosell (Almería)

Desfibrilación precoz efectiva. La experiencia en Euskadi.
Effective early defibrillation. Experience in Euskadi.
Dr. Karlos Ibarguren (Bilbao)

Nuevos dispositivos de ayuda a la RCP. ¿Son realmente útiles?
New devices for CPR assitance. Are they really helpful?
Dr. Francesc Carmona (Barcelona)

Excelencia actualizada en el manejo integral del paciente coronario agudo.
Acute Coronary Disease; excellence in overall management.
Dr. Higinio Martín (Galdácano)

12.15-13.20

Room A1

Los Profesionales Sanitarios en los Servicios de Emergencias.
Healthcare prividers in the Emergency Systems.

Dr. Juan Lopez Messa. Palencia

Ambulancias de Soporte Vital Basico: Papél del Técnico de Emergencias Sanitarias.
Basic Life Support Ambulances: role of the Emergency Medicine Technician.
Raúl Artíguez. Técnico Emergencias Sanitarias *Emergency Medicine Technician* (Miranda de Ebro)

Capacidades y competencias de la enfermería durante la RCP extrahospitalaria.
Competency and skills of nurses in out-of-hospital CPR.
Alicia Alonso. Enfermera *Nurse* (Galdácano)

¿Qué podemos mejorar en los Servicios 112? Dónde buscar la Calidad.
What can we improve in the 112 Services? Where should we look for quality?
Dr. Ervigio Corral (Madrid)

Lunch break
13:20 - 14:30

MESA REDONDA TARDE ESPAÑOLA CONGRESO EUROPEO DE RESUCITACION
Spanish Afternoon Round Table, courtesy of an unrestricted grant of BEXEN CARDIO.

14.30 - 16.45

Room A3

Desfibrilación por ciudadanos y responsabilidad legal
Defibrillation by Bystanders and Legal Liability

¿Por qué los ciudadanos son reacios a usar un DEA?
Why are people reluctant to use AEDs?
Carlos Urkía. Cruz Roja Madrid. Presidente del CERCP (Chair of the Spanish RC). 15'

Qué se pide a un DEA para la reversión de la muerte súbita.
AED's requirements to revert sudden death.
Ignacio Fdez. Lozano. Hospital Puerta de Hierro (Madrid) 30'

Uso del DEA y responsabilidad legal.
AED use and legal liability.
Fco. Javier Andechaga. Servicios Jurídicos de Osakidetza. *(Basque Health System Legal Advisor)*. 15'

Futuro de los DEA: retos desde la perspectiva de la ingeniería.
The future of AEDs: challenges for engineering.
Jesús Ruiz Ojeda y Sofía Ruiz de Gauna. Catedrático y Profesora Agregada.
Grupo de Señal y Comunicaciones. Escuela Técnica Superior de Ingeniería de Bilbao. Universidad del País Vasco.
(Chairman and Associate Professor. Signal and Communication Group. Faculty of Engineering of Bilbao. Basque Country University

The Congress of the European Resuscitation Council starts at Thursday May 15 at 13:30

All lectures are in English only without simultanious translation.

13.30-15.00

Towards 2015 — Maaret Castrén - Jerry Nolan — Room A1

Towards 2015: New Science
Bernd W. Böttiger (Germany)

Towards 2015: New Guidelines
Koen Monsieurs (Belgium)

Towards 2015: New Courses
Robert Greif (Switzerland)

Q & A - Discussion

Towards 2015 — Maaret Castrén - Jerry Nolan — Room Barria

The session in Room A1 will be transmitted to room Barria simultaneously.

Coffee break
15.00 - 15.30

General note: HANDS-ON Sessions

Space is limited! You can **register in advance** for a Hands-on session at the ERC Booth.

Registered participants are required to arrive **10min before** the session starts.

If you are not there, your place can be given to the first person on the waiting list.

15.30-17.00

Guidelines 2015 : Hot topics for ALS

Claudio Sandroni - Charles Deakin

Room A1

Prognostication
Claudio Sandroni (Italy)

Temperature control
Hans Friberg (Sweden)

Extracorporeal resuscitation
Marko Noč (Slovenia)

Q & A - Discussion

Free paper session 1

Room A2

AS001: Administration of Erythropoietin in a swine model of prolonged cardiac arrest.

AS002: Using surveillance video for insight into Out-of-Hospital Cardiac Arrest (OHCA).

AS003: Energy expenditure of compresion-only basic life support versus 30:2 – simulation study.

AS004: Do bystanders need follow-up after performing CPR?

AS005: What can CPR in simulated hypogravity teach us about CPR on Earth?

AS006: The correlation between the impedance cardiogram and end-tidal carbon dioxide during cardiopulmonary resuscitation in a porcine model of cardiac arrest.

Tutorial: Evidence based resuscitation

Jerry Nolan - Corsino Rey

Room Barria

GRADE: what's it all about?
Laurie Morrison (Canada)

How to do a resuscitation RCT
Gavin Perkins (UK)

Pros and cons of observational trials in resuscitation
Judith Finn (Australia)

Q & A - Discussion

15.30-17.00

Dispatcher CPR

Katarina Bohm - Antonio Caballero

Room A4

Eurocall
Nikolaos Nikolaou (Greece)

Dispatcher attitudes to dispatcher CPR
Katarina Bohm (Sweden)

How to identify and deploy an AED
Freddy Lippert (Denmark)

Q & A - Discussion

HANDS ON: Mechanical CPR

Monika Grünfeld - Carsten Lott

Rooms B1, C1 & C3

Please register for this session at the ERC Booth.

17:15 - 17:35

Late breaking science

Maaret Castrén - Bernd W. Böttiger

Room A1

PARAMEDIC Trial
Gavin Perkins (UK)

Commentary:
Sten Rubertsson (Sweden)

Discussion

17:35 - 18:35

Opening Ceremony

Maaret Castrén - Gavin Perkins

Room A1

Safar lecture: CPR in Schools
Andy Lockey (UK)

Late breaking science

Maaret Castrén - Bernd W. Böttiger

Room Barria

The session in Room A1 will be transmitted to room Barria simultaneously.

09.00-10.30

Guidelines 2015: Hot topics CPR/AED

Gavin Perkins - Leo Bossaert

Room A1

Compression only CPR
Tony Handley (UK)

Dispatcher CPR
Maaret Castrén (Sweden)

Chest compressions
Koen Monsieurs (Belgium)

Q & A - Discussion

Free paper session 2

Santi Mintegi - Pascal Cassan

Room A2

AS007: The impact of real-time audiovisual feedback and post-event debriefing: the CPR Quality Improvement Initiative

AS008: Maximizing administering CPR during the use of the Automatic External Defibrillator

AS009: Is dispatcher-assisted CPR (DA-CPR) associated with regional variations in outcome of out-of-hospital cardiac arrests (OHCAs)? ; A nation-wide population-based study

AS010: Defibrillation during different phases of the mechanical chest compression-decompression cycle - effects on termination of ventricular fibrillation/pulseless ventricular tachycardia

AS011: Transthoracic Impedance-Guided AMSA Threshold Adjustment for Robust Defibrillation Outcome Prediction

AS012: Automatic detection of chest compression pauses for rhythm analysis during 30:2 CPR in an ALS scenario.

Improving team performance

Elizabeth Norris - Anne Lippert

Room A3

We all work in teams, so what is the problem with its performance?
Franziska Tschan (Switzerland)

What can the ERC learn from full-scale simulation to improve team performance?
Anne Lippert (Denmark)

What can the ERC learn from the ETC approach to improve team performance?
Monika Grünfeld (Slovenia)

Q & A - Discussion

09.00-10.30

Joint session with ESICM

Tutorial: Post resuscitation care

Bernd W. Böttiger - Alain Cariou

Room Barria

How I cool patients after cardiac arrest
Hans Friberg (Sweden)

Prognostication - how I do it
Tobias Cronberg (Sweden)

How I decide to take a patient for a PCI
Alain Cariou (France)

Q & A - Discussion

HANDS ON: Drug delivery in children

Patrick Van de Voorde - Ignacio Manrique

Rooms B1, C1 & C3

Pleae register for this session at the ERC Booth.

CPR Competition

Room E

09.00-09.30	Czech Republic
09.30-10.00	Japan
10.00-10.30	Denmark

Coffee break
10.30 - 11.00

11.00-12.30

Guidelines 2015: Hot topics Paediatrics

Ian Maconochie - Patrick Van de Voorde

Room A1

Bystander and phone CPR
Katarina Bohm (Sweden)

Compression only CPR
Dominique Biarent (Belgium)

Post resuscitation care
Ian Maconochie (UK)

Q & A - Discussion

11.00-12.30

Integrated post resuscitation care

Hildigunnur Svavarsdottir - Joost Bierens

Room A2

Prehospital approaches
Maaret Castrén (Sweden)

Initial hospital management
Marko Noč (Slovenia)

How to manage in intensive care
Kjetil Sunde (Norway)

Q & A - Discussion

Education session - Why is it so hard …

Keith Couper - Elizabeth Norris

Room A3

to performe effective CPR?
Tony Handley (UK)

to retain CPR competencies?
Andy Lockey (UK)

to teach the entire community?
Freddy Lippert (Denmark)

Q & A - Discussion

Improving CPR Quality

Judith Finn - John Ballance

Room Barria

Pro: CPR feedback devices
Ian Jacobs (Australia)

Con: CPR feedback devices
Gavin Perkins (UK)

Pro/Con: Train the individual
Koen Monsieurs (Belgium)

Pro-con: Train the system
Richard Lyon (UK)

Q & A - Discussion

11.00-12.30

HANDS ON: Feedback devices — Robert Greif - Nicolas Mpotos

Rooms B1, C1 & C3

Please register for this session at the ERC Booth.

CPR Competition

Room E

11.00-11.30	United Kingdom
11.30-12.00	Spain
12.00-12.30	UK A to E

Lunch break

12:30 - 14:00

Room A1: Resuscitation Academy
Room Barria: National Resuscitation Council Meeting

13.00-14.00

Poster tours 1 to 13

Hall 1

At 13:00, guided poster tours will start in Hall 1 at the various screens.
The authors will present their work and you will have the chance to ask questions afterwards.

14.00-15.30

Guidelines 2015: Hot topics Education — Robert Greif - Judith Finn

Room A1

The ILCOR task force view on the hot educational topics
Farhan Bhanji (Canada)

How does ILCOR reach consensus on science
Andy Lockey (UK)

Evidence-based CPR-teaching strategies or simple believes?
Robert Greif (Switzerland)

Q & A - Discussion

14.00-15.30

Rapid response systems

Joyce Yeung

Room A2

Implementation
Mike Parr (Australia)

Risk Stratification
Markus Skrifvars (Finland)

Effectiveness
Claudio Sandroni (Italy)

Q & A - Discussion

European Restart a Heart Day

Marios Georgiou - Silvija Hunyadi-Antičević

Room A3

Launch of the 2014 European Restart a Heart Day, the unveiling of the design for this year's campaign focusing on saving your loved ones.
We will also have a look back on the fabulous events that took place last year and the National councils will talk about their experiences last year and plans for next year.

Guidelines 2015: Hot topics -Devices

Ian Jacobs - Sten Rubertsson

Room Barria

Should we use mechanical CPR?
Laurie Morrison (Canada)

Impedance Threshold device
Lars Wik (Norway)

New innovations with mechanical CPR
Sten Rubertsson (Sweden)

Q & A - Discussion

HANDS ON: Telemedicine/telephone CPR

Charles Deakin - Freddy Lippert

Rooms B1, C1 & C3

Please register for this session at the ERC Booth.

CPR Competition

Room E

14.00-14.30	Portugal
14.30-15.00	Cyprus
15.00-15.30	Finland

Coffee break
15.30 - 16.00

16.00-17.30

HANDS ON SESSION: "DROWNING, WATER RESCUE AND CPR"

Dock at the Bilbao riverside

José Palacios Aguilar
Andoni Oleagordia Aguirre
Antonio Caballero Oliver
Roberto Barcala Furelos
Invited instructors: Gavin Perkins, Tony Handley

OBJECTIVES
- To acquire skills to manage drowning events
- To train the water rescue of a drowning victim
- To train CPR in the drowning patient

First session: 15.00-16.30
Second session: 16.30-18.00

Guidelines 2015: Hot topics - drugs

Ian Jacobs - Joyce Yeung

Room A1

What is the role of adrenaline in cardiac arrest?
Jerry Nolan (UK)

Anti-arrhythmic drugs in cardiac arrest
Laurie Morrison (Canada)

Vasodilators and beta blockers in cardiac arrest
Theodoros Xanthos (Greece)

Q & A - Discussion

Resuscitation in special circumstances

Monika Grünfeld - Marios Georgiou

Room A2

Drowning
Joost Bierens (Netherlands)

Resuscitation without drugs
Kjetil Sunde (Norway)

Hypothermia
Lars Wik (Norway)

Q & A - Discussion

16.00-17.30

Joint session with EuSEM — Room A3

Paediatric session: Everything you want to know but were afraid to ask

Patrick Van de Voorde - Dominique Biarent

How to deliver drugs without an IV line
Patrick Van de Voorde (Belgium)

How to participate in global paediatric emergency medicine research
Santi Mintegi (Spain)

How to train team leadership during mock codes
Farhan Bhanji (Canada)

Q & A - Discussion

Tutorial: The chain of survival in action — Room Barria

Hildigunnur Svavarsdottir - Richard Lyon

How to use registries to strengthen the chain of survival
Jan-Thorsten Gräsner (Germany)

How I improved outcomes from cardiac arrest
Freddy Lippert (Denmark)

How to improve the effectiveness of PAD
Violetta Raffay (Serbia)

Q & A - Discussion

HANDS ON: Airway management — Rooms B1, C1 & C3

Ian Maconochie - Carsten Lott

Please register for this session at the ERC Booth.

CPR Competition — Room E

16.00-16.30	Hungary
16.30-17.00	Egypt
17.00-17.30	Mexico

09.00-10.30

Guidelines 2015: Hot topics First Aid

David Zideman - Violetta Raffay

Room A1

Spinal immobilisation
Emmy De Buck (Belgium)

Aspirin chest pain
Tom Evans (UK)

Stroke Recognition
Pascal Cassan (France)

Q & A - Discussion

Free paper session 3

Jesus Lopez-Herce - Joyce Yeung

Room A2

AS013: Reduction in carotid blood flow after epinephrine during CPR in a porcine model of cardiac arrest is probably related to an increased vascular bed resistance

AS014: Opinions of secondary school students about obligatory CPR training in school

AS0015: Ventricular fibrillation in cardiac arrest. Is the decline over years really so large when mesured early after collapse?

AS016: Inconsistencies in Do Not Attempt Cardiopulmonary Resuscitation (DNACPR) policies: a review of 20 NHS acute trusts

AS0017: Results of the implementation of hands-only CPR for cardiac arrest in Sao Paulo Metro

AS018: Central Site Photoplethysmography Tracks Arterial Pressure During Resuscitation.

CPR COMPETITION FINALS

Room A3

The 3 finalists will compete against each other.

09.00-09.30	Finalist 1
09.30-10.00	Finalist 2
10.00-10.30	Finalist 3

09.00-10.30

Whats new in defibrillation?

John Ballance - Keith Couper

Room A4

Defibrillation: hands on or hands off?
Charles Deakin (UK)

Predicting defibrillation success
Guseppe Ristagno (Italy)

Refibrillation: is it a problem?
Rudy Koster (The Netherlands)

Q & A - Discussion

Best of the Best Abstracts

Bernd W. Böttiger - Jan Bahr

Room Barria

Judges: Alain Cariou, Mike Parr & Markus Skrifvars

BOB1: Hypothermia during vs. after cpr in out of hospital cardiac arrest. Preliminary results of a controlled randomized trial.

BOB2: Chest compression release velocity is independently associated with survival from out-of-hospital cardiac arrest.

BOB3: Metoprolol administration in acute anterior myocardial infarction during prehospital emergency care. Insights from METOCARD-CNIC trial.

BOB4: Increased rate of bystander-initiated CPR during the initial 3 months after completion of the week of cardiac arrest awareness "Viva!" in two Italian cities.

BOB5: Admission interleukin-6 predicts post resuscitation organ dysfunction and long-term outcome after out-of-hospital ventricular fibrillation.

BOB6: Long-term evolution after in-hospital cardiac arrest in children: prospective multicenter multinational study.

Coffee break
10.30 - 11.00

11.00-12.30

Room A1

Joint session with ESC/ACCA

Guidelines 2015: Hot topics ACS

Leo Bossaert - Nikolaos Nikolaou

Pre-hospital ECG
Anatolij Truhlář (Czech Republic)

Pre-hospital fibrinolysis and PCI
Alain Cariou (France)

MONA
Nikolaos Nikolaou (Greece)

Q & A - Discussion

Room A2

Free paper session 4 — Antonio Caballero - Hildigunnur Svavarsdottir

AS019: Prognostic implication of out of hospital cardiac arrest in patients with cardiogenic shock and acute myocardial infarction

AS020: Ischemic post-conditioning and nitric oxide inhalation failed to demonstrate protective effect in comparison with mild hypothermia in porcine model of cardiac arrest

AS021: Early activation of the kynurenine pathway predicts early death and long-term outcome in patients resuscitated from out-of-hospital cardiac arrest

AS022: Relationship between Plasma High-Sensitive Cardiac Troponin T and Infarct Size in a Porcine Model of Acute Myocardial Infarction and Cardiac Arrest and Resuscitation

AS023: Compliance with Prehospital Traumatic Brain Injury Guidelines is Poor with Longer Prehospital Treatment Duration

AS024: A pilot study on instructional effectiveness for AED skills with a low-cost imitation AED and peer training.

Room A4

Tutorial : Paediatrics — Antonio Rodríguez Núñez - David Zideman

When I consider ECMO
Farhan Bhanji (Canada)

How I use biomarkers to predict outcome
Corsino Rey (Spain)

Prognostication
Dominique Biarent (Belgium)

Q & A - Discussion

11.00-12.30

Young Investigator Competition — Gavin Perkins - Nicolas Mpotos

Room Barria

Judges: Markus Skrifvars, Jan-Thorsten Gräsner, Robert Greif

Finalists:

Trond Nordseth
Thomas Uray
Rochelle M. Velho
Jakob E. Thomsen
Janet Bray
Aiham Albaeni

Lunch break

12:30 - 14:00

Room 2:
ERC clinical trials network meeting

Room 4:
ERC Research NET meeting

13.00-14.00

Poster tours 14 to 25

Hall 1

At 13:00, guided poster tours will start in Hall 1 at the various screens.
The authors will present their work and you will have the chance to ask questions afterwards.

14.00-15.30

Guildelines 2015: Hot topics implementation

Judith Finn - Silvija Hunyadi-Antičević

Room A1

From consensus on science to guidelines
Koen Monsieurs (Belgium)

Why not a politically top down legislation?
Marios Georgiou (Cyprus)

Implementation of guidelines to laypersons
David Zideman (UK)

Q & A - Discussion

Tutorial: Recovering from cardiac arrest

Anatolij Truhlar - Keith Couper

Room A2

What can the cardiologist do?
Rudy Koster (The Netherlands)

What can the neurologist offer?
Tobias Cronberg (Sweden)

How can rehabilitation help?
Veronique Moulaert (The Netherlands)

Q & A - Discussion

Joint session with ESA - Trauma

Bernd W. Böttiger - Richard Lyon

Room A3

Coagulopathy of trauma
Mike Parr (Australia)

The European Trauma Course
Carsten Lott (Germany)

Multiple victims: Santiago de Compostela train crash
Jose Antonio Iglesias Vazquez (Spain)

Q & A - Discussion

HANDS ON: Educator session

Robert Greif - Andy Lockey

Room A4

Developing a blended programme for instructor training: an interactive exploration
Mike Davis (UK)

Teaching Human Factors on Resuscitation Courses
Elisabeth Norris (UK)

14.00-15.30

Systems approach to saving lives — Jan-Thorsten Gräsner - Jesus Lopez-Herce — Room Barria

The European-Latin-American registry and increasing survival
Jesus Lopez-Herce (Spain)

Use of social media to improve cardiac arrest recognition
Theodoros Xanthos (Greece)

European restart a heart day initiatives - are they worthwhile?
Giuseppe Ristagno (Italy)

Q & A - Discussion

15.30-16.30

Closing Session — Maaret Castrén - Hildigunnur Svavarsdottir — Room A1

Presentation of the new Honorary members and Citations
Presentation of the new Fellows of the ERC
Presentation Resuscitation 2015 in Prague, Czech Republic

Network: EUSKALDUNA
LOGIN: invitado
PASSWORD: euskalduna

SPONSORED LUNCH TIME SESSIONS

Friday 16 May in room 3.

Join ZOLL for a lunchtime symposium
that reviews Sports and Medicine.

The world is watching.

Preparing to treat athletes and spectators.

Lunch will be provided, but space is limited
so register at www.zoll.com/erc.

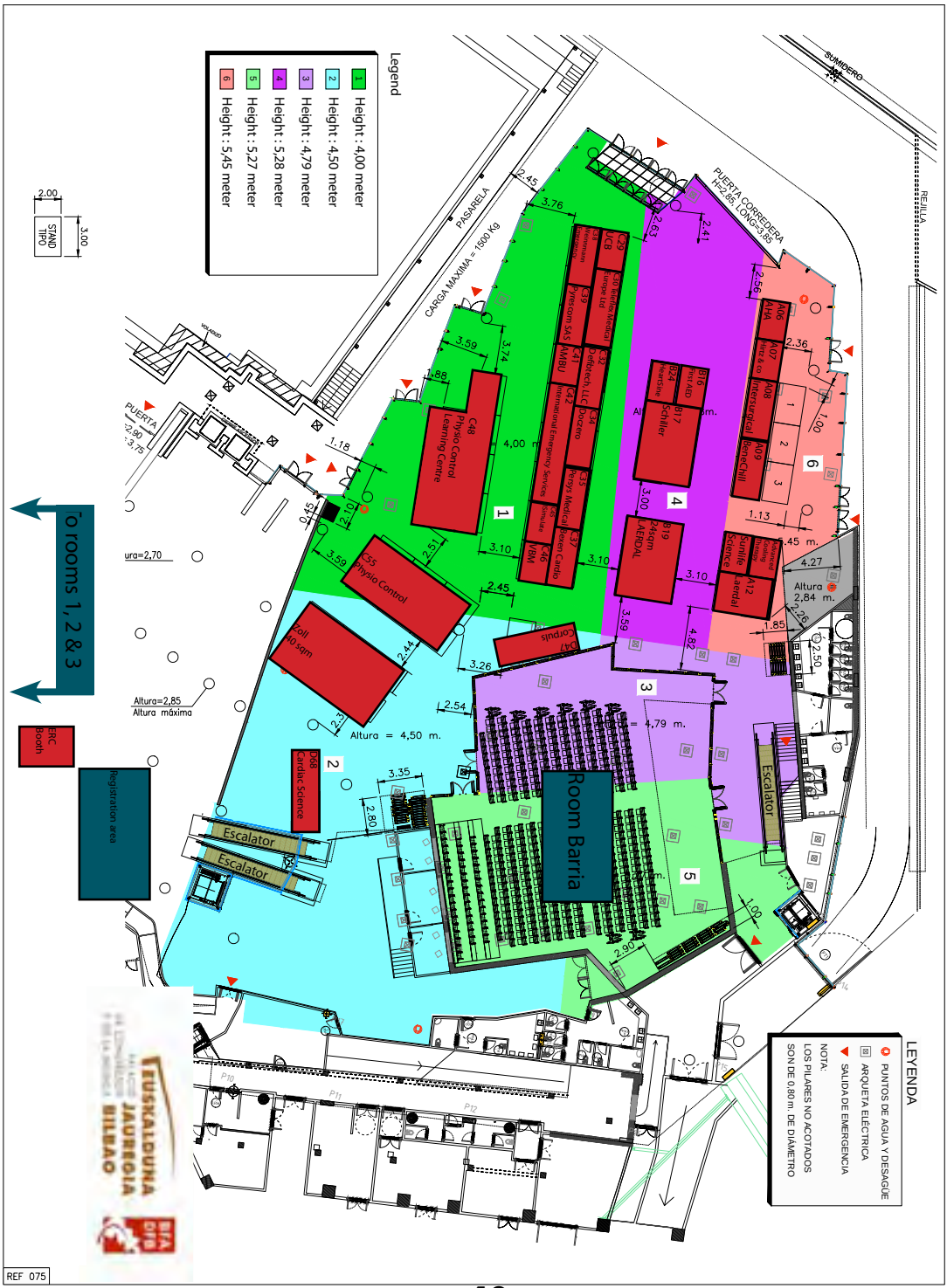
SOCIAL EVENT

Following a busy congress day we are delighted to invite you to join us for food and drinks in Bilbao's fantastic **Maritime museum**.
This visit will bring you closer to the thrilling adventure of the sea via the Bilbao Estuary and Port.

Friday evening 16th of May from **18:00 – 20:00** we look forward to raising a glass with you and tasting the wonderful food that Bilbao has to offer.
Tickets cost €30 and cover all food and drinks until 20:00.
Maritime Museum is 150m from congress venue, a short relaxing walk via a picturesque bridge and past a wonderful Dali sculpture.

If you have not yet booked your place for this Social Event, you can do so at the registration desk in the Congress venue on Friday between 13:00 and 15:00.
Payment with credit card will be possible.
Partners who are joining you in Bilbao, but are not registered for the congress, are of course welcome to join you for this charming evening among the ships!
They will be charged the same fee of €30 and can also arrange their tickets via the registration desk in the venue at the time mentioned above.

EXHIBITION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Physio Control
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Corpuls
Schiller
Bard
Sunlife Science
Room Barria
Escalator
Escalator
Escalator
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ERC Booth
Cardiac Science
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ARQUETA ELÉCTRICA
SALIDA DE EMERGENCIA
NOTA:
LOS PILARES NO ACOTADOS
SON DE 0,80 m. DE DIÁMETRO
REF 075

LIST OF EXHIBITORS

A04 Advanced Cooling Therapy
A06 American Heart Association
A07 Hirtz & Co. KG
A08 Intersurgical
A09 BeneChill International GmbH
A11 SUNLIFE SCIENCE, INC.
A12 Laerdal
B16 FirstAED ApS
B17 Schiller
B19 Laerdal
B24 HeartSine
C29 UCB
C30 Teleflex Medical Europe Ltd
C32 Defibtech , LLC
C34 Doczero
C35 Persys Medical
C37 Bexen Cardio
C38 Weinmann Emergency
C39 Pyrescom SAS
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Resuscitation 2014, ERC Symposium on Guidelines: Abstract Presentations

"Best of the Best" Presentations

Advanced Life Support

BoB1

Hypothermia during vs. after CPR in out of hospital cardiac arrest. Preliminary results of a controlled randomized trial

Luis Sanchez Santos[1,*], Fernando Muñoz Agius[1], Maria Jose Garcia Monje[3], Pablo Vidal Cortes[4], Jose Maria Garcia Acuña[5], Antonio Rodriguez Nuñez[5], Eduardo Murias Taboada[6], Francisco Javier Rodriguez Fariñas[7], Carlos Manuel Nieto Mouronte[8], Jose Ignacio Cenoz Osinaga[9], Marcial Rey Martinez[10], Laura Alvarez Montero[2], Noelia Vigo Rivas[1], Gonzalo Amigo Rodriguez[1], Carmen Lopez Unanua[1], Maria Pichel Lopez[1], Luisa Chayan Zas[1], Javier Sanz Smith[1], Maria Victoria Barreiro Diaz[1], Antonio Iglesias Vazquez[1]

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[2] *University Hospital Lucas Augusti, Lugo, Galicia, Spain*
[3] *University Hospital of la Coruña, la Coruña, Galicia, Spain*
[4] *University Hospital of Ourense, Ourense, Galicia, Spain*
[5] *University Hospital of Santiago, Santiago (la Coruña), Galicia, Spain*
[6] *University Hospital Group of Vigo, Vigo (Pontevedra) Galicia, Spain*
[7] *Hospital Arquitecto Marcide, Ferrol (la Coruña), Galicia, Spain*
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[10] *Povisa Hospital, Vigo (Pontevedra), Galicia, Spain*

Introduction: Therapeutic hypothermia (TH) after cardiac arrest (CA) improves neurological outcome. Immediate initiation of TH, just during cardiopulmonary resuscitation (CPR) could improve the outcome even more. Our objective was to assess the safety and effectiveness of TH during CPR (TH-CPR) compared to TH after return of spontaneous circulation (ROSC) in out-of-hospital cardiac arrest (OH-CA).

Methods: Randomized, multicenter, controlled, double-blind, parallel group clinical trial. Inclusion criteria: males >18 y and women >50 y with OH-CA and candidates to CPR. Exclusion criteria: CA not witnessed or prolonged over 20 min without CPR, CPR not indicated, environmental hypothermia. Variables studied: ROSC and survival, cerebral function category score (CFC), and Barthel functional index (BFI) at hospital discharge, at one month and at 6 months. Full study period: June 2013 to May 2016. This is a preliminary intermediate analysis to assess the protocol safety. Analyzed period: June 2013 to January 2014 (7 months).

Results: Forty-eight patients were included, 25 in TH group (52%) and 20 in TH-CPR group (48%). ROSC was 64.0% in TH and 52.2% in TH-CPR group (p n.s.). At 6 months follow-up global survival was 36% (9/25) in TH and 40% (9/23) in TH-CPR (p n.s.). At hospital discharge, mean CFC score was 1.4 in TH vs. 2.2 in TH-CPR (p n.s.), and mean BFI scale was 1.6 vs. 2.6 respectively (p n.s.). At one month follow-up, mean CFC score was 1.6 in TH vs. 1.5 in TH-CPR group (p n.s.), and mean BFI scale, 1.6 vs. 1.7 respectively.

Conclusion: Our preliminary intermediate analysis of the trial indicates that in case of OH-CA in our setting, TH-CPR is feasible and it is as safe and effective as TH after ROSC. Our results support to continue the study until a representative sample be obtained, in order to assess the real impact of TH-CPR.

http://dx.doi.org/10.1016/j.resuscitation.2014.03.015

CPR Quality

BoB2

Chest compression release velocity is independently associated with survival from out-of-hospital cardiac arrest

Bentley Bobrow[1,*], Annemarie Silver[2], Uwe Stolz[3], Taro Irisawa[4], Madalyn Karamooz[5], Ryan Anne Murphy[6], Alexander Kovacs[6], Daniel Spaite[3]

[1] *Maricopa Medical Center, Phoenix, AZ, USA*
[2] *ZOLL Medical Corporation, Chelmsford, MA, USA*
[3] *University of Arizona, Tucson, AZ, USA*
[4] *Osaka University, Osaka, Japan*
[5] *University of Pennsylvania, Philadelphia, PA, USA*
[6] *University of Arizona College of Medicine, Phoenix, AZ, USA*

Purpose: There is mounting evidence that prehospital CPR quality (CPRQ) strongly impacts survival. Animal studies have demonstrated the influence of chest compression release velocity

0300-9572/$ – see front matter

(CCRV) on survival, but there is insufficient clinical data. We tested the hypothesis that CCRV is independently associated with survival in out-of-hospital cardiac arrest (OHCA).

Materials and methods: CPRQ was measured using a monitor/defibrillator equipped with accelerometer-based CPR sensing technology (E Series, ZOLL Medical) during the treatment of consecutive OHCA patients by 4 EMS agencies in the state of Arizona between 09/2008 and 06/2013, as part of an ongoing study to improve CPRQ. Cases of non-EMS witnessed arrest of presumed cardiac etiology were included. Fisher's exact test was used to compare survival among arrests grouped into categories of CCRV: fast (>400 mm/s), moderate (300–400 mm/s), or slow (≤300 mm/s). The impact of CCRV on survival to hospital discharge was also assessed using multivariable logistic regression to calculate adjusted odds ratios (aOR) for survival to discharge adjusting for known confounders.

Results: 730 adult OHCAs (mean age 66 ± 16, 65% male, 11% survival to discharge) were analyzed. Survival varied significantly with CCRV ($p < 0.001$; fast = 18/78 [23%]; moderate = 48/404 [12%]; slow = 16/248 [6%]). Logistic regression revealed that fast CCRV was independently associated with increased survival to discharge compared to both slow [aOR 3.86; 95% CI: 1.54, 9.66) and moderate CCRV (aOR 3.31 [1.50, 7.29]). When assessed as a continuous variable (per 10 mm/s), CCRV remained an independent predictor of survival ($p < 0.05$) and the adjusted odds of survival increased 5% for each 10 mm/sec increase in CCRV (aOR 1.05 [1.00, 1.10]).

Conclusion: CCRV is significantly associated with survival from adult OHCA after controlling for known confounders and independent risk factors. Prospective studies are required to confirm the linkage between CCRV and survival and to determine if improving CCRV will result in better survival.

http://dx.doi.org/10.1016/j.resuscitation.2014.03.016

Acute Coronary Syndromes

BoB3

Pre-hospital metoprolol administration in Killip-class I–II anterior ST-segment elevation acute myocardial infarction is safe and reduces infarct size and adverse events. Insights from the METOCARD-CNIC trial

Alonso Mateos [1,7,*], Ines Garcia [2,7], Jose Manuel Garcia [2,7], Juan Valenciano [1,7], Pilar Huertas [1,7], Jose Antonio Iglesias [3,7], Maria Jose Fernandez [1,7], Rodrigo Fernandez [5,7], Borja Ruiz [8,7], Jesus Bravo [1,7], Ana Garcia [5,7], Leticia Fernandez [2,7], Antonio Fernandez [5,7], Agustin Albarran [6,7], Andres Iñiguez [9,7], Ervigio Corral [4,7], Carlos Macaya [5,7], Valentin Fuster [2,7], Vicente Sanchez [1,7], Borja Ibañez [2,7]

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[7] *H Quiron, Madrid, Spain*
[8] *H Cruz Roja, Madrid, Spain*
[9] *CH Vigo-Meixoeiro, Madrid, Spain*

Objective: Pre-reperfusion administration of i.v. metoprolol has been shown to reduce infarct size in Killip-class I–II anterior ST-segment elevation myocardial infarction (STEMI) patients undergoing primary angioplasty (METOCARD-CNIC trial, Circulation 2013). The objective of the present study was to study the effects of i.v. metoprolol administration in the pre-hospital emergency care environment.

Methods: This study is a pre-specified sub-analysis of the recruited (randomized and treated) patients in the pre-hospital environment by emergency medical services (EMS) in the METOCARD-CNIC trial. Inclusion criteria were: Killip-class I–II anterior STEMI, anticipated reperfusion by primary angioplasty within 6 h from symptoms onset, systolic blood pressure ≥ 120 mmHg, heart rate ≥ 60 bpm. Patients were randomized to receive i.v. metoprolol (up to three 5-mg boluses) or control before reperfusion. The primary endpoint was infarct size measured by MRI one week post-infarction. Primary safety endpoint was the presence of major adverse cardiac events (MACE) in the first 24 h.

Results: From the 270 patients of this trial, 147 (54%) were recruited in the pre-hospital environment (74 i.v. metoprolol and 73 controls). Groups were balanced for baseline characteristics: age (58.5 vs 59.1, $p = 0.7$), BMI (27.6 vs 27.7, $p = 0.8$), gender (female 16.2% vs 17.8%, $p = 0.8$), hypertension (39.1% vs 41.7%, $p = 0.9$), diabetes (19.1% vs 19.4%, $p = 1$), dyslipidemia (44.1% vs 38.0%, $p = 0.5$) and smoking (53.6% vs 47.2%, $p = 0.5$). Mean (SD) infarct size on one-week MRI was 23.4 grams (15) vs. 34.0 grams (24) in i.v metoprolol and control respectively, $p = 0.005$. Mean (SD) LVEF on one-week MRI in the metoprolol group was 48.1% (8.4) vs. 43.1% (10.2) in control, $p = 0.004$.

There was as a significant reduction in the pre-specified safety MACE (composite of death, malignant ventricular arrhythmias, cardiogenic shock, or AV block during the first 24 h) in the i.v. metoprolol group: 6.8% vs. 17.8% in controls ($p = 0.047$). The same trend was observed in all individual components of MACE but mainly driven by a reduced rate of ventricular fibrillation during transfer to the hospital (4.1% vs. 9.6%).

Conclusions: Early i.v. administration of metoprolol in the extrahospital environment by EMS in Killip-class I–II anterior STEMI patients is safe and results in a significant reduction of infarct size and higher LVEF one week after infarction. If these data are confirmed in other trials, clinical guidelines might change in this regard.

http://dx.doi.org/10.1016/j.resuscitation.2014.03.017

Education

BoB4

Increased rate of bystander-initiated CPR during the initial 3 months after completion of the week of cardiac arrest awareness "Viva!" in two Italian cities

Giuseppe Ristagno [1,*], Federico Semeraro [1], Andrea Scapigliati [1], Giovanni Gordini [2], Marco Comploi [3], Cosimo Picoco [2], Bruno Iarussi [2], Niccolò Grieco [1], Tommaso Pellis [1], Erga Cerchiari [1]

[1] *Italian Resuscitation Council, Bologna, Italy*
[2] *Servizio Emergenza Territoriale 118, Ospedale Maggiore, Bologna, Italy*
[3] *Croce Bianca, Bolzano, Italy*

Background: Public awareness of CPR is relatively low in Italy, with a bystander-initiated CPR in less than 20% of cardiac arrests. The Italian Resuscitation Council (IRC) organized a week of

awareness and mass training on CPR for lay people in Italy, called "Viva!" (October 14th–20th 2013). We have now evaluated the effects of the Viva! campaign on bystander-initiated CPR during the first 3 months after its completion.

Methods: Data on cardiac arrest events, witnessed instances, bystander-initiated CPR, and use of automated external defibrillators (AED) by lay people, were collected from two cities, Bologna and Bolzano, where different Viva! events were organized. More specifically, data collected during the initial 3 months after Viva! (21 October 2013–20 January 2014) were compared with those collected during the same period, the previous year (21 October 2012–20 January 2013).

Results: There were 123 cardiac arrests in the pre-Viva! period compared to 93 in the post-Viva! period. Seventy-five % of cardiac arrests were witnessed in the pre-Viva! period compared to 69% during the post-Viva! one. Bystander CPR initiated by lay people increased from 18% of witnessed cardiac arrests during the pre-Viva! period to 27% after the Viva! campaign. Moreover, in two instances of cardiac arrest, occurred in the post-Viva! period, a defibrillation was delivered by lay rescues with the aid of an AED, in contrast to none in the pre-Viva! period. No effects on ROSC improvement were observed.

Conclusions: Viva! campaign was successfully organized and increased the rate of bystander-initiated CPR in two cities during the initial 3 months after its completion. Nevertheless, more data from all the cities reached by Viva! need to be retrieved in order to confirm this initial positive effects of the awareness campaign. Viva! like campaigns need to be further supported.

http://dx.doi.org/10.1016/j.resuscitation.2014.03.018

Post Resuscitation Care

BoB5

Admission interleukin-6 predicts post resuscitation organ dysfunction and long-term outcome after out-of-hospital ventricular fibrillation

Jukka Vaahersalo [1,*], Markus Skrifvars [1], Kari Pulkki [2], Mats Stridsberg [3], Tero Varpula [1], Ville Pettilä [1], Esko Ruokonen [4]

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Purpose of the study: To study plasma concentrations of interleukin-6 (IL-6), high sensitive C-reactive protein (hs-CRP) and S100B during intensive care after out-of-hospital cardiac arrest (OHCA), and to study their associations with the duration ischemia, organ dysfunction and long-term neurological outcome.

Materials and methods: A 12-month prospective observational multicenter study conducted in 21 Finnish intensive care units in 2011.[1] Interleukin-6, hs-CRP and S100B were measured with an automatic immune analyzer and an enzyme-linked immunosorbent assay at 0–6, 24, 48 and 96 h after ICU admission. Associations with time to return of spontaneous circulation (ROSC) and Sequential Organ Failure Assessment (SOFA) scores divided in tertiles and 12-month Cerebral Performance Category (CPC) were tested for using statistical methods.

Results: A total of 186 OHCA patients resuscitated from ventricular fibrillation were included in the study and 109 (58.6%) patients survived with good neurologic outcome (CPC 1–2) at 12 months after cardiac arrest. Admission plasma concentrations of IL-6 but not hs-CRP were higher with prolonged time to ROSC ($p < 0.001$, 0.203), SOFA scores ($p < 0.001$, 0.069) and in patients with poor long term outcome ($p < 0.001$, 0.315). S100B concentrations over time were higher in patients with a poor neurological outcome ($p < 0.001$). The area under the curve for prediction of poor 12-month outcome was 0.711 for IL-6, 0.663 for S100B and 0.534 for hs-CRP. With multivariate logistic regression analysis admission IL-6 ($p = 0.046$, OR 1.006, 95% CI 1.000-1.011/increase), but not hs-CRP and S100B, was an independent predictor of poor outcome.

Conclusion: Admission interleukin-6, but not hs-CRP or S100B, predicted long-term neurologic outcome and subsequent organ failure.

Reference

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Prognostication

BoB6

Long-term evolution after in-hospital cardiac arrest in children: Prospective multicenter multinational study

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Objective: To study survival and neurologic evolution of children who suffered in-hospital pediatric cardiac arrest (CA).

Methods: Prospective, international, observational, multicentric study in 48 hospitals of 12 countries. CA in children between 1 month and 18 years were analyzed using the Utstein template. Survival and neurological state measured by Pediatric Cerebral Performance Category (PCPC) scale one year after hospital discharge was evaluated.

Results: 502 patients in-hospital CA were evaluated. 197 of them (39.7%) survived to hospital discharge. PCPC at hospital discharge was available in 160 (81.2%) patients. 74.4% had good neurologic state (PCPC 1–2) and 25.8% poor PCPC 3–6. One year after hospital discharge we could obtain data of 143 patients (72.5%). Survival was 128 (89.5%). PCPC was available in 120 patients. 90 (75.6%) had a good neurologic evaluation and 29 (24.4%) a poor one. One year after hospital discharge, 7 patients (5.4%) showed a better PCPC, in 112 (87.6%) the PCPC was the same, and in 9 (7%) the PCPC was worse.

Conclusion: Survival one year after hospital discharge in children after in-hospital cardiac arrest is high. Neurologic outcome of these children a year after cardiac arrest is mostly the same as after hospital discharge.

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Resuscitation 2014, ERC Symposium on Guidelines: Abstract Presentations

Oral Presentations

Advanced Life Support

AS001

Administration of Erythropoietin in a swine model of prolonged cardiac arrest

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Purpose of the study: Recombinant human erythropoietin (rh-EPO) has been shown to exert tissue protective properties in various experimental models. However, its potential role in the cardiac arrest (CA) setting has not yet been sufficiently elucidated. The purpose of our study was to evaluate the effect of rh-EPO administration in swine model of ventricular fibrillation (VF) CA. The primary goal of our study was to investigate whether rh-EPO exerts any beneficial effect on Return of Spontaneous Circulation (ROSC) rates, while the secondary aim was to assess its impact in the short-term basis of 24-h and 48-h survival.

Materials and methods: VF was electrically induced in 20 piglets and remained untreated for 8 min before attempting resuscitation. Animals were randomized to receive rh-EPO (5000 IU kg^{-1}, EPO group, $n = 10$) immediately before the initiation of chest compressions, or to receive 0.9% NaCl solution instead (control group, $n = 10$). Endpoints of the experiment were defined as either asystole or ROSC.

Results: Compared with controls, the EPO group had higher rates of ROSC (100% *vs* 60%, $p = 0.011$), and higher 48-h survival (100% *vs* 40%, $p = 0.001$). Diastolic aortic pressure (DAoP) and coronary perfusion pressure (CPP) during cardiopulmonary resuscitation (CPR) were significantly higher in the EPO group compared to the placebo group. EPO treated animals required fewer number of shocks in comparison with animals that received normal saline ($p = 0.04$). Furthermore, the neurologic alertness score was higher in the EPO group compared to placebo at 24 ($p = 0.004$) and 48 hours ($p = 0.021$).

Conclusion: Administration of rh-EPO in a pig model of VF-induced CA just before reperfusion facilitates ROSC and improves survival rates as well as hemodynamic variables.

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Basic Life Support

AS002

Using surveillance video for insight into Out-of-Hospital Cardiac Arrest (OHCA)

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Background: Bystander and telephone assisted cardiopulmonary resuscitation (CPR) is important, however little is known about the first critical minutes. On 8th of July 2013, a 57 year old man collapsed with OHCA at a train station in Copenhagen. The incident was captured on closed circuit television (CCTV). We combined CCTV and audio recordings from the emergency medical dispatcher (EMD) in order to identify the learning possibilities.

Methods: A qualitative approach based on systematic text condensation with NVivio 10 software. We focused on the interval from collapse until the arrival of an ambulance.

Results: Themes (1) organization: Call-processing-time was 101 s (measured from bystander call to the emergency services until the caller was connected to EMD); (2) communication between EMD and caller versus observed by CTTV: The caller could not see the patient very well. EMD was not aware of this and did not realize that the patient had cardiac arrest before CPR was started by other bystanders. The caller himself was not performing CPR, but the CPR instruction was given to him. EMD informed about the

0300-9572/$ – see front matter

location of an automated external defibrillator (AED), but this message was overheard because caller was communicating with other bystanders. EMD made caller interrupt CPR unnecessarily one time; (3) treatment: compressions and ventilations ratio was first 15:2 and change to compressions only. AED was first mentioned 185 s after the diagnosis of cardiac arrest; (4) Behavior of bystanders: people standing less than 3 meters away helped immediately. However, everyone left when the train arrived – except the caller and one other person.

Conclusion: CCTV combined with audio recordings from the emergency call can provide unique insights in the challenges of treating OHCA and can improve our understanding of the challenges in communication between emergency medical dispatchers and bystanders. Furthermore it gives insight to the behavior of bystanders.

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AS003

Energy expenditure of compression-only basic life support versus 30:2 – Simulation study

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Purpose of the study: One of the factors that may affect the quality of basic life support (BLS) is its energy expenditure. Therefore, we performed the study to compare energy expenditure of standard BLS with compression–ventilation ratio 30:2 (S-BLS) and compression-only BLS (CO-BLS) and assess sensation of fatigue and perceived exertion associated with these activities.

Materials and methods: We conducted simulation cross-over study with 10 healthy volunteers on resuscitation manikin. Participants were randomly assigned to start with CO-BLS or with S-BLS in accordance with the ERC guidelines 2010. A few days later, every individual underwent the other type of BLS than was the first. BLS was terminated for severe exhaustion, for impossibility of participant to retain high-quality CPR, or volunteer performed high-quality CPR for 30 min. Energy expenditure of BLS was expressed as oxygen consumption throughout the protocol. It was measured in all participants continuously by spiroergometric monitoring system. We calculated relative oxygen consumption (VO_2/kg) and area under the curve of all VO_2/kg measurements during each BLS procedure indexed to one minute ($AUC_{VO_2/kg\,min}$). All participants completed a short survey to assess perceived intensity of exertion by Borg and sensation of general fatigue by visual analogue scale (0–100).

Results: Average quality and duration of CO-BLS and S-BLS procedure were comparable. Maximal VO_2/kg reached during S-BLS was significantly higher than during CO-BLS (23.16 ± 3.94 vs. 20.17 ± 2.14 ml kg^{-1} min^{-1}, $p = 0.049$). $AUC_{VO_2/kg\,min}$ was found significantly higher while performing S-BLS than CO-BLS (18.90 ± 3.13 vs. 15.91 ± 2.07 ml/min^3; $p = 0.021$). Conversely, more intense rate of perceived exertion (16.6 ± 2.0 vs. 13.8 ± 1.2, $p = 0.001$) and the rate of sensation of general fatigue (86.5 ± 10.8 vs. 75.0 ± 14.3, $p = 0.058$) were associated with CO-BLS approach.

Conclusion: We found that the energy expenditure of S-BLS procedure was higher than of CO-BLS in our study, while sensation of fatigue and perceived exertion reflected the opposite association.

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AS004

Do bystanders need follow-up after performing CPR?

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Introduction: Bystanders increase the chance of survival in out of hospital cardiac arrest (OHCA) victims by two to three times[1] by alerting the Emergency Medical Services (EMS) and performing cardiopulmonary resuscitation (CPR). To improve survival for OHCA victims, the health care system is dependent on community citizens to perform appropriate actions. However, we do not know whether the bystanders need follow-up after a cardiac arrest situation. The aim of this study was to reveal bystanders need of follow-up after performing CPR in an OHCA situation.

Methods: Twelve bystanders, who performed CPR to OHCA victims, took part in a qualitative interview study. We used in-depth interviews with open-ended and continuous questions, focusing on emotions, coping strategies and expectations to follow-up after performing CPR.

Results: All CPR bystanders reported strong emotional reactions even after several years. They wished to know the most frequent emotions after being present in an OHCA situation. All bystanders described a strong need to talk to health care professionals, preferably EMS staff, shortly after performing CPR. One essential wish was to receive information on the cardiac arrest victim's outcome, and they used great efforts to obtain information on the patient outcome. Many bystanders had been in touch with family members and friends who were health care professionals to receive recognition and acceptance for their own CPR performance. Bystanders who experienced life threatening situations in their daily work described less emotional stress.

Conclusions: Bystanders performing CPR in OHCA situations need follow-up from health care professionals to learn about frequent emotions after CPR and to receive feed-back on patient outcome. We believe that organizing professional follow-up after CPR performance might mitigate emotional stress among OHCA bystanders.

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http://dx.doi.org/10.1016/j.resuscitation.2014.03.024

CPR Quality

AS005

What can CPR in simulated hypogravity teach us about CPR on Earth?

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Introduction: Studies were conducted to evaluate cardiopulmonary resuscitation (CPR) in a simulated low gravitational field, such as Mars (hypoG), aimed at providing an insight into the performance of terrestrial CPR.

Methods: Two studies were conducted to evaluate external chest compressions (ECC) depth and rate, as well as perceived exertion (RPE) and the physiological cost, when 4 sets of 30 ECCs were performed on a standard CPR mannequin for 1.5 min during Mars simulation, using terrestrial (1 Gz) as control. The first study ($n = 20$; 2005 guidelines) also evaluated the electromyographic (EMG) activity of four muscles (triceps brachii, erector spinae, upper rectus abdominis, pectoralis major). The second study ($n = 30$; 2010 guidelines) included range of elbow flexion, minute ventilation (V_E) and peak oxygen consumption (VO_2 peak) measurements. HypoG simulation was achieved using a body suspension device (BSD) and a counterweight system.

Results: In both studies, subjects successfully performed ECCs at 1Gz and hypoG. In the first study, there were increases from 1 Gz values of 32% ($p < 0.001$) for RPE and 44% ($p = 0.002$) for HR when ECCs were performed during Mars simulation. In hypoG, the triceps brachii showed less activity when compared with the other three muscles studied ($p < 0.001$). A higher RPE ($p < 0.05$) was also seen in the second study, which was accompanied by an increased V_E (11.4 ± 5.9 to 37.5 ± 10.3 L min^{-1}, $p < 0.05$) and VO_2 peak (3.2 ± 1.1 to 20.5 ± 7.6 mL kg^{-1} min^{-1}, $p < 0.05$). The arm flexion angle during hypogravity CPR, compared to 1 Gz CPR, was also increased ($4.3 \pm 2.8^\circ$ to $14.0 \pm 8.1^\circ$, $p < 0.05$).

Conclusion: Simulated reduction of upper body weight did not decrease the ability to perform proper ECCs, however, it increased the physiological cost and altered performance of the 'straight arm' CPR technique. These findings could be used to improve terrestrial CPR, especially when physical disparities are encountered with the rescuer being smaller and lighter than the patient.

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AS006

The correlation between the impedance cardiogram and end-tidal carbon dioxide during cardiopulmonary resuscitation in a porcine model of cardiac arrest

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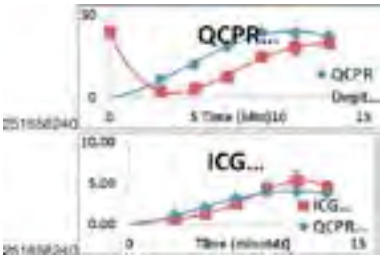
Introduction: Changes in expired end-tidal carbon dioxide ($EtCO_2$) during cardiopulmonary resuscitation (CPR) have been shown to be a predictor of successful resuscitation attempts. Non-invasive monitoring of the impedance cardiogram (ICG) after cardiac arrest via standard defibrillation pads has been shown to relate positively to compression depth during CPR. This study aims to demonstrate how the correlation between ICG amplitude, compression depth and $EtCO_2$ in a porcine model, could resultantly be used to enhance CPR feedback systems which use ICG as a real-time feedback platform for CPR efficacy.

Materials and methods: Porcine ICG amplitude was monitored and recorded via defibrillation pads connected to an automated HeartSine defibrillator. Following anaesthetisation of the model, 3 min of untreated ventricular fibrillation (VF) was induced using a Grass® Single channel Stimulator. A mechanical resuscitator (Thumper®) was used to administer CPR at approximately 110 compressions per minute at depths ranging between 1 and 6 cm, over 2 min periods. Compression depth was measured using a Philips Q-CPR device and $EtCO_2$, SpO_2 and blood pressure measurements were monitored using a Datex vital signs monitor. Sensitivity, specificity and accuracy (and corresponding 95% CI) were calculated based on pre-qualified logistic regression models.

Results: The following graphs show the association between ICG amplitude and $EtCO_2$ for different compression depths. Correlation between; Q-CPR depth and ICG amplitude $r = 0.88$, 95% CI (0.84, 0.91); Thumper depth and ICG amp $r = 0.89$, 95% CI (0.85, 0.92); $EtCO_2$ and ICG amplitude $r = 0.88$, 95% CI (0.85, 0.92).



Conclusions: The data presented demonstrate that there is strong association between depth and ICG amplitude. It also demonstrated a high sensitivity and specificity can be achieved for various well established physiological thresholds for end-tidal carbon dioxide and depth at depths of 30 and 40 mm as well as $ETCO_2$ of 20 mmHg.

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Table 1

Phase	Hospital 1		Hospital 2		Hospital 3	
	Control	QCPR	Control	QCPR + Debrief	Control	Control
ROSC (%)*	39%	42%	51%	56%	35%	50%
Survival to discharge (%)	17%	13%	19%	20%	16%	18%
Compression rate (min)						
Mean	126.69	115.73	120.22	115.55	121.37	113.66
sd*	16.82	10.75	12.27	24.31	14.69	11.29
Compression depth (mm)						
Mean	50.42	48.83	46.22	54.07	45.24	53.44
sd*	23.92	10.09	15.00	10.63	18.24	11.40
Flow fraction						
Mean	78.06	81.87	79.95	83.52	78.24	84.16
sd*	7.54	7.44	7.72	9.78	10.69	9.00
Incomplete release						
Mean	14.37	2.11	14.26	1.68	16.93	1.68
sd*	19.81	3.35	18.94	1.76	21.57	1.82

* $P < 0.05$ between control and implementation phase.

AS007

The impact of real-time audiovisual feedback and post-event debriefing: The CPR Quality Improvement Initiative

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Purpose of the study: The quality of CPR (cardiopulmonary resuscitation) is an important determinant of survival in cardiac arrest. This study sought to evaluate the effect of implementing CPR feedback and prompt technology (Q-CPR) with and without post event debriefing on survival and the quality of CPR.

Methods: We conducted a two-phase prospective cohort study across one UK NHS Trust, comprising three hospital sites. Consecutive adult patients receiving CPR for an in-hospital cardiac arrest were included. Data on survival and quality of CPR were recorded during the control (November 2009–November 2011) and implementation (December 2011–May 2013) phases. During the implementation phase, Q-CPR was introduced at Hospital One and Q-CPR and post-event debriefing were introduced at Hospital Two. No intervention was delivered at Hospital Three. Data were analysed using logistic and linear regression models which adjusted for known confounders.

Results: 1739 patients were screened for study inclusion, of whom 1395 (761 phase one; 634 phase two) were eligible. The introduction of Q-CPR and Q-CPR with debriefing reduced variation in the quality of CPR but did not improve clinical outcomes or quality of CPR relative to the control site. However, overall clinical outcomes (ROSC) and the quality of CPR (compression depth, rate) improved across all three sites between control and implementation phase (see Table 1) suggesting a system-wide effect. This may be attributable to movement of staff between hospitals and the Hawthorne effect due to clinicians being aware that the quality of CPR was being monitored.

Conclusion: In this study, an NHS Trust-wide CPR quality improvement initiative led to system-wide improvements in ROSC and CPR quality.

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AS008

Maximizing administering CPR during the use of the Automatic External Defibrillator

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Background: It is claimed that any interruption of CPR has a negative impact on outcome. However, automated external defibrillators (AED) in the Guideline 2000 protocol, results in long pauses in CPR for rhythm analysis, shock delivery and pulse checks. We tested a different AED protocol aimed to increase the CPR administered to patients with out-of-hospital cardiac arrest (OHCA) and VF, focusing on short pre-shock pauses and post-shock pauses.

Methods: Patients with OHCA requiring defibrillation were treated with AED protocol A or B in a randomized manner. Randomization was blinded until AED power-on and electrode connection was completed. In control protocol (A), based on Guidelines 2000, no CPR is delivered from analysis, during charging until shock delivery and rhythm analysis after every shock, followed by a second or third shock when needed. Pulse check done after every shock; when no pulse is detected, CPR is resumed for 60 s. In the experimental protocol B, a 15 s period of CPR after shock decision, during charging but before delivery of the shock is added to the voice prompts, to minimize pre-shock pauses. Protocol B further included no pulse check, no rhythm analyze after the shock, and CPR for 2 min before next rhythm analysis, as recommended in the Guidelines 2005.

Results: Of 1216 OHCA patients connected to an AED, 480 required defibrillation, and 392 were included in the final analysis. Study patients ($n = 196$) had shorter preshock pauses (A; 20 s versus B: 6 s; $P < 0.001$), shorter postshock pauses (A; 28 s versus B: 7 s; $P < 0.001$), received more CPR measured by chest compression fraction (A; 41% versus B: 57%; $P < 0.001$) and fewer shocks than control patients ($n = 196$) (A; 1.8 versus B: 1.5; $P = 0.008$). Similar proportions survived to Emergency Room (A; 79.6% versus B: 82.1%; $p = 0.54$), hospital admission (A; 57.7% versus B: 60.6%; $P = 0.56$) and survived to hospital discharge (A: 40.9% versus B: 37.3%; $P = 0.59$).

Conclusion: The tested AED protocol, with a period of CPR immediately before the shock, significantly shortened pre-shock pauses and other pauses in CPR and improved overall hands-on time, but did not improve survival to hospital admission or discharge of patients with ventricular fibrillation. The changes in AED

voice prompts for shockable rhythm in Guidelines 2005 (maintained in Guidelines 2010) do not result in survival benefit over the Guidelines 2000.

http://dx.doi.org/10.1016/j.resuscitation.2014.03.028

CPR Systems

AS009

Is dispatcher-assisted CPR (DA-CPR) associated with regional variations in outcome of out-of-hospital cardiac arrests (OHCAs)? A nation-wide population-based study

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Aims: To investigate whether DA-CPR provision is associated with regional variations in outcome of bystander-witnessed OHCAs.

Methods: Data for 157,093 bystander-witnessed OHCAs having complete dataset for analysis but no involvement of physician were extracted from the nationwide database of 588,742 OHCAs collected prospectively between 2007 and 2011. The activities of DA-CPR provision in 47 prefectures of Japan were assessed by the rate of DA-CPR provision in OHCA cases that did not receive bystander CPR on bystander's own initiative; the top five prefectures in terms of this rate (63.4–73.6%) was defined as advanced region (OHCA number; $N = 16,232$), the low rank five (32.4–41.6%) as less-advanced region ($N = 22,439$) and the others as intermediate region ($N = 118,422$). The rate of one-month neurologically favorable survival and the backgrounds of emergency medical service and patients were determined and compared among the three groups of region.

Results: The rate of survival was 4.8%, 4.0% and 3.3% for advanced, intermediate and less-advanced region, respectively; odds ratio (95% CI) for survival with advanced region as reference, 0.82 (0.76–0.89) vs. intermediate, 0.67 (0.60–0.74) vs. less advanced region. Number of ambulance cars over one-million population was 42.1, 50.5 and 32.8, respectively. The proportion of total bystander CPR was the highest (56.1%) in advanced region and lowest (35.8%) in less-advanced region while the proportion of bystander-initiated CPR without instruction was the highest (18.5%) in less-advanced region and lowest (11.0%) in advanced region. Early emergency call was the most frequent in advanced region and response time interval was the shortest in less-advanced region. After adjustment for patient age, etiology of arrest, initial rhythm and response time, adjusted odds ratio (95% CI) for survival with advanced region as reference were 0.87 (0.79–0.95) vs. intermediate region and 0.45 (0.40–0.50) vs. less-advanced region.

Conclusions: DA-CPR provision activity is associated with regional variations in outcome of bystander-witnessed OHCAs.

http://dx.doi.org/10.1016/j.resuscitation.2014.03.029

Defibrillation

AS010

Defibrillation during different phases of the mechanical chest compression–decompression cycle – Effects on termination of ventricular fibrillation/pulseless ventricular tachycardia

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Purpose of the study: Guidelines emphasize minimizing pre-shock chest compression pauses. One way to achieve this is to defibrillate without stopping chest compressions. This is possible when using an automatic mechanical chest compression device. An animal study showed a higher termination of ventricular fibrillation (VF)/pulseless ventricular tachycardia (VT) (TOF) rate if the shock hit the decompression phase of the compression–decompression cycle. We wanted to investigate clinically if TOF was influenced by where in the compression–decompression cycle the shock impacted, based on electronic ECG data from the Circulation Improving Resuscitation Care (CIRC) trial.

Materials and methods: Patients receiving Load Distributing Band-compression (LDB-c) prior to a defibrillation attempt (LifePak 500/12/15), were analyzed. Initial rhythm, pre-shock rhythm and rhythm 5 s post-shock were recorded as shockable or non-shockable. TOF rates were defined as absence of ventricular arrhythmia 5 s post-shock. The LDB-c cycle was divided into 3 phases: (a) compress and hold, (b) decompression and (c) release. Each shock was scored for TOF according to which of these three phases it hit. Differences between the phases were calculated using the chi-square test.

Table 1
TOF according to different chest compression-decompression phases [*n* (%)].

	Compression and hold	Decompression	Release	P value
Initial VF/VT	220 (75.1%)	73 (80.2%)	211 (80.5%)	0.26
All initial rhythms	313 (76.0%)	121 (80.7%)	310 (80.1%)	0.28

Results: Of 4978 indicated and delivered shocks, 1130 shocks were delivered during continuous LDB-c. All data parameters were available for 949 (84%) of these shocks. TOF for the three phases are showed in Table 1.

Conclusion: TOF rates were not different for defibrillation delivered during the three different phases of the LDB-c cycle irrespective of initial rhythm. How TOF rates for each of the phases compares to LDB-c shocks with different pre-shock pauses warrants further investigation.

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AS011

Transthoracic impedance-guided AMSA threshold adjustment for robust defibrillation outcome prediction

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Purpose: Previous studies have demonstrated that the multifactorial nature of the ventricular fibrillation (VF) waveform may undermine a universal amplitude spectrum area (AMSA) threshold for the prediction of defibrillation outcome. In the present study, we investigated the effect of transthoracic impedance (TTI) on the performance of AMSA for the prediction of defibrillation outcome using registry data of out-of-hospital cardiac arrests.

Materials and methods: Digitalized ECG recordings, along with TTI measurements between two shocking pads, were collected from multiple emergency medical services (EMSs) in the USA through a regular field case submission program sponsored by ZOLL Medical Corporation. All the EMSs in this study used ZOLL AED which employs current-based impedance compensation technique. The sampling rate of the ECG data files was 250 Hz. An episode of 2.05 s (512 data points) waveform ending at 0.5 s before each shock attempt was selected for analysis. Shock success was defined as an organized rhythm that was present for a minimum of 30 s, started within 60 s after the shock, and had a rate of 40 beats per minute or greater.

Results: A total of 1262 shocks (305 successful) from 580 patients with VF were included in the analysis. AMSA value was significantly higher when the TTI was greater than 150 ohm (11.6 ± 8.9 vs. 9.8 ± 7.1, $p = 0.002$) as compared with those shocks with TTI less than 150 ohm. The AMSA threshold value was increased from 8.2 to 10.3 mVHz and from 11.8 to 14.2 mVHz when sensitivity and specificity were set to 85%, respectively.

Conclusions: In this patient population, the patient's TTI affects the predictability of AMSA by shifting the threshold upward for a given sensitivity or specificity value. Using real-time TTI recorded from the same defibrillation pads to adjust AMSA threshold may provide robust prediction for defibrillation outcome.

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AS012

Automatic detection of chest compression pauses for rhythm analysis during 30:2 CPR in an ALS scenario

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Introduction: Ventilation pauses in cardiopulmonary resuscitation (CPR) could be used for rhythm analysis without chest compression (CC) artefacts by analyzing short ECG segments (<4 s).[1] The objective of this study is to automatically detect CC-pauses (>3.5 s) using the impedance in 30:2 CPR during advanced life support (ALS).

Materials: Eighty out-of-hospital cardiac arrest episodes collected in Oslo in 2012 during ALS were analyzed. ECG and impedance were recorded using LP12/LP15 defibrillators (Physio-Control). Then, 128 intervals with 30:2 CPR (792 min) and median duration 305 s (IQR, 143–495) were selected. CCs were automatically annotated using CodeStat (Physio-Control), and manually corrected by inspecting the impedance and ECG. These intervals contained 1118 pauses (>3.5 s) with median duration 4.8 s (IQR, 4.0–7.4).

Methods: The CC-pause detector applied two sequential algorithms to the impedance. First, an envelope detector identified the presence of a pause.[2] Then, a CC-detector analyzed the vicinity of the pause to determine its start/end points. The sensitivity (Se), proportion of pauses (>3.5 s) correctly detected, and positive predictive value (PPV), proportion of correct pause detections, were evaluated. The time-shift in the detection of the start of the pause was measured.

Results: The Se and PPV of the detector were 94.8% and 96.1%, respectively. The median Se and PPV per episode were 93.1 (95% CI, 90.3–95.4) and 96.2% (95% CI, 93.7–98.0). The median time-shift for the start of the pause was 0.0s (5–95 percentile range, 0.0–0.7).

Conclusions: CC-pauses and their starting point were accurately detected in 30:2 CPR during ALS. This would enable automatic rhythm analysis for very short ventilation pauses, as found in CPR performed by well-trained ALS providers. Further analysis is needed to confirm the accuracy of rhythm analysis in combination with CC-pause detection.

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http://dx.doi.org/10.1016/j.resuscitation.2014.03.032

Drugs

AS013

Reduction in carotid blood flow after epinephrine during CPR in a porcine model of cardiac arrest is probably related to an increased vascular bed resistance

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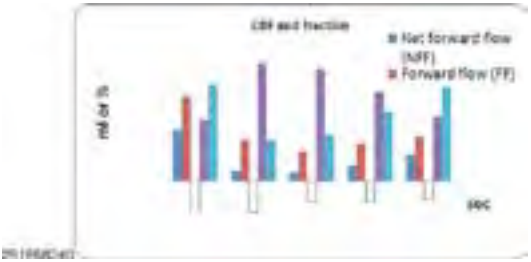
Introduction: We have previously reported the detrimental effect of epinephrine (epi) during CPR on carotid blood flow (CBF) in an animal model. We now sought to investigate the epi-altered CBF profile in a porcine model of post-shock pulseless electrical activity (PEA) cardiac arrest.

Methods: 9 domestic pigs were anesthetized, endotracheally intubated and mechanically ventilated. Aortic and right atrial pressures were invasively monitored and coronary perfusion pressure (CPP) calculated. CBF was continuously monitored by a Transonic flow probe. VF was electrically induced and PEA produced by delivering electrical countershock(s). CPR, including mechanical chest compression and ventilation, was then initiated and continued for 15 min. Epi (20 $\mu g\,kg^{-1}$) was administered into the right atrium after 2 min of CPR and repeated every 3 min thereafter.

Results: CPP significantly increased from 14 ± 6 mmHg before epi to a peak of 32 ± 13 mmHg ($p < 0.01$) at 1 min after epi administration. Concurrent to CPP increases, net CBF decreased from 46 ± 19 mL/min before epi to the lowest value of 22 ± 18 mL/min ($p < 0.01$) at 30 s after epi. Bipolar integration revealed that decrease in net CBF was from a decrease in the forward flow as well as an increase in the backflow fraction. The decrease in the forward CBF started approximately 30 s post epi administration and persisted beyond 3 min after epi, while the backflow fraction remained augmented for the 3 min after epi.

Conclusions: In this model, CPP was significantly increased, while CBF was markedly reduced following epi administration during CPR. Decrease in CBF mainly resulted from a reduction in forward blood flow and an augmentation of backflow fraction probably due to the increase in vascular bed resistance.



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Education

AS014

Opinions of secondary school students about obligatory CPR training in school

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Purpose of the study: Guidelines state that to obtain cardiopulmonary resuscitation (CPR) skills in an entire community, training during the secondary school curriculum is recommended. In some countries CPR-training is already implemented in the school curriculum, while others are still hesitating. An important aspect in this regard is the opinion of secondary school students about this topic.

Materials and methods: A total of 1720 school students of a secondary school in the Dutch province of Limburg participated in a 1½ hour Meuse-Rhine Euregion CPR training program EMuRgency. Before the training most students had little knowledge on the topic. A questionnaire regarding opinion and willingness about the obligation of CPR-training in school was completed before and after the CPR-training.

Results: A total of 1252 students completed both questionnaires (mean age 14.4; SD: 1.3; male: 46.6%). Before the CPR-training 1100 (87.9%) students agreed that CPR-training should be part of the school curriculum and 1063 (84.9%) after the training. For male students these figures were 83% and 77% and for female students 92% and 91%. Regarding educational level these figures were respectively: higher educational level 83% and 78%, preparatory scholarly education 90% and 89%. An increase was observed per higher school year: 1st year: 84% and 78%, 2nd year 87% and 83% 3rd year 92% and 91%, 4th year 88% and 90% and 5th year 96% and 96%.

Conclusions: Although students, before participating in CPR training, had little knowledge on the topic, the large majority agreed that CPR-training should be obligatory in secondary schools. This opinion persisted after the training and increased per higher school year. This information is encouraging when considering implementing CPR training in secondary schools.

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Epidemiology & Outcome

AS015

Ventricular fibrillation in cardiac arrest. Is the decline over years really so large when measured early after collapse?

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Purpose: Worldwide the incidence of ventricular fibrillation (VF) in Out-of-Hospital Cardiac Arrest (OHCA) declined. However, this decline has mainly been reported without reference to delay between collapse and initial rhythm assessment. We investigated the time course of the deterioration of shockable (VF/VT) to non-shockable rhythms in two time periods.

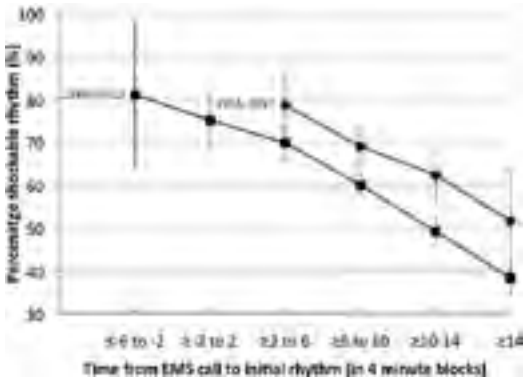

Fig. 1.

Methods: Data from the ARREST-study, a registry of all OHCA in North-Holland, were used. We included all bystander witnessed OHCA of cardiac origin in 1995–1997 ($n = 779$) and in 2006–2012 ($n = 4220$). Cases with available ECG and known elapsed time between EMS-call ($t = 0$ in the figure) and initial rhythm assessment were included. When an AED was used, time from EMS call to initial rhythm could be negative. We calculated the proportion of shockable rhythm, stratified for delay from EMS-call to initial rhythm. We calculated the slope of the deterioration using binary linear regression, comparing two time periods.

Results: A shockable rhythm was observed in 75% of cases at moment of EMS-call. There was a modest overall decline in percentage shockable rhythm from 67% to 56% ($p < 0.01$). The proportion of VF in every time block was lower in 2006–2012 than in 1995–1997 (Fig. 1, showing % and 95% CI). The slope of deterioration of shockable rhythm was not different ($p = 0.39$) between the two time periods, indicating parallel lines.

Conclusion: Despite the overall decrease in incidence of VF, there still is a high proportion of VF/VT at the shortest time delays. The decline in VF incidence is not caused by faster deterioration of shockable rhythms after collapse. VF remains the most important cause of witnessed OHCA.

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Ethics

AS016

Inconsistencies in Do Not Attempt Cardiopulmonary Resuscitation (DNACPR) policies: A review of 20 NHS acute trusts

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Purpose of the study: In the UK national guidelines for DNACPR decisions exist, however, implementation is dependent on local policies. This study examined acute hospitals DNACPR policies to identify variations and inconsistencies in implementation of national guidelines.

Methods: Freedom of information requests for adult DNACPR policies were sent to all English acute trusts and a random 20 were analysed. DNACPR policies were assessed on 18 aspects identified from national guidelines including relevant laws, the legal basis of DNACPR decisions, consultation of multidisciplinary teams, validity as well as portability of decisions.

Results: Five teaching hospitals, 14 DGHs and one specialist centre were analysed. Policies consistently (20/20, 100%) referred to relevant guidelines/laws and correctly described the legal basis for DNACPR decision. 19/20 (95%) defined the relationship of DNACPR decisions to other aspects of care. The validity period for DNACPR decisions varied from indefinitely ($n = 9$), duration of hospital admission ($n = 7$), to a specific time point ($n = 3$), or not defined ($n = 1$). DNACPR decisions were valid outside the hospital for 9/20 trusts. Some ($n = 6$) described systems through which DNACPR decisions could be transferred between providers. Three policies failed to describe any system for handover. Most policies (17/20) recommended consultation amongst the multidisciplinary team for decision making. Only one mandated it and two made no reference. Decisions could be made by the consultant ($n = 20$), by the GP ($n = 1$), a nurse ($n = 5$) and by other doctor grades ($n = 18$). The lowest doctor grade making DNACPR decisions was Foundation Year 2.

Conclusions: While some aspects of the national guidelines have been implemented consistently, there is generally huge variability between local policies particularly concerning the validity and portability of decisions which greatly affects the interface between services. The fact that junior doctors can make decisions without mandated consultation of multidisciplinary teams needs reconsideration. The variability of local policies is deeply concerning and warrants attention by policy makers.

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Implementation

AS017

Results of the implementation of hands-only CPR for cardiac arrest in Sao Paulo Metro

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Introduction: Sao Paulo's Subway carries about 4.5 million people per day. Since November 2009, the employees (lays rescuers) from Sao Paulo's Subway facilities conduct continuous training (at least every two years) in cardiopulmonary resuscitation (CPR), instructed to perform hands only (HO) CPR and handling of the automatic external defibrillator (AED). Previously (September 2006 to October 2009), patients were treated by conventional CPR and obtained a survival rate of 22%, with minimal neurologic impairment one year after cardiac arrest (CA).

Objectives: Calculate the rate of hospital survival in patients that suffered from cardiac arrest (CA) at Sao Paulo Subway after employees had received training in HO-CPR.

Methods: We studied a prospective series of cases of sudden cardiac arrest in Sao Paulo's Subways from November 2009 to November 2012. Subway security officials were instructed to perform HO-CPR and to use AEDs. The outcome of each patient was followed through medical records of the hospitals to which patients were referred. Reading the AED registration of each patient was performed. The primary outcome was minimal neurologic impairment one year after an out-of-hospital cardiac arrest.

Results: Automated external defibrillators were used in 40 patients whose initial cardiac rhythm was ventricular fibrillation. The average age of victims was 60 ± 12 years and 29 (72%) were male. The percentage of patients who achieved sustained return of spontaneous circulation was 28 (70%), 24 (60%) of patients arrived alive at the hospital and 18 (45%) were discharged and survival one year after of the event without neurological deficits. Comparing the periods of the September/2006–November/2009 with October/2009–November/2012, respectively, the rate of survival without neurological impairment was 22% versus 45% one year after the event ($p = 0.0824$).

Conclusion: We conclude that the implementation of the HO-CPR at the program of public access to defibrillation greatly increased the survival rate of victims who suffered CA in Sao Paulo's Subways. This is the highest rate of survival of CA registered in public place from Latin America so far.

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Mechanical Devices

AS018

Central site photoplethysmography tracks arterial pressure during resuscitation

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Purpose: Assess feasibility of monitoring pulse noninvasively during resuscitation with photoplethysmography (PPG) of central circulatory sites.

Materials and methods: Under a protocol approved by the MUV Ethics Committee, unfiltered waveforms from commercial oximeters (Oxypleth, Philips) were obtained from sensors applied to two central sites (nasal septum, ear pinna) concurrent with arterial blood pressure (ABP) waveforms from bedside monitors (Intellivue, Philips) and additional supporting data during treatment of hemodynamically unstable patients. Infrared (IR) PPG waveforms were normalized to the median of the adjacent 2 s period.

Results: We recorded over 190 h of artifact-free ABP signals from 50 patients during stabilization and resuscitation, including over 4 h of cardiopulmonary resuscitation (CPR) from October 2012 to January 2014. Technical difficulties precluded analysis of 4 patients. PPG waveforms corresponded to ABP waveforms during normal blood pressures. During blood pressures in the clinically challenging range of 60 mmHg to 90 mmHg, where palpation can be particularly difficult and unreliable, PPG continued to reflect ABP. When ABP subsided below the level at which it can be expected to be clinically palpable, PPG remained indicative of ABP. During chest compressions and pauses in compressions, PPG reflected ABP including following changes in magnitude of ABP during compressions when one rescuer replaced another.

Conclusions: A noninvasive pulse monitor using PPG applied to central circulatory sites appears feasible and may be useful in guiding resuscitation therapy, including CPR.

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Post Resuscitation Care

AS019

Prognostic implication of out of hospital cardiac arrest in patients with cardiogenic shock and acute myocardial infarction

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Objectives: We aim to evaluate if out of hospital cardiac arrest (OHCA) aggravates the prognosis in patients with acute myocardial infarction complicated by cardiogenic shock (CS).

Background: Cardiogenic shock complicating acute myocardial infarction (AMI) is a severe condition with a high mortality rate of 50%. Approximately 5% of AMI patients develop CS. OHCA is estimated to occur in one in fifty AMI patients. Little is known of the independent effects of OHCA and CS on prognosis in these patients.

Methods and results: In a retrospective study from 2008 to 2013 we included patients admitted to the intensive cardiac care unit with the diagnosis of CS and AMI. The group included both patients with OHCA and return of spontaneous circulation ROSC 127 (49%) and non-OHCA patients 132 (51%). Long-term mortality until June 2013 was 75% percent of all CS patients. One-week mortality was 56% in the non-OHCA group and 64% in the OHCA group. Median lactate level in OHCA patients was significantly higher 9 mmol l^{-1} (SD 6) vs. 6 mmol l^{-1} (SD 4) $p < 0.0001$. The multivariate analysis showed only two highly significant predictors of one-week and long-term mortality: age (Hazard Ratio = 1.019 [CI 1.005–1.034], $p = 0.009$), and lactate level at admission (HR = 1.064 [1.033–1.096], $p < 0.0001$). OHCA was not significant and independent predictor of excess mortality (HR = 1.05 [CI 0.79–1.4], $p = 0.6$).

Conclusion: OHCA is not an independent predictor of death in AMI complicated by cardiogenic shock. This should encourage active intensive treatment of CS patients regardless of OHCA.

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AS020

Ischemic post-conditioning and nitric oxide inhalation failed to demonstrate protective effect in comparison with mild hypothermia in porcine model of cardiac arrest

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Background: The protective effects of ischemic post-conditioning (IPC) and nitric oxide inhalation (NO) have been demonstrated in several ischemic situations. Current evidence on

the effect of IPC and NO in the management of post-cardiac arrest syndrome, however, remains insufficient.

Methods: Fifteen female swine (*sus scrofa domestica*; body weight 45 kg) underwent veno-arterial extracorporeal membrane oxygenation (ECMO) implantation and at minimal ECMO flow of 0.5 L min^{-1} the animals were exposed to cardiac arrest (CA) by induction of ventricular fibrillation by rapid ventricular pacing. After 20 min of CA, blood flow was restored by increasing the ECMO flow to 4.5 L min^{-1} (100 mL min^{-1} kg^{-1}). The animals (five animals per group) were then randomly assigned to receive IPC (three cycles of 3 min ischemia followed by 3 min reperfusion), NO (80 ppm via oxygenator) or mild hypothermia (HT; 33.0 °C). After 90 min of reperfusion, blood samples were drawn for the measurement of troponin I (TnI), myoglobin (MGB), creatine-phosphokinase (CPK), alanin-aminotransferase (ALT), neuron-specific enolase (NSE), cystatin C (CysC), and reactive oxygen metabolite (ROM) levels. Near-infrared spectroscopy was used for measurement of cerebral oxygenation and aortic blood pressure was monitored invasively.

Results: Significantly higher blood pressure and cerebral oxygen saturation values were observed in the HT group in comparison with IPC and NO ($P < 0.05$). The levels of TnI, MGB, CPK, and ALT were significantly lower in the HT group ($P < 0.05$); levels of NSE, CysC, and ROM were not significantly different between groups. IPC and NO were comparable in all monitored parameters.

Conclusions: Our results indicate that IPC and NO failed to demonstrate any protective effect over HT in the maintenance of blood pressure, cerebral oxygenation, organ protection and oxidative stress suppression following CA.

http://dx.doi.org/10.1016/j.resuscitation.2014.03.040

Prognostication

AS021

Early activation of the kynurenine pathway predicts early death and long-term outcome in patients resuscitated from out-of-hospital cardiac arrest

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Background: Kynurenine pathway (KP) is the major route of tryptophan (TRP) catabolism and is activated by inflammation and after cardiac arrest (CA) in animals. We investigated post-CA KP activation in a large representative cohort of CA patients. We hypothesized that the KP activation level correlates with the severity of post-CA hypotension, early death, and long term outcome.

Methods: Plasma was obtained from 245 patients enrolled in a prospective multicentre observational study in 21 intensive care units (ICU) in Finland. Time to return of spontaneous circulation (ROSC), lowest systolic arterial pressure (SAP) and bicarbonate (BIC) during the first 24 h of ICU were collected. A cerebral performance category (CPC) of 3–5 defined 12-month poor outcome. Plasma TRP and KP metabolites, kynurenine (KYN), kynurenic acid (KYNA), 3-hydroxyanthranilic acid (3-HAA), and the KYN/TRP ratio, were measured by liquid-chromatography and mass-spectrometry.

Results: All KP metabolites at ICU admission were significantly higher in CAs with a non-shockable rhythm compared to those with a shockable one, and KYNA and 3-HAA correlated with time to ROSC. Patients with higher levels of KYN, KYN/TRP ratio, KYNA, and 3-HAA had lower 24 h SAP and BIC. All KP metabolites and KYN/TRP ratio, but not TRP, were significantly higher in patients who died in ICU in comparison to those who survived ($p < 0.001$). Multivariable logistic regression showed that higher KYNA (OR 1.004, 95% CI 1.001–1.008, per nM increase, $p = 0.014$), and 3-HAA (OR 1.011, 95% CI 1.001–1.022, per nM increase, $p = 0.03$) were independently associated with 12-month poor outcome and significantly improved risk reclassification.

Conclusions: KP is activated early after CA and is associated with the severity of hypotension, early death and poor long-term outcome. KP metabolites may have clinical value for prognostication.

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AS022

Relationship between plasma high-sensitive cardiac Troponin T and infarct size in a porcine model of acute myocardial infarction and cardiac arrest and resuscitation

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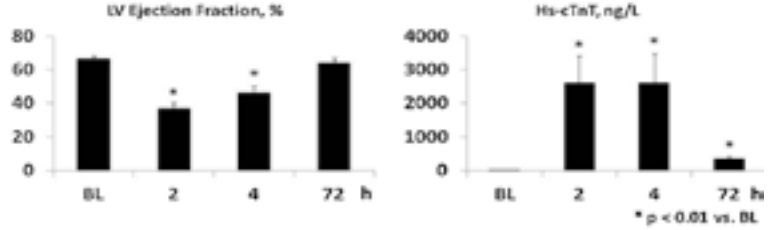
Introduction: Cardiac troponins (c-Tn) are important diagnostic markers in setting of acute myocardial infarction (AMI) and more recently in chronic cardiovascular conditions. Less is known about the relation between plasma high-sensitivity c-TnT (hs-cTnT) and myocardial injury after AMI leading to cardiac arrest (CA). We determined the association between plasma hs-cTnT levels and left ventricular infarct size (LVIS) after AMI and CA in a pig model.

Methods: 12 pigs were anesthetized, endotracheally intubated and mechanically ventilated. AMI was induced by occlusion of the left anterior descending coronary artery (LAD) with a balloon catheter. CA was then induced and left untreated for 8 min. CPR was then performed for 5 min, prior to defibrillation. After successful resuscitation, animals were followed up to 72 h. LAD balloon was removed 45 min after resuscitation from CA. Serial blood samples were withdrawn for plasma hs-cTnT assay. Left ventricular ejection fraction (LVEF) was echocardiographically assessed, while LVIS was measured by tetrazolium chloride staining on histological sections.

Results: At 2 and 4 h post AMI and CA, plasma hs-cTnT levels significantly increased compared to baseline (BL) and remained significantly elevated up to 72 h ($p < 0.01$). Inversely, LVEF significantly decreased at 2 and 4 h post AMI and CA ($p < 0.01$) and completely recovered to BL values after 72 h. At sacrifice, LVIS extension was 17% ± 2% of the LV area. Peak plasma hs-cTnT levels were highly correlated with LVIS ($r = 0.81$, $p < 0.0001$) and inversely correlated

with LVEF ($r = -0.64$, $p < 0.01$). LVEF was also inversely correlated with LVIS ($r = -0.61$, $p < 0.01$), but this relation was lesser strong compared to that between hs-cTnT and LVIS.

Conclusions: Plasma concentrations of hs-cTnT are highly correlated with LV infarct size in a porcine model of AMI and cardiac arrest and resuscitation.



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Trauma/Disaster Med

AS023

Compliance with prehospital traumatic brain injury guidelines is poor with longer prehospital treatment duration

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Purpose: Traumatic brain injury (TBI) is a major public health problem worldwide. The Guidelines recommend documentation of vital signs (VS-SpO2, SBP, ETCO2) at least every 5 min in TBI patients as hypotension, hypoxia, and hyperventilation are all associated with significantly worse outcome. We examined whether frequency of VS documentation is associated with prehospital treatment duration.

Materials and methods: Patient care reports were reviewed from the treatment of 47 prehospital patients with moderate to severe TBI (initial GCS median 11, IQR 6–13) by 2 EMS agencies formally participating in a prehospital TBI project aimed at implementing nationally-vetted TBI Guidelines in Arizona (US). Times of VS documentation were abstracted from electronic patient care reports. Duration of EMS treatment was determined as time from EMS arrival on scene to ED arrival. EMS treatment time was divided into tertiles to categorize short (18 ± 3 min), moderate (24 ± 2 min), and long (34 ± 6 min) treatments. Frequency of VS documentation was compared between calls of different duration using the Chi-square statistic.

Results: A total of 47 TBI cases were analyzed (mean age 42 ± 20 years, 67% male). Documentation of SpO2 every 5 minutes was significantly less likely for longer (1/17; 6%) compared with moderate (5/15; 33%) and short (7/15; 47%) EMS treatment durations ($p = 0.03$). BP was significantly less likely to be documented every 5 minutes for longer duration (0/17, 0%) compared with moderate (3/15; 20%), and short (6/15; 40%) duration EMS treatments ($p = 0.02$). Regardless of treatment duration, ETCO2 was only documented in 7/47 (15%) cases and none documented ETCO2 every 5 min.

Conclusion: Prehospital providers are challenged to document VS at the recommended frequency of every 5 min, especially when prehospital EMS duration is long. More research is needed to determine the reasons and implications of this finding. Technologies to automate VS measurement and documentation should be considered.

http://dx.doi.org/10.1016/j.resuscitation.2014.03.048

POSTER TOURS

Poster Tour 1 - Friday May 16 13:00 -14:00 (TV 1)

AP001 13:00
Incidence of Culprit lesions after successful resuscitation from out of hospital cardiac arrest

AP002 13:06
The role of pre-hospital systemic delay. Copmarison of transport method for patients with ST-elevation myocardial infarction to a Percutaneous Coronary Intervention Centre, and long-term mortality.

AP003 13:12
Comparison of the short-term predictive value of four risk scores in chest pain patients in a Hong Kong emergency department: TIMI, GRACE, Banach and HEART

AP004 13:18
Management and Mortality of Patients with ST Elevation Myocardial Infarction presenting to two University Hospital Emergency Departments in China: Retrospective Comparison between Hong Kong and Guangzhou

AP005 13:24
Comparison of the prognostic value of TIMI, GRACE, Banach and HEART scores to evaluate patients with chest pain in a Guangzhou emergency department: prospective observational study

AP006 13:30
Ultrafast cooling with hypothermic total liquid ventilation is potently protective after non-shockable cardiac arrest in rabbits

AP007 13:36
Changes in expression of V-ATPase in hippocampus and cortex after cardiac arrest in rats

AP008 13:42
Laboratory study on the kinetics of the warming of cold fluids: What are consequences for therapeutic hypothermia?

AP009 13:48
Variability in the structure and operation of out-of-hospital emergency services in Spain. Spanish Registry of out-of-hospital cardiac arrest

AP010 13:54
Use of emergency ultrasound during cardiopulmonary resuscitation to detect pulmonary embolism

Poster Tour 2 - Friday May 16 13:00 -14:00 (TV 2)

AP011 13:00
A comparison of intravenous and intraosseous vascular access during simulated cardiac arrest on an Advanced Life Support course

AP012 13:06
Factors associated with the Return of Spontaneous Circulation (ROSC) outcome in cardiopulmonary resuscitated patients

AP013 13:12
Clinicians' views on the effectiveness of adrenaline to treat cardiac arrest.

AP014 13:18
PCI de Lucs; A safety and feasibility study on a pathway to the cathlab for patients with out-of-hospital cardiac arrest

AP015 13:24
HEMODYNAMIC FACTORS RELATED TO RECOVERY AD INTEGRUM PATIENT IN VENTRICULAR FIBRILLATION

AP016 13:30
HYDROGEN IONS INSTEAD MINUTES: The Initial Ph level may predict survival without neurological impairment in the not witnessed prehospital cardiac arrest

AP017 13:36
Factors associated to the survival in pre-hospital Sudden Cardiac Arrest

AP018 13:42
Difference of CPP according to the infusion type of selective intra-aortic volume expansion in prolonged ventricular fibrillation

AP019 13:48
ACIDOSIS IN VENTRICULAR FIBRILLATION: Does the administration of sodium Bicarbonate(SB) prevent from or delay return of spontaneous circulation(REC)?

AP020 13:54
Prehospital cardiac arrest

Poster Tour 3 - Friday May 16 13:00 -14:00 (TV 3)

AP021 13:00
A Role of the Emergencies Coordinating Center managing an OHCA call and its influence on the variables that may improve the outcome of the EMS response.

AP022 13:06
Emergencies Médical Services: Intraosseous drill in CPR.

AP023 13:12
EVALUATION OF CARDİAC ARREST PATİENTS IN UNIVERSITY HOSPİTAL IN TURKEY

AP024 13:18
Differences in airway management during out-of-hospital cardiopulmonary resuscitation (CPR) between experienced and inexperienced emergency medical physicians

AP025 13:24
Impact of different ventilation modalities on lung volumes and pressures during automatic cardio pulmonary resuscitation : a bench study

AP026 13:30
Monitoring respiratory rate with capnography during cardiopulmonary resuscitation

AP027 13:36
Availability of resuscitation airway equipment in areas of the hospital: closing the audit circle

AP028 13:42
Comparison of Three Types of Intubation Stylets for Tracheal Intubation with McGRATH MAC Video Laryngoscope by Novice Intubators in a Simulated Cervical Spine Immobilization: A Randomized Crossover Manikin Study

AP029 13:48
The laryngeal tube LTS-D: a quick and easy airway management device for prehospital emergency nurses.

AP030 13:54
CAPNOGRAPHY AS STANDAR VENTILATION MONITORING DURING LIFE SUPPORT. DO WE FULFILL ERC GUIDELINES?

Poster Tour 4 - Friday May 16 13:00 -14:00 (TV 4)

AP031 13:00
Influence of mechanical ventilation with Chest Compression Synchronized ventilation (CCSV) or Intermitted Positive Pressure Ventilation (IPPV) on haemodynamics in a pig model.

AP032 13:06
Utility of the use of timer for laryngoscopes

AP033 13:12
NEW GENERATION OF EtCO2 CANNULAS FOR NON INTUBATED PATIENTS

AP034 13:18
Is McGrath® MAC better than Glidescope® Ranger for novice providers in the simulated difficult airway? : A randomized manikin study

AP036 13:30
Airway management in out of hospital cardiac arrest

AP037 13:36
Monitoring the probability of desired rhythm transition during resuscitation

AP038 13:42
Ventricular fibrillation/tachycardia, pulseless electrical activity and asystole are equally common initial rhythms in in-hospital cardiac arrest due to cardiac reasons

AP039 13:48
Intra-operative transcutaneous pacing in the setting of an urgent surgery: case-report

AP040 13:54
Does emergency call placed before cardiac arrests improve the survival from out-of-hospital cardiac arrests (OHCAs)?

Poster Tour 5 - Friday May 16 13:00 -14:00 (TV 5)

AP041 13:00
CHILDREN CAPABILITY TO PERFORM CPR, IS USEFUL TO TEACH THEM SO YOUNG?

AP042 13:06
The Langeland AED project - incorporates emergency dispatch, FirstAED GPS technology, smartphones, first responders with distinct roles, and an AED network.

AP043 13:12
Impact of a public awareness campaign promoting bystander-CPR: Results from a representative survey

AP044 13:18
School children learn BLS better and in less time than adults

AP045 13:24
A Comparative Study on Feedback for BLS: Duration until first chest compression and absolute hands-off time

AP046 13:30
Implementation of CPR in Flemish secondary schools: results of a self-training strategy without practice on a manikin.

AP047 13:36
Impact of the newly implemented human feedback in contrast to Q-CPR® feedback and standard BLS on the "Effective Compression Ratio" outcome

AP048 13:42
Influence of maximal oxygen uptake of university students in the ability to perform quality cardiopulmonary resuscitation.

AP049 13:48
A Randomized Control Trial to Compare Retention Rate of Two Cardiopulmonary Resuscitation Instruction Methods in the Novice

AP050 13:54
Comparison of 30:1 and 30:2 compression:ventilation ratios for cardiopulmonary resuscitation. Are two ventilations neccessary?

Poster Tour 6 - Friday May 16 13:00 -14:00 (TV 6)

AP051 13:00
Differences of verbal feedback between human feedback and an audio-visual feedback device during two-rescuer CPR

AP052 13:06
Achieving an out of hospital cardiac arrest survival rate of over 79%

AP053 13:12
Quality of external chest compressions, time or body mass index and fitness.

AP054 13:18
HOW WE PERFORM REAL CPR? ARE WE AS GOOD AS WE THINK WHEN WE TRAIN?

AP055 13:24
A digital filter can effectively remove mechanical chest compression artifact

AP056 13:30
High Quality CPR and Mass Training: is it achievable combination?

AP057 13:36
Lifeguards' cardiopulmonary resuscitation quality performance: Self-perception vs. Reality

AP058 13:42
Quality of compression-only vs. standard bystander CPR in out-of-hospital cardiac arrest: Take the breath away?

AP059 13:48
CPR feedback devices: length of use does not affect CPR quality

AP060 13:54
Quality of chest compressions differs substantially between ALS and BLS

Poster Tour 7 - Friday 25 October 13:00 -14:00 (TV 7)

AP061 13:00
Increasing importance of release velocity with vasopressor use in a porcine model of cardiac arrest

AP062 13:06
Correction for Body Displacement for Accurate Delivery of Chest Compressions on a Soft Surface: The Triaxial Field Induction Technology

AP063 13:12
Water rescue with aids. Do they improve rescue and cardiopulmonary resuscitation performance?

AP064 13:18
ANALYSIS ABOUT USE OF A CPR OPTIMIZATION PROTOTYPE DURING OUT-OF-HOSPITAL CARDIAC ARREST

AP065 13:24
Evaluation of prehospital use of manual defibrillators; the dangers of inappropriate or delayed defibrillation

AP066 13:30
Mechanical chest compressions improve quality of CPR in out-of-hospital cardiac arrest

AP067 13:36
2-minutes training with visual feedback significantly improves CPR quality in lay-rescuers

AP068 13:42
ASSESSMENT OF CHEST COMPRESSIONS QUALITY PERFORMED BY RESIDENTS BEFORE AND AFTER PEDIATRIC CARDIOPULMONARY RESUSCITATION TRAINING

AP069 13:48
Family presence during ALS in the out-of-hospital emergency: an overview of the Emergency Medical System in An dalusia.

AP070 13:54
The gap between guidelines and the real practice. Not always what is presumed to happen really happens

Poster Tour 8 - Friday May 16 13:00 -14:00 (TV 8)

AP071 13:00
IMPROVING OUT OF HOSPITAL RESUSCITATION QUALITY BY REVIEWING AUTOMATIC EXTERNAL DEFIBRILLATOR DATA

AP072 13:06
Deliver care to cardiac arrest without a rapid response team.

AP073 13:12
COMPARISON OF SURVIVAL IN CARDIORESPIRATORY ARREST PATIENTS RECEIVING CONVENTIONAL MANUAL OR EXTERNAL MECHANICAL CHEST COMPRESSION

AP074 13:18
ANALYSIS OF SURVIVAL IN PATIENTS WITH OUT-OF-HOSPITAL CARDIAC ARREST WHEN USING iCPR APPLICATION

AP075 13:24
Public Access Defibrillator Use by Untrained Bystanders: Does Patient Gender Affect the Time to First Shock During Resuscitation Attempts?

AP076 13:30
Instructors must be trained the ability to evaluate chest compressions.

AP077 13:36
How to improve cardiopulmonary resuscitation in an Emergency Medical Service: role of professional practice assessment.

AP078 13:42
More accurately perform chest compressions by oneself, more accurately evaluate chest compressions done by others.

AP079 13:48
Music will save lives !

AP080 13:54
CPR Quality: Perception versus reality.

Poster Tour 9 - Friday May 16 13:00 -14:00 (TV 9)

AP081 13:00
FUNCTIONING OF THE SURVIVAL CHAIN IN A REAL LIFE CASE

AP082 13:06
Local lay rescuers with AEDs, alerted by text messages, contribute to early defibrillation in a Dutch out-of-hospital cardiac arrest system

AP083 13:12
Evaluation of selected parameters of pre-hospital CPR at City of Prague during 11 years period (2003 - 2013)

AP084 13:18
Doctor ambulance dispatch was an independent predictor of favorable outcome in ROSC, survival and functional outcome.

AP085 13:24
Impact of the use of AUTOPULSE ® on intubation conditions in cardiac arrest patients

AP086 13:30
Major differences in member composition on cardiac arrest teams and limited pre-arrest allocation of tasks - A nationwide study

AP087 13:36
Electrocardiographic Characteristics of Ventricular Fibrillation in Patients with a Wearable Cardioverter Defibrillator

AP088 13:42
IS HANDS-ON DEFIBRILLATION SAFE WHEN USING INSULATING GLOVES? - A CLINICAL TRIAL

AP089 13:48
Comparison of eight Automated External Defibrillators.It's a matter of time

AP090 13:54
Resuscitation by Text-Message Responders in the Netherlands

Poster Tour 10 - Friday May 16 13:00 -14:00 (TV 10)

AP091 13:00
Witnessed cardiac arrest

AP092 13:06
The Reliability Of "Hands On" Defibrillation In Patients With Internal Cardioverter Defibrillator

AP093 13:12
Training in the use of AED from the Girona Heart Protected Territory Program

AP094 13:18
Use of automated external defibrillator: As easy as necessary

AP095 13:24
Girona, cardio-protected territory

AP096 13:30
ACCESS TO PUBLIC DEFIBRILLATION FOR PEOPLE WITH VISUAL DISABILITY

AP097 13:36
Relationship with between adrenaline dose and survival from out of hospital cardiac arrest

AP098
Differences in blood pressures and flows with and without vasopressors in a porcine model of cardiac arrest

AP099 13:48
Medication Safety and Incident Reporting in Prehospital Emergency Care

AP100 13:54
Achievements of the week of cardiac arrest awareness "Viva!" in Italy

Poster Tour 11 - Friday May 16 13:00 -14:00 (TV 11)

AP101 13:00
The impact of human factors in Immediate Life Support course providers

AP102 13:06
Children drawing CPR process during the Restart a Heart Day

AP103 13:12
Student generated and tutor generated web based resuscitation education resources - mind the gap?

AP104 13:18
Comparison of instructor-led Automated External Defibrillation training and two alternative web-based self-training methods

AP105 13:24
PROFILE OF EDUCATIONAL INSTITUTIONS AND TEACHERS INTERESTED IN LEARNING CPR TO TEACH IN THEIR SCHOOLS.

AP106 13:30
Instructional Quality of Official Lay BLS Courses: Do Instructors Foster Self-confidence of Participants?

AP107 13:36
PEER ASSESSMENT OF RESUSCITATION SKILLS BY SECONDARY SCHOOL TEACHERS

AP108
Layperson trainees improve their resuscitation knowledge and their confidence in providing bystander CPR in ERC-accredited BLS/AED courses.

AP109 13:48
Chest compression in resuscitation - actual performance and self-assessment of final-year medical students

AP110 13:54
Public CPR training event in Bologna during the "Viva!" week in Italy

Poster Tour 12 - Friday May 16 13:00 -14:00 (TV 12)

AP111 13:00
Efforts by medical students joined in Taskforce QRS to increase survival chances in South-Netherlands

AP112 13:06
EXPLORING GENERAL POPULATION'S PERCEPTION OF IMPORTANCE AND BASIC KNOWLEDGE OF CARDIAC ARREST.

AP113 13:12
To some it comes as a shock...an automated external defibrillator (AED) used by elementary school children.

AP114 13:18
DEVELOPING A SUSTAINABLE COMMUNITY BASED CPR PROGRAM FOR SCHOOLS: The "el ABC que Salva Vidas" model (Eng,= the ABC that saves lives).

AP115
The 'Learning conversation' as a style of feedback in resuscitation courses

AP116 13:30
Use of Checklists facilitates guideline adherence in prehospital emergency care

AP117 13:36
A review of the resuscitation training and equipment in a UK hospital without a Resuscitation Officer.

AP118
ENCOURAGING CITIZENS TO PERFORM BASIC CPR: POTENTIAL USEFULNESS OF MOBILE PHONE APPLICATIONS.

AP119 13:48
Restart a Heart Day: The Danish Way 2013

AP120 13:54
Training the next generation: A feasibility study establishing a region-wide sustainable near-peer life support training scheme targeted at secondary school students in the UK.

Poster Tour 13 - Friday May 16 13:00 -14:00 (TV 13)

AP121 13:00
Secondary school students tend to overestimate their CPR-skills

AP122 13:06
EVALUATION OF THE EFFECTIVENESS OF A TRAINING PROGRAMME CPR

AP123 13:12
Restart a Heart Day in the Czech Republic

AP124 13:18
A Simulation-Based Post-Cardiac Arrest Care and Therapeutic Hypothermia Training Course to Improve Self-Efficacy and Facilitating Performance of Hospital Educators

AP125 13:24
VIRTRAPP: IMPROVING LEARNING AND KNOWLEDGE RETENTION IN RESUSCITATION APPLICATION.

AP126 13:30
Prior to CPR training, courage of secondary school students predominates their self-perceived ability to provide CPR, but depends on school type

AP127 13:36
A Randomized Control Trial Comparing the Use of The Sandwich Technique and Learning Conversation Feedback Mechanisms in Teaching Basic Life Support

AP128 13:42
TODAY'S CHILD CAN SAVE A LIFE TOMORROW

AP129 13:48
Introducing non-technical skills teaching to the Resuscitation Council (UK) Advanced Life Support Course

AP130 13:54
From Rescuer to Rescued: A Unique Narrative Account of a Medical Student's Survival Following Out-of Hospital Cardiac Arrest

Poster Tour 14 - Saturay May 17 13:00 -14:00 (TV 1)

AP131 13:00
Advanced Medical simulation as a tool to assess the leadership and teamwork in emergencies.

AP132 13:06
Cardiopulmonary resuscitation knowledge of future teachers: should basic life support be taught during the educational system?

AP133 13:12
LISSA a Serious Game to teach CPR and use of AED

AP134 13:18
ANALYSIS OF KNOWLEDGE AND OPINION OF NURSES AT ILS COURSES IN CROATIA

AP135 13:24
Assessment of e-learning teaching (Moodle platform) in immediate life support (ILS) by the Spanish Resuscitation Council (CERCP). Results of a satisfaction survey for course instructors.

AP136 13:30
Factors associated with survival from out-of-hospital cardiac arrests (OHCAs) in remote time-distance region: potential benefit of conventional bystander cardiopulmonary resuscitation (BCPR) on bystander's own initiative

AP137 13:36
Dispatching professional teams to the scene of out-of-hospital cardiac arrest in addition to emergency medical service --interim analysis from SOS-KANTO 2012

AP138 13:42
Resuscitation with Automated External Defibrillators (AED) in Uruguay

AP139 13:48
Does the emergency physician miss a spot?

AP140 13:54
Copeptin level after cardiac arrest is associated with one-year mortality

Poster Tour 15 - Saturay May 17 13:00 -14:00 (TV 2)

AP141 13:00
Cardiac arrest by drowning: what special features?

AP142 13:06
Outcome reporting in cardiac arrest randomised controlled trials

AP143 13:12
Establishment of a consensus on quality management in dispatcher assisted CPR

AP144 13:18
CARDIAC ARREST IN THE PRE-HOSPITAL SETTING - WHAT CHANGED AFTER 2010?

AP145 13:24
The IgE levels in children with bronchial asthma and gastroesophageal reflux disease

AP146 13:30
Prognostic value of MET-criteria in patients treated by the physician in the emergency medical service.

AP147 13:36
CARDIAC ARREST IN PRE-HOSPITAL CARE SETTING - 10 YEARS OF EXPERIENCE

AP148 13:42
Neurological outcome at discharge after in hospital cardiac arrest.

AP149 13:48
RISK FACTORS PREDISPOSING OF TRAFFIC ACCIDENTS WITH MOTOBOYS

AP150 13:54
Survival from inpatient cardiac arrest in a tertiary referral hospital for Cardiology and Cardiothoracic Surgery.

Poster Tour 16 - Saturay May 16 13:00 -14:00 (TV 3)

AP151 13:00
Analysis of the sudden cardiac arrest (SCA) management in a tertiary hospital (H. Universitario de Cruces, Barakaldo, Spain) after the implementation of a global plan for training and intra-hospital SCA management

AP152 13:06
Searching of adjustable factors that influence the resuscitation outcome – single center experience

AP153 13:12
PROCESS COST: THE OUT-OF HOSPITAL CARDIO-RESPIRATORY ARREST WITH DOCTORS ON-SCENE

AP154 13:18
Results of a training and response program of in-hospital cardiac arrest

AP155 13:24
Death in the Field post Out-of-Hospital Cardiac Arrest (OCHA): An analysis of one-year's Ambulance Data in Leinster, Ireland

AP156 13:30
Early Survival from Out-of-Hospital Cardiac Arrest (OCHA) in Ireland: An analysis of one year's Ambulance Data in Leinster

AP157 13:36
Doctors' experiences of Do Not Attempt Cardiopulmonary Resuscitation (DNACPR) decision making: a meta-ethnography.

AP158 13:42
"End of life" procedures and Advanced Health Care Directives in the Andalusian Health Emergency Agency (EPES). 2013 review.

AP159 13:48
ETHICAL APPROACHES OF CANDIDATES PARTICIPATING ERC ALS PROVIDER COURSES IN TURKEY

AP160 13:54
"Getting resus at the forefront": a qualitative study of the mechanisms of cardiac arrest debriefing

Poster Tour 17 - Saturay May 17 13:00 -14:00 (TV 4)

AP161 13:00
Clinician perceptions of the usefulness of cardiac arrest debriefing: a questionnaire study

AP162 13:06
Refractory cardiac arrest: do we go beyond, do we increase the organ donation pool or both?

AP163 13:12
Incorporating Innovative Technologies and Addressing Behavioral Factors to Improve Sudden Cardiac Arrest (SCA) Response.

AP164 13:18
A systematic review of do-not-attempt-cardiopulmonary-resuscitation (DNACPR) orders: summarising the evidence around decision making and implementation.

AP165 13:24
Results of the implementation of hands-only CPR for cardiac arrest care in Sao Paulo Metro

AP166 13:30
Limited implementation of ERC 2010 resuscitation guidelines in Danish hospitals - A nationwide study

AP167 13:36
Implementation of safe and effective defibrillation practice in Hungary: hard paddles or self-adhesive electrodes?

AP168 13:42
CPR INTEGRAL PROGRAM IMPLEMENTATION IN A 3RD LEVEL HOSPITAL

AP169 13:48
How to Minimize "Hands-off Times" during Mechanical Chest Compression Device Installation.

AP170 13:54

Implementation of the ABL-90 blood gas analyzer in a Mobile Emergency Care Unit

Poster Tour 18 - Saturay May 17 13:00 -14:00 (TV 5)

AP171 13:00
Extracorporeal life support for refractory cardiac arrest

AP172 13:06
MECHANICAL CPR DEVICES IN DONORS AFTER CARDIAC DEATH

AP173 13:12
Feasibility of a Continuous Non-invasive Arterial Pressure (CNAP) device in a Prehospital setting.

AP174 13:18
A comparative evaluation on the outcomes of cardiac resuscitation by using manual CPR and mechanical CPR

AP175 13:24
MECHANICAL EXTERNAL CPR DURING OHCA

AP176 13:30
DIFFERENT RESPIRATORY RATES DURING RESUSCITATION IN A PEDIATRIC ANIMAL MODEL OF ASPHYXIAL CARDIOPULMONARY ARREST. CHANGES IN VENTILATION AND OXYGENATION VALUES.

AP177 13:36
FACTORS FOR SURVIVAL AFTER PAEDIATRIC OUT-OF-HOSPITAL CARDIAC ARREST

AP178 13:42
Pediatric cardiac arrest: specific or similar to adult cardiac arrest?

AP035 13:48
Impact of dynamic airway collapse and continuous flow insufflation on initial and dynamic lung volume changes and intrathoracic pressure variation during automated cardiopulmonary resuscitation

AP180 13:54
Cardiac arrest in children: increase in ventricular tachycardia/fibrillation, decrease in mortality!

Poster Tour 19 - Saturay May 17 13:00 -14:00 (TV 6)

AP181 13:00
Extremely poor outcome of prolonged resuscitation in children with hypothermic cardiac arrest after drowning: a nationwide retrospective cohortstudy

AP182 13:06
PAEDIATRIC DONATION AFTER CARDIAC DEATH: ANOTHER OPPORTUNITY TO SAFE LIVES WHEN RESUSCITATION IS NOT SUCCESSFULL

AP183 13:12
OUT-OF-HOSPITAL CARDIORESPIRATORY ARREST IN CHILDREN WITH TRAUMA

AP184 13:18
Comparison of injury phenotype between ventricular fibrillation and asphyxial cardiac arrest in a rat model

AP185 13:24
Therapeutic hypothermia in cardiac arrest and ventilation-associated pneumonia: our 6 years experience on SDD protocol

AP186 13:30
Therapeutic hypothermia: eight and a half years of experience from an intensive care unit

AP187 13:36
The Relationship between Time-weighted Mean Oxygen Tension and Outcome in Out-of-hospital Cardiac Arrest Survivors Treated with Therapeutic Hypothermia

AP188 13:42
The Out-of-Hospital Cardiac Arrest Score in the Era of Therapeutic Hypothermia: An External Validation in an Asian Country

AP189 13:48
What about Therapeutic Hypothermia in Out-of-Hospital Cardiac Arrest, in a two-tiered emergency system ? An observational study.

AP190 13:54
The Association between Dyscarbia and Outcome in Out-of-hospital Cardiac Arrest Survivors Treated with Therapeutic Hypothermia

Poster Tour 20 - Saturay May 17 13:00 -14:00 (TV 7)

AP191 13:00
Impact of case volume on performance of targeted temperature management, incidence of adverse events, and neurologic outcome in comatose out-of-hospital cardiac arrest survivors treated with targeted temperature management: a propensity score matching analysis

AP192 13:06
Increasing bispectral indices during post-resuscitative therapeutic hypothermia can predict incidence of seizures after rewarming.

AP193 13:12
Ultrafast whole body cooling induced by hypothermic total liquid ventilation attenuates shock after aortic cross clamping in rabbits

AP194 13:18
OUTCOME OF "CONSCIOUS" AND "COMATOSE" SURVIORS OF OUT-OF-HOSPITAL CARDIAC ARREST

AP195 13:24
Cerebral performance categories (CPC) score among patients surviving an in-hospital cardiac arrest (IHCA) at dicharge from hospital

AP196 13:30
Therapeutic hypothermia after sudden cardiac arrest: is endothelial function compromised during treatment?

AP197 13:36
Which patient should not be denied for primary percutaneous coronary intervention after out-of hospital cardiac arrest?

AP198 13:42
Therapeutic hypothermia after cardiopulmonary arrest in neonates and children: a prospective series

AP199 13:48
The patient journey through a hospital with high survival rates for ventricular fibrillation out-of-hospital cardiac arrest

AP200 13:54
Association of blood glucose at admission with outcomes in patients treated with therapeutic hypothermia after cardiac arrest

Poster Tour 21 - Saturay May 17 13:00 -14:00 (TV 8)

AP201 13:00
NURSING INTERVENTIONS IN EMERGENCY MEDICAL SERVICE: CPR CASES

AP202 13:06
Epinephrine during cardiac arrest may worsen the outcome of resuscitated patients

AP203 13:12
INTENSIFIED POSTRESUSCITATION TREATMENT IN COMATOSE SURVIVORS OF OUT-OF-HOSPITAL CARDIAC ARREST - DIFFERENCE BETWEEN SHOCKABLE AND NON-SHOCKABLE RHYTHM

AP204 13:18
Using Root Cause Analysis (RCA) following resuscitation to reduce futile attempts.

AP205 13:24
Basic life support skills of junior high school students before and after cardiopulmonary resuscitation training with a musical video: an intervention study.

AP206 13:30
The Medical Emergency Team in an university-affiliated hospital: the past, the present and the future

AP207 13:36
PCT levels as predictors of neurological outcome in patients with cardiac arrest treated with therapeutic hypothermia: A retrospective study.

AP208 13:42
Factors influencing the decision to complete a do not attempt cardiopulmonary resuscitation order

AP209 13:48
Attendance timings are related to survival in out- of- hospital cardiac arrests

AP210 13:54
Neuron-specific enolase is a strong predictor of neurological outcomes in cardiac arrest survivors treated with endovascular hypothermia.

Poster Tour 22 - Saturay May 17 13:00 -14:00 (TV 9)

AP211 13:00
ASSOCIATION OF GLIAL CELL LINE-DERIVED NEUROTROPHIC FACTOR (GDNF) PROTEIN EXPRESSION WITH THE NEURONAL DEATH IN POST-RESUSCITATION PERIOD

AP212 13:06
Acute pulmonary embolism as cause of cardiac arrest: presentation and prognosis

AP213 13:12
C-Reactive Protein is a biomarker for neurological outcome in patients undergoing therapeutic hypothermia

AP214 13:18
Increased mean platelet volume and leukocytosis new predictors of mortality in acute pulmonary embolism

AP215 13:24
Prognostic evaluation in patients after CPR of cardiac cause by therapeutic hypothermia in coronary care unit of a Hospital University Cruces

AP216 13:30
The dynamics of perioperative changes in serum BNP and troponin i concentrations in patients undergoing heart-valve correction with extracorporeal circulation.

AP217 13:36
Are pediatricians ready to handle a severe anaphylactic reaction? Assessment by means of Advanced Simulation.

AP218 13:42
Generation of chest compression artefacts on the ECG and the thoracic impedance signals in a manikin model.

AP219 13:48
Introduction of high-fidelity simulation in Pediatric Basic Life Support training for medical students.

AP220 13:54
Debriefing Emergency Nurses after High-Fidelity Simulation Team Training in Resuscitation

Poster Tour 23 - Saturay May 17 13:00 -14:00 (TV 10)

AP221 13:00
USE OF THE "RESUSCITATION TEAM LEADER EVALUATION" TO EVALUATE THE LEADERS IN PAEDIATRIC CPR SIMULATIONS

AP222 13:06
SISTEMATIC EVALUATION OF THE INTERVENTION IN THE MYOCARDIAL INFARCTION WITH S-T ELEVATION BY PRIMARY CARE PHYSICIANS

AP223 13:12
"Role of high versus low fidelity simulation training in BLS teaching and learning process"

AP224 13:18
Out of hospital refractory cardiac arrest treated with V-A Extracorporeal Membrane Oxygenation: an Italian tertiary care center experience

AP225 13:24
Prolonged resuscitation in the cath-lab and long term follow-up

AP226 13:30
Carbon Monoxide Poisoning: Prognostic Factors for Delayed Neuropsychiatric Sequelae

AP227 13:36
Ability Of a Diabetic Problems Protocol to Predict Patient Severity Indicators Determined by On-Scene EMS Crews

AP228 13:42
Outcome accuracy of the Emergency Medical Dispatcher's initial selection of a Diabetic Problems Protocol.

AP229 13:48
A Single-Centre Retrospective Analysis of Experiences Training Basic Life Support Candidates with Physical Disability.

AP230 13:54
PATIENT MANAGEMENT OF EMERGENCIES MEDICAL SERVICES IN PATIENTS WITH IMPLANTABLE CARDIOVERTER DESFIBRILLATOR. WHAT ABOUT PROFESSIONALS SHOULD KNOW?

Poster Tour 24 - Saturay May 17 13:00 -14:00 (TV 11)

AP231 13:00
Can hyperbaric-oxygen therapy improve neurologic deterioration at the early stage of acute carbon monoxide poisoning?

AP232 13:06
Validating a Pragmatic Definition of Shock in Adult Patients Presenting to the Emergency Department

AP233 13:12
HOW TO IMPROVE THE ORGAN PRESERVATION MANEUVERS AFTER UNSUCCESSFUL CPR IN NON HEART BEATING DONORS?

AP234 13:18
Stress Cardiomiopathy after ephinephrine administration in anaphylactic reaction

AP235 13:24
Evaluating the role of USCOM for Assessing Shock in Adult Patients Presenting to the Emergency Department

AP236 13:30
STROKE MIMICS; A CHALLENGE FOR THE EMERGENCY PHYSICIAN

AP237 13:36
Hydroquinone shows neuroprotective potential in rodent ischemic stroke model

AP238 13:42
Traumatic cardiac arrests in asystole at Emergency Medical Service (EMS) arrival: pre-hospital resuscitation is not futile.

AP239 13:48
DEVELOPMENT OF ACUTE RESPITAORY DISTRESS SYNDROME (ARDS) IN PATIENTS WITH CHEST TRAUMA

AP240 13:54
Could be the traumatic cardiorespiratory arrest influenced by the time management of interventions? Experience of an Emergency Department upon Cowley's "Golden Hour"

Poster Tour 25 - Saturay May 17 13:00 -14:00 (TV 12)

AP241 13:00
Requirements for helicopter landing sites in a concept of airborne primary rescue

AP242 13:06
EFFECTS OF NON-INVASIVE FEMORAL ARTERIES OCCLUSION ON RESTORATION OF SPONTANEOUS CIRCULATION OF TRAUMA PATIENTS WITH ACUTE BLOOD LOSS

AP243 13:12
Assessing the quality chest compressions in paediatric simulations

AP244 13:18
Indentifying the reversible causes of Respiratory Arrests on the Paediatric Wards

AP245 13:24
Chest Compressions Using Load Distributing Band-CPR Devices Are More Effective Than Manual Compressions Concomitant With Emergency Percutaneous Coronary Interventions

AP246 13:30
Chest Injuries During Resuscitation Following the Current Guidelines: First Results of the RECAPTA Study.

AP247 13:36
THE UNIQUE CARDIAC ARREST REGISTRY IN THE CANARY ISLANDS (SPAIN)

AP248 13:42
"A lesson for Life-Un Ora per la Vita": Resuscitation for Schoolchildren and Young people

AP249 13:48
IMPLEMENTATION OF RESUSCITATION COMMITTEES IN CANARY ISLANDS HEALTH SERVICE (CANARY ISLANDS, SPAIN).

AP250 13:54
The Resuscitative Management of Pulmonary Haemorrhage

All abstracts can be downloaded at the congress website at www.resuscitation2014.eu

Principal Sponsor

Zoll

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ZOLL Medical Corporation, an Asahi Kasei Group company, develops and markets medical devices and software solutions that help advance emergency care and save lives, while increasing clinical and operational efficiencies. With products for defibrillation and monitoring, circulation and CPR feedback, data management, fluid resuscitation, and therapeutic temperature management, ZOLL provides a comprehensive set of technologies that help clinicians, EMS and fire professionals, and lay rescuers treat victims needing resuscitation and critical care. For more information, visit www.zoll.com.

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For more information, visit www.asahi-kasei.co.jp/asahi/en/.

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Laerdal Medical is a dynamic and multicultural organization that employs around 1500 people in 23 countries. The main office is located in Stavanger, Norway.

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More than 50 years ago Physio-Control pioneered defibrillation technology to offer hope for hundreds of thousands of people who experience sudden cardiac arrest each year. LIFEPAK® defibrillator/monitors and automated external defibrillators from Physio-Control set the standard for quality and reliability and are used by more physicians, hospitals and emergency medical services than any other brand. Physio-Control continues to lead the industry through innovation and advanced technology with product lines like the LIFENET® System which expands communication between first responders and treatment centers. Physio-Control offers a wide range of service solutions and has the strongest service component in the industry.

Personal Notes

Thursday May 15

Room	A1	A2	A3	A4	Barria	B1, C1 & C3
13.30 15.00	Towards 2015	Towards 2015				
15.30 17.00	GL 2015 : Hot topics for ALS	FREE PAPER session 1	Spanish Afternoon Session	Dispatcher CPR	Evidence based resuscitation	Mechanical CPR
17.15 17.35	Breaking science: Paramedic Trial	Breaking science: Paramedic Trial				
17.40 17.50	Opening Ceremony	Opening Ceremony				

Friday May 16

Room	A1	A2	A3	A4	Barria	B1, C1 & C3
09.00 10.30	GL 2015: Hot topics CPR/ AED	FREE PAPER session 2	Improving team performance		(ESICM) Tutorial: Post resuscitation care	Drug delivery in children
11.00 12.30	GL 2015: Hot topics Paediatrics	Integrated post resus care	Education session : Why is it so hard …		Improving CPR Quality	Feedback devices
Poster tours 1 to 13						
14.00 15.30	GL 2015: Hot topics Education	Rapid response systems	European Restart a Heart Day		Guidelines 2015: Hot topics: Devices	Telemedicine telephone CPR
16.00 17.30	GL 2015: Hot topics : drugs	Resuscitation in special circumstances	(EuSEM) Paediatric session:		The chain of survival in action	Airway management

Saturday May 17

Room	A1	A2	A3	A4	Room Barria	B1, C1 & C3
09.00 10.30	GL 2015: Hot topics First Aid	FREE PAPER session 3	CPR Competition Finals	Whats new in defibrillation?	Best of the Best Abstracts	
11.00 12.30	(ESC/ACCA) GL 2015: Hot topics ACS	FREE PAPER session 4		Tutorial : Paediatrics	Young Investigator Competition	
Poster tours 14 to 25						
14.00 15.30	GL 2015: Hot topics implementation	Recovering from cardiac arrest	(ESA) Trauma	HANDS ON: Educator session	Systems approach to saving lives	
16.00 17.30	Closing Session					

Physio-Control Learning Center Schedule

ERC Booth C48

PHYSIO CONTROL UNIVERSITY

THURSDAY 15 MAY 2014

13:30-15:00	**OPENING SESSIONS**
15:00-15:30	**Capnography: A Standard of Care from the EMS to the ICU.** *Luis D. Diaz-Picazo, MD*
15:30-16:00	**The Merits of Mechanical CPR: Experiences with LUCAS.** *Mark D. Frank, MD*
16:00-16:30	**Ameliorating Reperfusion Injury During Resuscitation from Cardiac Arrest.** *Scott T. Youngquist, MD, MSc*

FRIDAY 16 MAY 2014

10:00-10:30	**Capnography: A Standard of Care from the EMS to the ICU.** *Luis D. Diaz-Picazo, MD*
10:30-11:00	**The Role of the Cath Lab in the Treatment of Cardiac Arrest.** *Karl B. Kern, MD**
12:00-12:30	**The Importance of Complete Revascularization in Post Resuscitated Cardiogenic Shock.** *Karl B. Kern, MD**
12:30-13:00	**The Prehospital 12-Lead ECG and its Present and Future Role in Acute Coronary Syndrome Outcomes.** *Scott T. Youngquist, MD, MSc*
13:00-13:30	**The Merits of Mechanical CPR: Experiences with LUCAS.** *Mark D. Frank, MD*
13:30-14:00	**Ameliorating Reperfusion Injury During Resuscitation from Cardiac Arrest.** *Scott T. Youngquist, MD, MSc*
14:00-14:30	**Current Topics in Defibrillation.** *Fred Chapman, PhD*

SATURDAY 17 MAY 2014

10:00-10:30	**Prehospital Patient Assessment and Pathways to PCI - Early Results from Transporting Patients during Ongoing LUCAS CPR Directly to the Cath Lab.** *Christer Axelsson, PhD, RN, Paramedic*
10:30-11:00	**The Prehospital 12-Lead ECG and its Present and Future Role in Acute Coronary Syndrome Outcomes.** *Scott T. Youngquist, MD, MSc*
12:00-12:30	**Current Topics in Defibrillation.** *Fred Chapman, PhD*
12:30-13:00	**The Importance of Complete Revascularization in Post Resuscitated Cardiogenic Shock.** *Karl B. Kern, MD**
13:00-13:30	**Out of Hospital Cardiac Arrest - Circumstances in Reality; Essentials and Case Presentations.** *Mark D. Frank, MD*
13:30-14:00	**The Role of the Cath Lab in the Treatment of Cardiac Arrest.** *Karl B. Kern, MD**
14:00-14:30	**Prehospital Patient Assessment and Pathways to PCI - Early Results from Transporting Patients during Ongoing LUCAS CPR Directly to the Cath Lab.** *Christer Axelsson, PhD, RN, Paramedic*

Please join us for these educational sessions provided by renowned speakers. Seats are limited. For those completing an evaluation, a USB bracelet will be provided.

All Learning Center sessions will be held in the Physio-Control Booth C48. Times and speakers are subject to change.

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LUNCHTIME SYMPOSIUM

DATE: May 16

TIME: 12:30—13:30

LOCATION: Resuscitation 2014, Bilbao

VENUE: Euskalduna Conference Center

Major sporting events such as the Olympic Games and the World Cup attract huge crowds eager to view the action. But, behind the scenes, there is a whole other event taking place. Join us at this lunch symposium to learn how emergency preparedness comes into play to treat both spectators and athletes, and what happens when the plans need to be executed.

Moderator:
Sergio Timerman, MD, PhD, FACC, FAHA, FERC, FESC, FACP
National Director Medicine and Health Sciences, Sao Paulo University, School of Medicine

Emergency Medicine at the London Olympics – Lessons Learnt
David Zideman, LVO, QHP(C), BSc, FRCA, FRCP, FIMC, FERC
Clinical Lead, Emergency Medical Services, London Organising Committee of the Olympic and Paralympic Games London 2012

The Boston Marathon Bombing: The Consortium Behind the Response
Richard Raymond, Chief Operating Officer Armstrong Ambulance

Current Management of Sudden Cardiac Arrest in Football – on the Field and Inside the Stadium
Prof. Efraim Kramer, Head of the Division of Emergency Medicine, University of the Witwatersrand, South Africa.
Member of the FIFA Medical Assessment and Research Center and the South African Football Association Medical Committee

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