

Scandinavian Update 2007

What new ideas can the 2010 international guidelines on resuscitation and emergency cardiac care bring?

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ERC



European Resuscitation Council



International Liaison Committee on Resuscitation



ILCOR – Consensus on Science



- American Heart Association
- Australian & New Zealand Resuscitation Council
- European Resuscitation Council
- Heart and Stroke Foundation of Canada
- Inter America Heart Foundation
- Resuscitation Council of Southern Africa
- Asian Resuscitation Council



ILCOR – Consensus on Science



- How often does ILCOR revise its International Consensus?
 - a) 1 year
 - b) 2 years
 - c) 5 years**
 - d) 10 years
 - e) Continuous process



ILCOR – Consensus on Science

- ❖ 5 year cycle of science evaluation
- ❖ Working groups define approximately 400 questions
- ❖ Data for each question gathered onto worksheets by two topic experts
- ❖ Scientific debate & consensus statement
- ❖ Interim statements
 - Hypothermia,
 - Biphasic defibrillation in children



ILCOR – Consensus on Science

Developing Evidence Based Consensus

- ❖ Search for evidence - Medline, Embase,
- ❖ Critical appraisal of the **quality** of each publication
- ❖ Determine the '**level of evidence**' for each publication

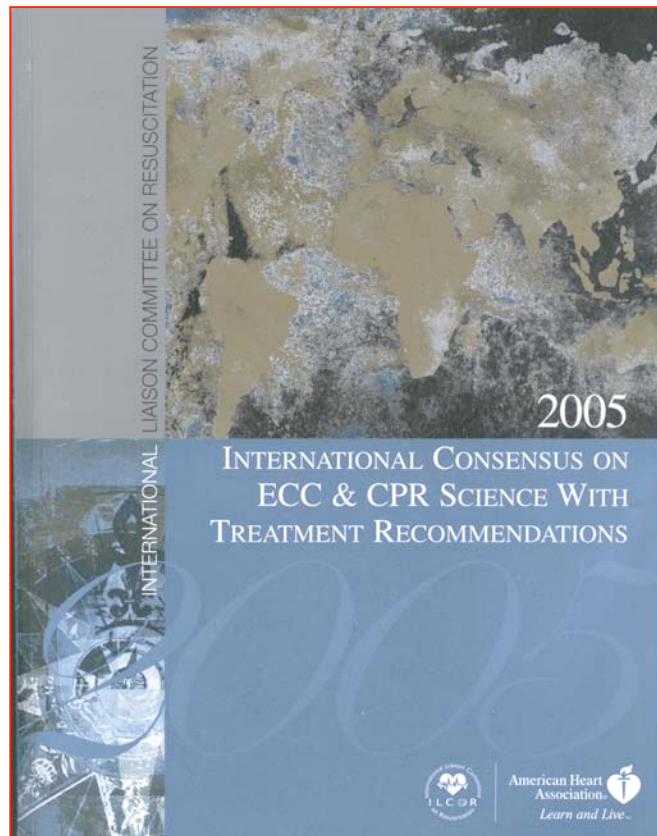


ILCOR – Consensus on Science

Levels of Evidence

- ❖ **Level 1** Positive Randomised Controlled Trials
- ❖ **Level 2** Neutral Randomised Controlled Trials
- ❖ **Level 3** Prospective non-randomised trials
- ❖ **Level 4** Retrospective non-randomised
- ❖ **Level 5** Case series
- ❖ **Level 6** Animal studies
- ❖ **Level 7** Extrapolations
- ❖ **Level 8** “common sense”

ILCOR – Consensus on Science



C2005 Conference

January 2005

Consensus on Science

November 2005



ILCOR – Consensus on Science

Developing Consensus on Science

- ❖ Search for evidence - Medline, Embase,
- ❖ Critical appraisal of the **quality** of each publication
- ❖ Determine the '**level of evidence**' for each publication
- ❖ Integration of all the acceptable evidence into a Consensus on Science and?



ILCOR – Consensus on Science



- **Does ILCOR produce/publish?**
 - a) International guidelines
 - b) National guidelines
 - c) Local guidelines
 - d) Other

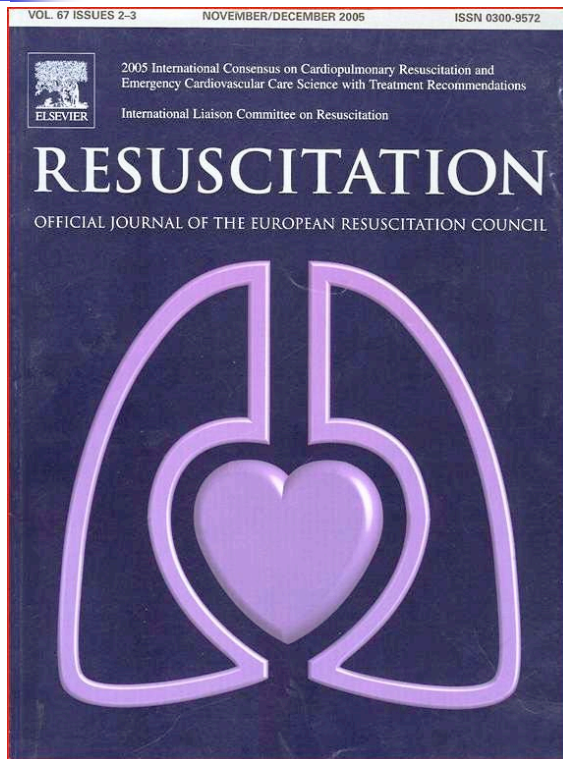


ILCOR – Consensus on Science

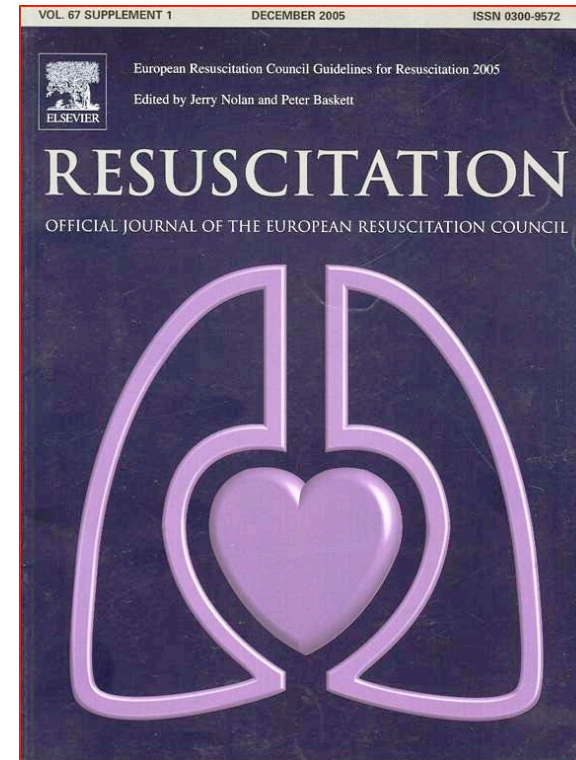


- **Does ILCOR produce/publish?**
 - a) International guidelines
 - b) National guidelines
 - c) Local guidelines
 - d) Treatment recommendations**

European Resuscitation Council



Consensus on Science



European Guidelines

European Resuscitation Council



www.erc.edu

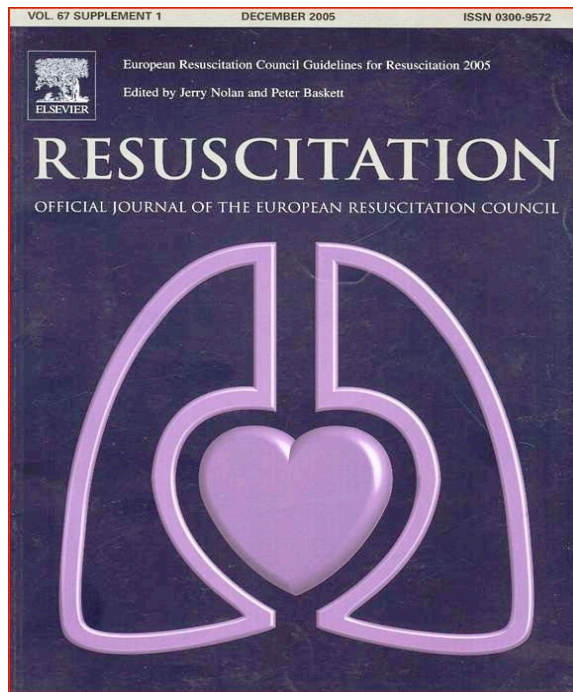
The screenshot shows the homepage of the European Resuscitation Council (ERC) website. The header includes the ERC logo, the text "European Resuscitation Council", and the subtitle "Interdisciplinary Council For Resuscitation Medicine and Emergency Medical Care". A search bar and navigation links for "Login - Contact - FAQ" are also present. The date "Tuesday 15 May, 2007" is displayed. The main navigation menu includes "Home", "News & Events", "Publications", "Resources", "Forum", "Shop", "Partners", and "About ERC".

The page is divided into several sections:

- LOGIN:** A form with fields for "username" and "password", a "GO" button, and options for "Remember me", "Register for free", and "Lost password?".
- New Resuscitation Posters - Now Available:** A section featuring four posters and a link for "Free download here!".
- Welcome !:** A central text block stating: "On this site you will find the latest guidelines on Resuscitation, as well as a full overview of the ERC educational tools such as manuals, posters and slides. Find information on our **courses (basic life support and automated external defibrillation, advanced life support, paediatric life support)**. Register and interact with the resuscitation community through our **forum**." To the right, there is a link for "Free presentation slides" and a thumbnail for the "Basic Life Support & Automated External Defibrillation Course".
- Partners:** A section listing "ILCOR", "National Councils", "Scientific Partners", and "Business Partners", with a logo for "Laerdal".
- Membership:** A section with a "JOIN US" button.
- Other:** A section featuring a "European Trauma Course" scheduled for "May 20-23, 2007" in "Stavanger, Norway", with a link for "More information, click here!".

At the bottom, there are three columns of links: "Basic Life Support & AED" (Course Calendar), "Advanced Life Support" (Congress), and "Paediatric Life Support" (Publications). A "Hot links" section on the left includes "First time users" and "Guidelines".

European Resuscitation Council



European Guidelines

How often should the ERC produce new guidelines?

- a) 1 year
- b) 5 years
- c) 10 years
- d) Continuously
- e) Never



ERC Guidelines 20005

Major changes to guidelines

- Recognition and prevention of cardiac arrest
- Good quality CPR
- Minimising interruptions to chest compressions
- Compression: ventilation ratio (30:2)
- Single shock defibrillation strategy
- Therapeutic Hypothermia



ERC Guidelines 20005

What change has produced the greatest effect?

- a) Recognition and prevention of cardiac arrest
- b) Good quality CPR
- c) Minimising interruptions to chest compressions
- d) Compression: ventilation ratio (30:2)
- e) Single shock defibrillation strategy
- f) Therapeutic Hypothermia



Formula for Survival

Medical Science x Education Efficiency x Local Implementation = Survival



Formula for Survival

Which factor will produce the greatest

improvement in 'survival'?

- a) Medical Science
- b) Education Efficiency
- c) Local Implementation



Medical Science

- 'Gaps' paper
- New science
- Revised simplified template
- Revised process



Educational Efficiency - 1

- Evidence based education design
- Curriculum
 - Needs analysis
 - Learning objectives
 - Team skills
 - Individual skills
- Technology
- Assessment
- Professionalism



Educational Efficiency - 2

- Motivation
 - Simplicity and realism
 - Customisation
 - Facilitator improvement
 - Assessment, feedback, learning loops and reflection
 - Team based training
-
- Identify and remove local barriers to success
 - Design/implement easy, realistic and frequent refresher experiences
 - Target important areas for quick results
 - Mass learning for key skills
 - Dispatch assisted CPR



Local Implementation - 1

- Local champion
 - Strong, charismatic, credible, able to achieve change
- Simple protocol
 - Audit cycle: report, analyze, intervene
- Identify and overcome barriers
 - Political, legislative, cultural, resource, professional.
- Administrative 'buy in'
 - Empower groups
 - Build partnerships: political, media, administrative, professional



Local Implementation - 2

- Measure quality
 - Goal directed quality improvement indicators
- Live feedback
 - Just-in-time bedside coaching
 - Positive feedback loops
 - Encourage and perform research
- Identify cost benefits and resources
 - Share experiences (best practice)
 - Direct and indirect costs, institutional returns, political need
 - Qualitative and quantitative assessment



Formula for Survival

Medical Science x Education Efficiency x Local Implementation = Survival



UK BRESUS Study (1992)

- 3765 Resuscitation events
 - One year, 12 UK hospitals.
 - 417 known survivors at one year
 - 214 lost to follow up
- For every 8 attempted resuscitations
 - 3 immediate survivors
 - 1.5 left hospital alive
 - 1 alive at one year

Cardiac arrest data underreported and incomplete



Utstein and Outcome (2006)

- Survival
 - Discharged Alive
 - 'A good indicator of system performance'
 - Outcome measures
 - CPC scores (Corrected)
 - Pre-event status
 - Age
 - Previous morbidity
 - Confidentiality
 - Discharged to.....



ERC

Cerebral Performance Category



Good Cerebral Performance

- (Normal Life)



Moderate Cerebral Disability

- (Disabled but Independent)



Severe Cerebral Disability

- Conscious but Disabled and Dependent



Coma/Vegetative State

- Unconscious



Brain Death

- Certified brain dead or dead by traditional criteria



ERC

Cerebral Performance Category

- Hsu JWY et al (1996)
 - 3130 cardiac arrests in 52 months
 - 93 survivors (2.97%)
 - 35 survivors tested (71% eligible) using FSQ
 - 34% quality of life worse
 - 38% same
 - 28% better
 - 5 patients, CPC at discharge 3.2; vegetative at follow-up.

- Roine RO et al (1993)
 - Those that survive to discharge have similar or improved quality of life after discharge or die rather than experiencing deterioration of their function

Cerebral Performance Category

- Graves JR, Herlitz et al (1997)
 - 3754 out-of-hospital events in 13 years
 - 324 (9%) survived to discharge

	CPC	1	2	3	4
Discharge	N=324 n=320	53%	21%	24%	2%
1 year	N=263 n=212	73%	9%	17%	1%

- 21% died during first year
- Additional 16% had a further arrest
- 73% 1 year survivors returned to pre-arrest function



Cerebral Performance Category

Neurological status at Hospital Discharge (Out-of-Hospital events)

	n	CPC 1&2
BRCT (1986)	85	77%
BRCT (1991)	120	70%
Cobb et al (1999)	288	75%
Graves et al (1997)	324	74%
Langhelle et al (2003)	204	83%
Longstreth et al (1983)	279	67%



Consent and Confidentiality

- Human research in the United States must protect:
 - Autonomy (45 CFR 46 and 21 CR 50 & 56)
 - Individuals not Competent to give consent (21 CFR 50)
 - Patients or their representatives must provide informed consent prior to being enrolled in a research study unless the study involves minimal risk or meets criteria for exception from consent.
 - Privacy and Accountability (1996 HIPAA Act 67 CFR 157)
 - Healthcare organisations must make reasonable efforts to limit the disclosure of protected information to the minimum necessary to accomplish the intended purpose.
- Current American requirements for emergency research can introduce bias and expose participating and future patients to harm.



Consent and Confidentiality

- European Union Directive (2001)
 - Article 3 (Protection of Trial Subjects)
 - Article 5 (Inability to give informed consent)

'A clinical trial may be undertaken only if the trial subject or, when the person is not able to give consent, his legal representative, has had the opportunity in a prior interview with the investigator, to understand the objectives, risks and inconveniences of the trial.'



Consent and Confidentiality

- World Medical Association Declaration of Helsinki
 - Provision 26
 - Research without consent may be undertaken only if the physical/mental condition that prevents obtaining informed consent is an integral characteristic of the research population.
 - The specific reasons should be stated in the research protocol.
 - Consent to remain in the research should be obtained as soon as possible from the individual or a legally authorised surrogate.
- Individual states to introduce variations that could impact on emergency research



Consent and Confidentiality

- TROICA (Thrombolysis in Cardiac Arrest)
 - Pre-hospital study
 - 60 international centres
 - 1000 patients
 - Witnessed cardiac arrest
 - BLS (or ALS) started within 10 minutes
 - Primary endpoint – 30 day survival rate
 - Coprimary endpoint – hospital admission
 - Secondary Endpoints
 - ROSC
 - Survival to 24hrs
 - Survival to Hospital Discharge
 - Neurological Performance (CPC & OPC)



Consent and Confidentiality

- TROICA (Thrombolysis in Cardiac Arrest)
 - Trial subjects unable to give consent
 - Approval of protocol by:
 - Independent Ethics Committee
 - Institutional Review Body
 - Three different consent procedures:
 - Retrospective information and consent for continuing participation, collection and use of collected data for subjects who survived cardiac arrest
 - Retrospective.....for legal representatives of subjects who survived cardiac arrest but with inadequate consciousness
 - Retrospective.....for legal representatives of the subjects who died owing to cardiac arrest.





Ferrari F1

Ferrari F1