Course:

Noutati in resuscitarea copilului si a nou nascutului- ghidurile 2015

Country:Romania

Speaker: Simona Mărgărit MD, PhD

UMF "Iuliu Haţieganu " Cluj Napoca

Ce au adus nou noile ghiduri de resuscitare ?

- anumite subiecte- considerate prioritare
  - pe baza: noilor evidente stiintifice sau a controverselor legate de subiect

- utilizarea - GRADE (Grading of Recommendations and Assessment, Development, and Evaluation)
  - clasei (grad) de recomandare pe baza nivelului de evidenta (calitatea) a studiilor
- utilizarea unei platforme on line - SEERS (Systematic Evidence Evaluation and Review System)

ICOR 2015- International Consensus on CPR and ECC Science with Treatment Recommendations (CoSTR)

Grupurile de lucru ILCOR:

- Recomandare "puternica"- " noi recomandam….'
- Recomandare "slaba"- " noi sugeram……."

Ce au adus nou noile ghiduri de resuscitare ?

2015 AHA Guidelines

Updates for CPR and ECC

New AHA Classification System for Classes of Recommendation and Levels of Evidence*

CLASS (STRENGTH) OF RECOMMENDATION

CLASS I (STRONG) — Benefit >>> Risk

Suggested phrases for writing recommendations:
- Is recommended
- Is indicated/useful/effective/beneficial
- Should be performed/administered/other
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is recommended/indicated in preference to treatment B
  - Treatment A should be chosen over treatment B

CLASS IIa (MODERATE) — Benefit >> Risk

Suggested phrases for writing recommendations:
- Is reasonable
- Can be useful/effective/beneficial
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is probably recommended/indicated in preference to treatment B
  - It is reasonable to choose treatment A over treatment B

CLASS IIb (WEAK) — Benefit ≥ Risk

Suggested phrases for writing recommendations:
- May/might be reasonable
- May/might be considered
- Usefulness/effectiveness is unknown/unclear/uncertain or not well established

CLASS III: No Benefit (MODERATE) — Benefit = Risk
(Generally, LOE A or B use only)

Suggested phrases for writing recommendations:
- Is not recommended
- Is not indicated/useful/effective/beneficial
- Should not be performed/administered/other

CLASS III: Harm (STRONG) — Risk > Benefit

Suggested phrases for writing recommendations:
- Potentially harmful
- Causes harm
- Associated with excess morbidity/mortality
- Should not be performed/administered/other

LEVEL (QUALITY) OF EVIDENCE‡

LEVEL A
- High-quality evidence‡ from more than 1 RCTs
- Meta-analyses of high-quality RCTs
- One or more RCTs corroborated by high-quality registry studies

LEVEL B-R (Randomized)
- Moderate-quality evidence‡ from 1 or more RCTs
- Meta-analyses of moderate-quality RCTs

LEVEL B-NR (Nonrandomized)
- Moderate-quality evidence‡ from 1 or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies
- Meta-analyses of such studies

LEVEL C-LD (Limited Data)
- Randomized or nonrandomized observational or registry studies with limitations of design or execution
- Meta-analyses of such studies
- Physiological or mechanistic studies in human subjects

LEVEL C-EO (Expert Opinion)

Consensus of expert opinion based on clinical experience

COR and LOE are determined independently (any COR may be paired with any LOE).

A recommendation with LOE C does not imply that the recommendation is weak. Many important clinical questions addressed in guidelines do not lend themselves to clinical trials. Although RCTs are unavailable, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

* The outcome or result of the intervention should be specified (an improved clinical outcome or increased diagnostic accuracy or incremental prognostic information).

† For comparative-effectiveness recommendations (COR I and IIa; LOE A and B only), studies that support the use of comparator verbs should involve direct comparisons of the treatments or strategies being evaluated.

‡ The method of assessing quality is evolving, including the application of standardized, widely used, and preferably validated evidence grading tools; and for systematic reviews, the incorporation of an Evidence Review Committee.

COR indicates Class of Recommendation; EO, expert opinion; LD, limited data; LOE, Level of Evidence; NR, nonrandomized; R, randomized; and RCT, randomized controlled trial.

CoSTR ERC/CoSTR AHA

Members

Resuscitation 95 (2015) e1–e31

Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation

Part 1: Executive summary
2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations☆,☆☆

Jerry P. Nolan*,[1], Mary Fran Hazinski[1], Richard Aickin, Farhan Bhanji, John E. Billi, Clifton W. Callaway, Maaret Castren, Allan R. de Caen, Jose Maria E. Ferrer, Judith C. Finn, Lana M. Gent, Russell E. Griffin, Sandra Iverson, Eddy Lang, Swee Han Lim, Ian K. Maconochie, William H. Montgomery, Peter T. Morley, Vinay M. Nadkarni, Robert W. Neumar, Nikolaos I. Nikolaou, Gavin D. Perkins, Jeffrey M. Perlman, Eunice M. Singletary, Jasmeet Soar, Andrew H. Travers, Michelle Welsford, Jonathan Wyllie, David A. Zideman

Resuscitation 95 (2015) e147–e168

Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation

Part 6: Pediatric basic life support and pediatric advanced life support 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations☆,☆☆

Ian K. Maconochie*,[1], Allan R. de Caen[1], Richard Aickin[1], Dianne L. Atkins, Dominique Biarent, Anne-Marie Guerguerian, Monica E. Kleinman, David A. Kloeck, Peter A. Meaney, Vinay M. Nadkarni, Kee-Chong Ng, Gabrielle Nuthall, Ameila G. Reis, Naoki Shimizu, James Tibballs, Remigio Veliz Pintos, on behalf of the Pediatric Basic Life Support and Pediatric Advanced Life Support Chapter Collaborators[2]

Circulation

October 20, 2015, Volume 132, Issue 16 suppl 1

2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations

Part 1: Executive Summary: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations

Mary Fran Hazinski, Jerry P. Nolan, Richard Aickin, Farhan Bhanji, John E. Billi, Clifton W. Callaway, Maaret Castren, Allan R. de Caen, Jose Maria E. Ferrer, Judith C. Finn, Lana M. Gent, Russell E. Griffin, Sandra Iverson, Eddy Lang, Swee Han Lim, Ian K. Maconochie, William H. Montgomery, Peter T. Morley, Vinay M. Nadkarni, Robert W. Neumar, Nikolaos I. Nikolaou, Gavin D. Perkins, Jeffrey M. Perlman, Eunice M. Singletary, Jasmeet Soar, Andrew H. Travers, Michelle Welsford, Jonathan Wyllie, and David A. Zideman

Circulation. 2015;132:S2–S39, doi:10.1161/CIR.0000000000000270

Part 6: Pediatric Basic Life Support and Pediatric Advanced Life Support: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations

Allan R. de Caen, Ian K. Maconochie, Richard Aickin, Dianne L. Atkins, Dominique Biarent, Anne-Marie Guerguerian, Monica E. Kleinman, David A. Kloeck, Peter A. Meaney, Vinay M. Nadkarni, Kee-Chong Ng, Gabrielle Nuthall, Amelia G. Reis, Naoki Shimizu, James Tibballs, Remigio Veliz Pintos, and on behalf of the Pediatric Basic Life Support and Pediatric Advanced Life Support Chapter Collaborators

Circulation. 2015;132:S177–S203, doi:10.1161/CIR.0000000000000275

CoStr ERC/CoSTR AHA

Resuscitation 95 (2015) e169–e201

Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation

Part 7: Neonatal resuscitation
2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations☆,☆☆

Jonathan Wyllie (Co-Chair)*,[1], Jeffrey M. Perlman (Co-Chair)[1], John Kattwinkel, Myra H. Wyckoff, Khalid Aziz, Ruth Guinsburg, Han-Suk Kim, Helen G. Liley, Lindsay Mildenhall, Wendy M. Simon, Edgardo Szyld, Masanori Tamura, Sithembiso Velaphi, on behalf of the Neonatal Resuscitation Chapter Collaborators[2]

October 20, 2015, Volume 132, Issue 16 suppl 1

2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations

Part 7: Neonatal Resuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations

Jeffrey M. Perlman, Jonathan Wyllie, John Kattwinkel, Myra H. Wyckoff, Khalid Aziz, Ruth Guinsburg, Han-Suk Kim, Helen G. Liley, Lindsay Mildenhall, Wendy M. Simon, Edgardo Szyld, Masanori Tamura, Sithembiso Velaphi, and on behalf of the Neonatal Resuscitation Chapter Collaborators

Circulation. 2015;132:S204–S241, doi:10.1161/CIR.0000000000000276

Ghidurile de resuscitare europene 2015

http://www.cprguidelines.eu/

Resuscitation 95 (2015) 223–248

Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation

European Resuscitation Council Guidelines for Resuscitation 2015 Section 6. Paediatric life support

Ian K. Maconochie[a,*], Robert Bingham[b], Christoph Eich[c], Jesús López-Herce[d], Antonio Rodríguez-Núñez[e], Thomas Rajka[f], Patrick Van de Voorde[g], David A. Zideman[h], Dominique Biarent[i], on behalf of the Paediatric life support section Collaborators[1]

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[f] Paediatric Intensive Care Department, Womens and Childrens Division, Oslo University Hospital, Ulleval, Oslo, Norway
[g] Paediatric Intensive Care and Emergency Medicine Departments, University Hospital Ghent and Ghent University, EMS Dispatch 112 Eastern Flanders, Federal Department Health Belgium, Ghent, Belgium
[h] Anaesthesia Department, Imperial College Healthcare NHS Trust, London, UK
[i] Paediatric Intensive Care and Emergency Medicine Departments, Universite Libre de Bruxelles, Hôpital U

EUROPEAN RESUSCITATION COUNCIL

Summary of the main changes in the Resuscitation Guidelines

ERC GUIDELINES 2015

Resuscitation 95 (2015) 249–263

Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation

European Resuscitation Council Guidelines for Resuscitation 2015 Section 7. Resuscitation and support of transition of babies at birth

Jonathan Wyllie[a,*], Jos Bruinenberg[b], Charles Christoph Roehr[d,e], Mario Rüdiger[f], Daniele Trevisanuto[c], Berndt Urlesberger[g]

[a] Department of Neonatology, The James Cook University Hospital, Middlesbrough, UK
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[c] Department of Women and Children's' Health, Padua University, Azienda Ospediliera di Padova, Padua, Italy
[d] Department of Neonatology, Charité Universitätsmedizin, Berlin, Berlin, Germany
[e] Newborn Services, John Radcliffe Hospital, Oxford University Hospitals, Oxford, UK
[f] Department of Neonatology, Medizinische Fakultät Carl Gustav Carus, TU Dresden, Germany
[g] Division of Neonatology, Medical University Graz, Graz, Austria

Ghidurile de resuscitare americane 2015

https://eccguidelines.heart.org/wp-content/uploads/2015/10/2015-AHA-Guidelines-Highlights-English.pdf

https://circ.ahajournals.org/content/132/18_suppl_2.toc

Part 11: Pediatric Basic Life Support and Cardiopulmonary Resuscitation Quality: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
Dianne L. Atkins, Stuart Berger, Jonathan P. Duff, John C. Gonzales, Elizabeth A. Hunt, Benny L. Joyner, Peter A. Meaney, Dana E. Niles, Ricardo A. Samson, and Stephen M. Schexnayder
Circulation. 2015;132:S519–S525, doi:10.1161/CIR.0000000000000265

Part 12: Pediatric Advanced Life Support: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
Allan R. de Caen, Marc D. Berg, Leon Chameides, Cheryl K. Gooden, Robert W. Hickey, Halden F. Scott, Robert M. Sutton, Janice A. Tijssen, Alexis Topjian, Élise W. van der Jagt, Stephen M. Schexnayder, and Ricardo A. Samson
Circulation. 2015;132:S526–S542, doi:10.1161/CIR.0000000000000266

Part 13: Neonatal Resuscitation: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
Myra H. Wyckoff, Khalid Aziz, Marilyn B. Escobedo, Vishal S. Kapadia, John Kattwinkel, Jeffrey M. Perlman, Wendy M. Simon, Gary M. Weiner, and Jeanette G. Zaichkin
Circulation. 2015;132:S543–S560, doi:10.1161/CIR.0000000000000267

Circulation

American Heart Association

November 3, 2015, Volume 132, Issue 18 suppl 2

2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care

European Society of Anaesthesiology ESA

World Federation of Societies of Anaesthesiologists

Noutati in resuscitarea copilului

- nou nascut- (nastere pana la 28 zile)
- copil sub 1 an (sugar)
- copil cu varsta de peste 1 an- pubertate

Actualizari/noi recomandari

- suportul vital baza
- suportul vital avansat

Noutati in resuscitarea copilului

SUPORTUL VITAL BAZAL

1. secvența de realizare : compresiuni toracice/ventilație
   - importanta ventilatiei ca si parte a resuscitarii
   - algoritm 1 vs 2 sau mai multi resuscitatori

2. frecventa si profunzimea compresiuniilor toracice

3. resuscitare convențională cu masaj cardiac și ventilație vs doar masaj cardiac ?

Maconochie IK, de Caen AR, Aickin R, et al. Part 6: pediatric basic life support and pediatric advanced life support: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 2015; 95: e147–e168

SUPORTUL VITAL BAZAL

Secvența de realizare :compresiuni toracice/ventilație (C-A-B vs A-B-C ?)

- **ILCOR 2015 CoSTR- nu exista recomandari de consens**

EUROPEAN RESUSCITATION COUNCIL

Summary of the main changes in the Resuscitation Guidelines

ERC GUIDELINES 2015

menținere secvența de tip A-B-C

- 5 ventilatii/15 compresiuni apoi 2 ventilatii/15 compresiuni

menținere secvența de tip C-A-B

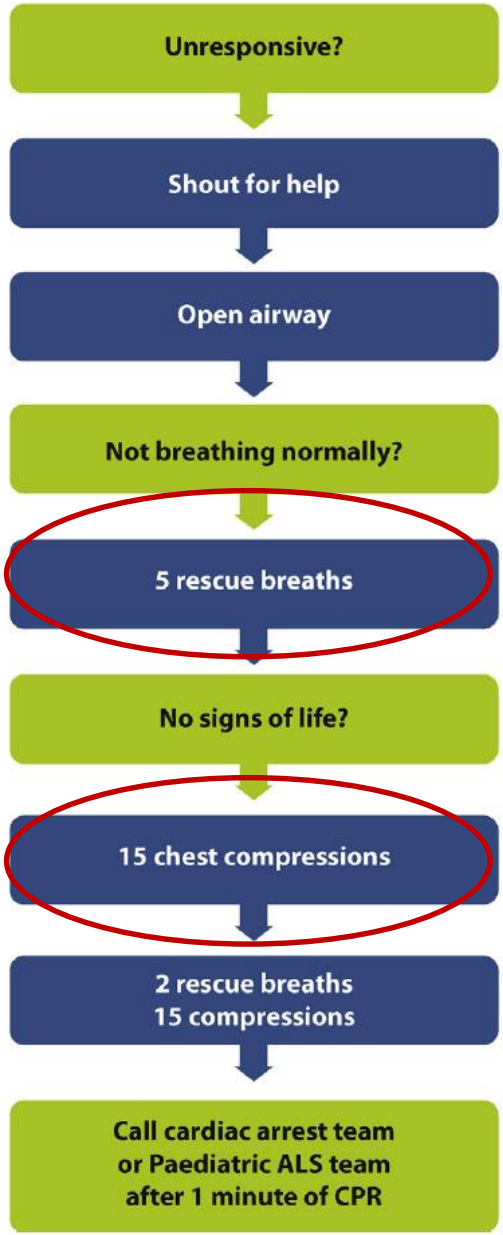
(clasa IIb, LOE C-EO)

- 30 compres/2 ventilatii (1 resuscitator)
- 15 compresiuni/2 ventilatii (2 sau mai multi resuscitatori)

Maconochie I, Bingham R, Eich C, et al. European resuscitation council guide-lines for resuscitation 2015. Section 6 Paediatric Life Support. Resuscitation 2015; 95: 222–47

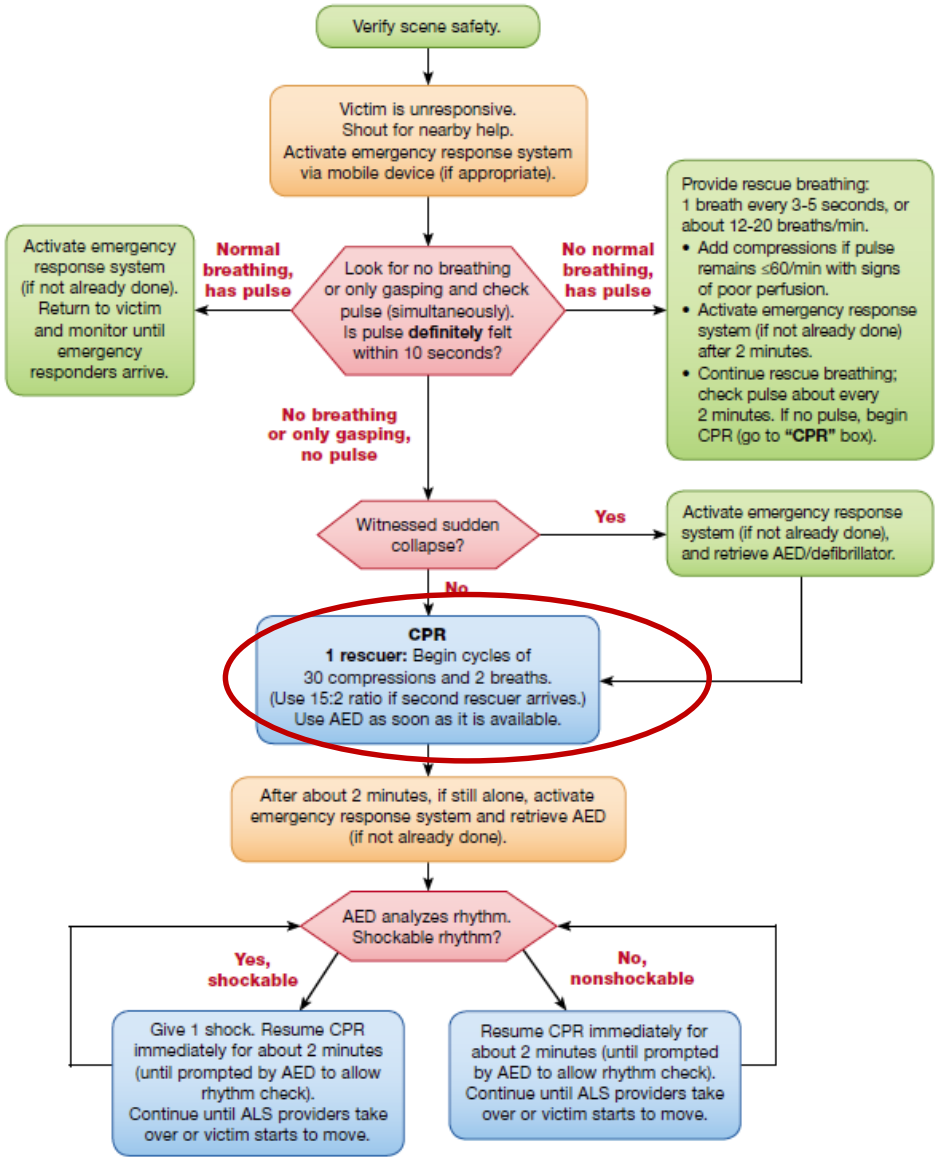
Atkins DL, Berger S, Duff JP, et al. Part 11: pediatric basic life support and cardiopulmonary resuscitation quality: 2015 American HeartAssociation Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation 2015;132 (suppl 2): S519–S525.

EUROPEAN RESUSCITATION COUNCIL 2015 -BLS

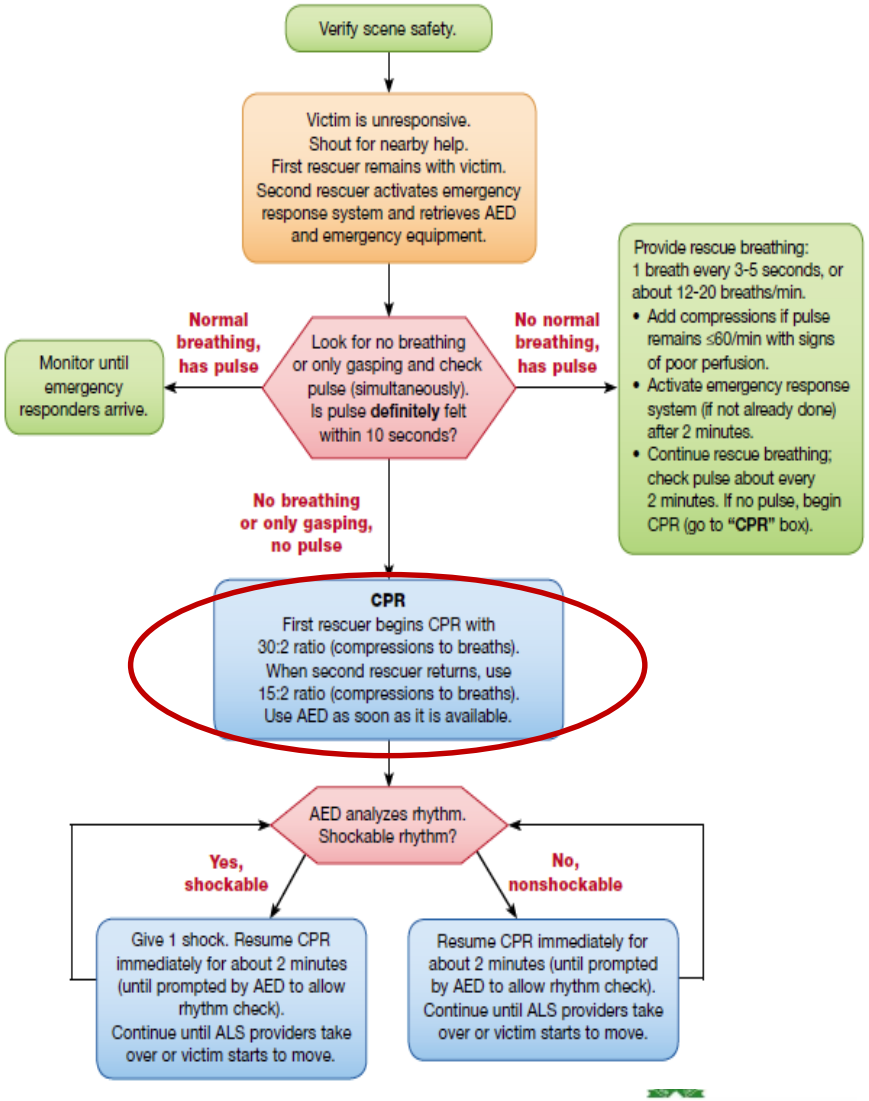


2015 AHA GUIDELINES
PEDIATRIC CARDIAC ARREST - NEW !

1 resuscitator calificat



2 sau mai multi resuscitatori calificati



ILCOR 2015-CoSTR -recomandari actualizate

- **Frecventa compresiunilor toracice in cursul resuscitarii copilului este de 100-120/min ca la adult (AHA clasa IIa, LOE C-EO)**

Profunzimea compresiunilor toracice - cel putin 1/3 din diametrul anteroposterior torace

grad de recomandare slaba – nivel de evidenta foarte redus(AHA clasa IIa LOE C-LD)

- **4 cm sugar(< 1 an)**
- **5 cm (copilul peste un an)**
- **copilul aflat la pubertate- cel putin 5 cm dar nu mai mult de 6 cm (recomandare adult)**

Maconochie IK, de Caen AR, Aickin R, et al. Part 6: pediatric basic life support and pediatric advanced life support: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 2015; 95: e147–e168

SUPORTUL VITAL BAZAL

Resuscitare convențională cu masaj cardiac și ventilație vs doar masaj cardiac ?

ILCOR 2015- CoSTR

- **recomandarea de a efectua ventilatie si masaj cardiac in cazul stopului cardiac survenit la copil atat in spital cat si inafara spitalului**
- **daca salvatorul nu doreste sau nu poate sa asigure respiratia artificiala, cel putin sa efectueze masaj cardiac**

grad de recomandare puternic, nivel de evidenta redus (AHA clasa I LOE B-NR)

Kitamura T, Iwami T, Kawamura T, et al. Conventional and chest-compression-only cardiopulmonary resuscitation by bystanders for children who have out-of-hospital cardiac arrests: a prospective, nationwide, population-based cohort study. Lancet 2010;375:1347–54.53.
Goto Y, Maeda T, Goto Y. Impact of dispatcher-assisted bystander cardiopulmonary resuscitation on neurological outcomes in children without-of-hospital cardiac arrests: a prospective, nationwide, population-based cohort study. J Am Heart Assoc 2014;3:e000499.54.

SUPORTUL VITAL AVANSAT

1. **Etapa anterioara instalarii stopului cardiac**
   - **Suportul vital avansat in cazul sugarului sau copilului peste varsta de 1 an aflat in stare critica in scopul prevenirii instalarii stopului cardiac**

2. **Suportul vital avansat in timpul stopului cardiac**

3. **Suport vital avansat -postresuscitare**

- **Etapa anterioara instalarii stopului cardiac**

  - **eficienta echipelor de urgenta sau de raspuns rapid asupra imbunatatirii evolutiei clinice**
  - **eficienta scorurilor pediatrice de avertizare precoce a deteriorarii starii clinice**
  - **tratamentul sugarului si a copilului peste 1 an cu miocardita sau cardiomiopatie dilatativa si iminenta de stop cardiac**

  - **atropina ca premedicație în cazul intubației traheale de urgență**
  - **resuscitarea volemica la copilul cu soc septic sau stare febrila severa**

Atropina ca premedicație în cazul intubației traheale de urgență

ILCOR 2015- new!

- nu este recomandata utilizarea de rutina a atropinei ca premedicatie anterior intubatiei traheala
  - poate fi utilizata ca premedicatie in sit de IOT de urgenta doar cand exista un risc crescut de bradicardie (ex adm succinilcolinei)

    grad de recomandare slaba, nivel de evidenta redus (AHA clasa IIb, LOE C-LD)
  - doza de premedicatie 0,02 mg/kg si nu o doza minima de 0,1 mg

Maconochie IK, de Caen AR, Aickin R, et al. Part 6: pediatric basic life support and pediatric advanced life support: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 2015; 95: e147–e168
Jones P, Dauger S, Denjoy I, Pinto da Costa N, Alberti C, Boulkedid R, Peters MJ. The effect of atropine on rhythm and conduction disturbances during 322 critical care intubations. Pediatr Crit Care Med 2013; 14: e289– e297.
Jones P, Peters MJ, Pinto da Costa N, et al. Atropine for critical care intubation in a cohort of 264 children and reduced mortality unrelated to effects on bradycardia. PLoS One 2013; 8: e57478.

Resuscitarea volemica la copilul cu soc septic /alte stari febrile severe

- Terapie volemica restrictiva vs terapie volemica non restrictiva ?
  - Utilizare de bolus lichidian ?
- Cristaloide vs coloide ?

SUPORTUL VITAL AVANSAT

Evidence for the Use of Restrictive Volume of Intravenous Fluid Resuscitation, Compared With Unrestrictive Volume

	Studies	Survival to Hospital Discharge	Need for Transfusion or Diuretics	Need for Rescue Fluid	Mechanical Ventilation or Vasopressor	Time to Resolution of Shock	Total IV Fluids
Severe sepsis/septic shock	Santhanam 2008; Carcillo 1991	No Benefit	No Benefit	No Studies Available	No Benefit	No Benefit	No Studies Available
Severe malaria	Maitland 2005; Maitland 2005	No Benefit	No Benefit	Harm	No Studies Available	No Benefit	No Benefit
Severe febrile illness with some but not all signs of shock	Maitland 2011; Maitland 2013	Benefit	No Benefit	No Studies Available	No Studies Available	Harm	No Benefit

No benefit

Noncrystalloid vs Crystalloid IV Fluid

	Studies	Survival to Hospital Discharge	Need for Other Treatment	Need for Rescue Fluid	Mechanical Ventilation or Vasopressor	Time to Resolution of Shock	Total IV Fluids	Hospital Duration of Stay
Severe sepsis/ septic shock	Upadhyay 2005	No Benefit	No Benefit	No Studies Available	No Benefit	No Benefit	No Studies Available	No Studies Available
Severe malaria	Maitland 2003; Maitland 2005	No Studies Available	No Benefit	No Studies Available	No Studies Available	No Benefit	No Studies Available	No Studies Available
Dengue shock	Cifra 2003; Dung 1999; Ngo 2001; Wills 2005	No Benefit	No Benefit	No Benefit	No Studies Available	Benefit	No Benefit	No Benefit
Severe febrile illness with some but not all signs of shock	Maitland 2011	No Benefit	No Benefit	No Benefit	No Studies Available	No Benefit	No Benefit	No Studies Available

No benefit

de Caen AR, Berg MD, Chameides L, et al.Gooden . Part 12: pediatric advanced life support: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. ***Circulation. 2015;132(suppl 2):S526–S542.***

SUPORTUL VITAL AVANSAT

Resuscitarea volemica la copilul cu soc septic /alte stari febrile severe

ILCOR 2015- CoSTR -new!

1. **Administrarea unui bolus initial de 20 ml/kg corp de lichid la nou nascut sau copilul peste un aflat in stare de soc**
   - soc septic –(sepsa de etiologie bacteriana)
   - malarie severa
   - febra Dengue forma severa

   grad de recomandare slab, nivel de evidenta scazut (AHA clasa IIa, LOE C-LD)

2. **Nu se recomanda utilizarea de rutina a bolusului lichidian la sugar si copilul cu varsta peste 1 an cu o stare febrila severa dar care nu prezinta semne de insuficienta circulatorie si mai ales daca nu sunt posibilitati de sustinere de terapie intensiva (VM, vasoactive)**

   grad de recomandare slab, nivel de evidenta redus (AHA clasa IIb, LOE B-R)

Resuscitarea volemica la copilul cu soc septic /alte stari febrile severe

ILCOR 2015- CoSTR -new!

- **Terapia lichidiană trebuie individualizată**
  - evaluarea clinica anterior administrarii bolusului lichidian
  - evaluarea posibilităților de monitorizare și de suport al șocului (ventilatie mecanica, vasoactive, antibioterapie, etc
  - cristaloide/coloide- utile initial pentru resuscitarea volemica

- **Reevaluarea copilului dupa fiecare bolus lichidian administrat**

  grad puternic de recomandare pe baza opiniei expertilor (AHA clasa I, LOE C –EO)

SUPORTUL VITAL AVANSAT

1. Etapa anterioara instalarii stopului cardiac

- Suportul vital avansat in cazul sugarului sau copilului peste varsta de 1 an aflat in stare critica in scopul prevenirii instalarii stopului cardiac

2. Suportul vital avansat in timpul stopului cardiac

3. Suport vital avansat -postresuscitare

SUPORTUL VITAL AVANSAT in timpul stopului cardiac

1. energia necesară defibrilării manuale la copil

2. medicația antiaritmică în cazul FV/TV fara puls rezistente la aplicarea socului electric

3. vasopresoarele utilizate în stopul cardiac

4. monitorizarea hemodinamică invazivă în cursul resuscitării cardiopulmonare

5. rolul oxigenării extracorporeale în cazul stopului cardiac intraspitalicesc

6. importanța unor variabile clinice intra si post stop cardiac ca si factori de prognostic

1. Energia necesara defibrilarii manuale

ILCOR 2015-CoSTR

a. **2-4 J/kg pentru primul soc electric aplicat cu defibrilator manual mono sau bifazic**

   grad de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb LOE C-EO)

   - **In cazul TV refractara – preferabil inceperea cu 4 J/kg**

b. **nu exista recomandare de consens in privinta celui de-al 2-lea sau urmatoarele socuri**

ERC guideline 2015

- **4J/kg pentru primul si urmatoarele socuri**

AHA Guideline 2015

- **4J/kg sau mai mult pentru urmatoarele, nu se depases 10J/kg sau doza maxima de adult**

2. Amiodarona vs lidocaina în cazul FV/TV fara puls refractare la aplicarea socului electric

ILCOR 2015 –CoSTR -new!

- **Amiodarona sau lidocaina se pot utiliza in egala masura pt tratamentul FV/TV fara puls refractare la defibrilare**

  grad de recomandare slab, nivel de evidenta foarte scazut (AHA IIb, LOE C-LD)

  - **amiodarona 5mg/kg bolus dupa cel de-al 3-lea soc**
  - **lidocaina 1mg/kg (max 100 mg/bolus) continuare 20-50 µg/kg/min**

ERC- utilizarea medicatiei antiaritmice cu care medicul este familiarizat

Maconochie IK, de Caen AR, Aickin R, et al. Part 6: pediatric basic life support and pediatric advanced life support: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 2015; 95: e147–e168
Valdes SO, Donoghue AJ, Hoyme DB, et al. Outcomes associated with amio-darone and lidocaine in the treatment of in-hospital pediatric cardiac arrest with pulseless ventricular tachycardia or ventricular fibrillation. Resuscitation 2014;85:381–6.63.

3. Vasopresoarele utilizate in stopul cardiac

Epinefrina

Vasopresina/terlipresina

ILCOR 2015-CoSTR- nu exista recomandare de consens

- doze standard de epinefrina –

grad de recomandare slab , nivel de evidenta redus (AHA IIa, LOE C LD)

Maconochie IK, de Caen AR, Aickin R, et al. Part 6: pediatric basic life support and pediatric advanced life support: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 2015; 95: e147–e168

Jacobs IG, Finn JC, Jelinek GA, Oxer HF, Thompson PL. Effect of adrenaline onsurvival in out-of-hospital cardiac arrest: a randomised double-blind placebo-controlled trial. Resuscitation 2011;82:1138–43.65.

4. Monitorizarea hemodinamică invazivă în cursul resuscitării cardiopulmonare

ILCOR 2015- COSTR- nu exista recomandare de consens

- daca exista monitorizare **invaziva a TA** la momentul stopului cardiac- utilizare pt asigurarea unei resuscitari de calitate
- nu a fost stabilita o valoare tinta a TA in timpul resuscitarii

Monitorizarea EtCO2 pentru ghidarea calitatii resuscitarii

ILCOR 2015- COSTR- nu exista recomandare de consens

- Poate fi considerata pentru evaluarea calitatii masajului cardiac dar nu exista o valoare specifica stabilita la copil

Maconochie IK, de Caen AR, Aickin R, et al. Part 6: pediatric basic life support and pediatric advanced life support: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 2015; 95: e147–e168
Sheak KR, Wiebe DJ, Leary M, et al. Quantitative relationship between end-tidal carbon dioxide and CPR quality during both in-hospital and out-of-hospital cardiac arrest. Resuscitation. 2015;89:149–154

5. Rolul oxigenării extracorporeale în cazul stopului cardiac intraspitalicesc

ILCOR 2015- CoSTR-new!

- **CPR+ ECMO (ERCP) poate fi considerata in cazul nou nascutului si a copilului cunoscuti cu afectiuni cardiace care au prezentat stop cardiac intraspitalicesc intr-o unitate cu expertiza in utilizarea ECMO**

  grad de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb, LOE C-LD)

- **Nu exista recomandare de consens in privinta utilizarii sau nu de rutina a ECMO asociat resuscitarii conventionale la nou nascut si copil care nu au afectiuni cardiace cunoscute la momentul instalarii stopului intraspitalicesc**

  grad de recomandare slab, nivel de evidenta foarte redus

Morris MC, Wernovsky G, Nadkarni VM. Survival outcomes after extracorporeal cardiopulmonary resuscitation instituted during active chest compressions following refractory in-hospital pediatric cardiac arrest. Pediatr Crit Care Med. 2004;5:440–446.

Raymond TT, Cunnyngham CB, Thompson MT, et al. American Heart Association National Registry of CPR Investigators. Outcomes among neonates, infants, and children after extracorporeal cardiopulmonary resuscitation for refractory inhospital pediatric cardiac arrest: a report from the National Registry of CardiopulmonaryResuscitation. Pediatr Crit Care Med. 2010;11:362–371.

SUPORTUL VITAL AVANSAT in timpul stopului cardiac

Variabile cu rol prognostic din cursul stopului cardiac produs in afara/intra spitalicesc pentru sugar și copilul peste 1 an

ILCOR 2015 –CoSTR –new! multipli factori utilizati pt prognosticare

Stop cardiac înafara spitalului:

- **vârsta peste 1 an, prezența unui ritm cardiac șocabil pot fi utilizați ca predictori ai unei evoluții favorabile**

  grad de recomandare slab, nivel de evidență foarte redus

Stop cardiac intraspitalicesc:

- **varsta sub 1 an, prezenta unui ritm socabil pot fi utilizati ca predictori ai unei evolutii favorabile**

  grad de recomandare slab, nivel de evidență foarte redus

Maconochie IK, de Caen AR, Aickin R, et al. Part 6: pediatric basic life support and pediatric advanced life support: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 2015; 95: e147–e168

SUPORTUL VITAL AVANSAT

1. Etapa anterioara instalarii stopului cardiac

- Suportul vital avansat in cazul sugarului sau copilului peste varsta de 1 an aflat in stare critica in scopul prevenirii instalarii stopului cardiac

2. Suportul vital avansat in timpul stopului cardiac

3. Suport vital avansat -postresuscitare

Dupa reluarea activitatii spontane a cordului

- Managementul temperaturii: hipotermia terapeutica vs normotermia
- Oxigenarea (PaO2)
- Ventilatia (PaCO2)
- Lichide /inotrope
- EEG
- Factori de prognostic postresuscitare

Managementul temperaturii: hipotermia terapeutica vs normotermia

- la sugar sau copilul peste varsta de 1 an care raman comatoși în primele zile postresuscitare **este recomandat**:
  - masurarea continua a temperaturii
  - controlul riguros al temperaturii centrale cu mentinerea unei valori tinta
  - tratarea agresivă a febrei (temperatură peste 37,5 C) sau a hipotermiei (temperatura sub 32 C)

Maconochie IK, de Caen AR, Aickin R, et al. Part 6: pediatric basic life support and pediatric advanced life support: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 2015; 95: e147–e168

de Caen AR, Berg MD, Chameides L, et al.Gooden . Part 12: pediatric advanced life support: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation. 2015;132(suppl 2):S526–S542*.

Managementul temperaturii: hipotermia terapeutica vs normotermia

ILCOR 2015- CoSTR

- **Stop cardiac extraspitalicesc la sugar si copilul peste 1 an- controlul temperaturii inseamna hipotermie usoară (32-34ºC) sau normotermia (36-37,5˚ C)**
- **grad de recomandare slab, nivel de evidență moderat**

- **Pentru stopul cardiac intraspitalicesc la sugar si copilul peste 1 an, nu există o recomandare de consens internațional asupra unei valori țintă a temperaturii (hipotemie terapeutică sau normotermie).**

Moler FW, Silverstein FS, Holubkov R, et al. THAPCA Trial Investigators. Therapeutic hypothermia after out-of-hospital cardiac arrest in children. N Engl J Med 2015; 372:1898–190

Managementul temperaturii : hipotermia terapeutica vs normotermia

- **hipotermia ușoară sau normotermia trebuie sa fie menținute cel puțin 24 ore postresuscitare**

Recomandari ghidurile AHA 2015- resuscitare infara spitalului

- **normotermia se mentine continuu cel putin 5 zile SAU 2 zile hipotermie terapeutica (32-34 C) si 3 zile de normotermie (AHA clasa IIa, LOE B-R)**

de Caen AR, Berg MD, Chameides L, et al.Gooden . Part 12: pediatric advanced life support: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation. 2015;132(suppl 2):S526–S542*.

Oxigenarea si ventilatia post resuscitare

Val tinta a PAO2, PaCO2?

ILCOR 2015 CoSTR -new!

- masurarea PaO2 post resuscitare si stabilirea unei val tinta in functie de statusul anterior al copilului (titrarea administrarii de oxigen)
- in absenta unor date de spre pacient -asigurarea normoxemiei (o val a SaO2 peste 94%)

  nivel de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb, LOE B- NR)
- măsurare a PaCO2 și asigurarea normocapniei.
- o valoarea țintă a PaCO2 se va stabili în acord cu contextul clinic și starea copilului care a prezentat stopul cardiac și se vor evita hipercapnia sau hipocapnia severă.

  nivel de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb,LOE C-LD)

Ferguson LP, Durward A, Tibby SM. Relationship between arterial partial oxygen pressure after resuscitation from cardiac arrest and mortality in children. Circulation. 2012;126:335–342.
Del Castillo J, López-Herce J, Matamoros M, et al. Iberoamerican Pediatric Cardiac Arrest Study Network RIBEPCI. Hyperoxia, hypocapnia and hypercapnia as outcome factors after cardiac arrest in children. Resuscitation 2012; 83:1456–1461.

Lichide si substante vasopresoare/inotrope postresuscitare

Scop:-evitare hipotensiune

ILCOR 2015 CoSTR - new!

recomandarea de a utiliza lichide și substanțele vasoactive/cardiotonice parenteral pentru a menține o tensiune arterială sistolică mai mare cu cel puțin 5% din valoarea corespunzatoare vârstei copilului

grad de recomandare puternic, cu nivel de evidență foarte redus (AHA clasa I, LOEC-LD)

- **daca este posibil monitorizarea continua invaziva a TA este recomandata pentru identificarea si tratarea hipotensiunii**

Topjian AA, French B, Sutton RM, et al. Early postresuscitation hypotension is associated with increased mortality following pediatric cardiac arrest. Crit Care Med. 2014;42:1518–1523.

Valoarea EEG postresuscitare

ILCOR 2015-CoSTR new!

- **EEG realizată în primele 7 zile post stop cardiac la copil poate fi utilă ca și variabilă de prognostic neurologic la externare**
  - **nivel de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb, LOE C-LD)**

Factori de prognostic postresuscitare

ILCOR 2015 CoSTR

Mai multe variabiles se vor lua in considerare pentru evaluarea evolutiei postresuscitare

- Grad slab de recomandare, nivel de evidenta foarte redus

- **Clinic- reflexul pupilar**
- **Biomarkeri neurologici sau serici (in primele 72 ore post resuscitare)**

Fink EL, Berger RP, Clark RS, et al. Serum biomarkers of brain injury to classifyoutcome after pediatric cardiac arrest. Crit Care Med 2014;42:664–74.103.
Abend NS, Topjian AA, Kessler SK, et al. Outcome prediction by motor andpupillary responses in children treated with therapeutic hypothermia aftercardiac arrest. Pediatr Crit Care Med 2012;13:32–8.104.
Topjian AA, Lin R, Morris MC, et al. Neuron-specific enolase and S-100B areassociated with neurologic outcome after pediatric cardiac arrest. Pediatr CritCare Med 2009;10:479–90.105.
Topjian AA, Clark AE, Casper TC, et al. Early lactate elevations following resus-citation from pediatric cardiac arrest are associated with increased mortality.Pediatr Crit Care Med 2013;14:e380–7.

RESUSCITARE LA NOU NASCUT

New!

- **Suportul tranzitiei de la viata intrauterina la cea extrauterina**
  - **varsta gestationala, tonusul, respiratia/plans**

Modificari ale algoritmului in cazul nou nascutului

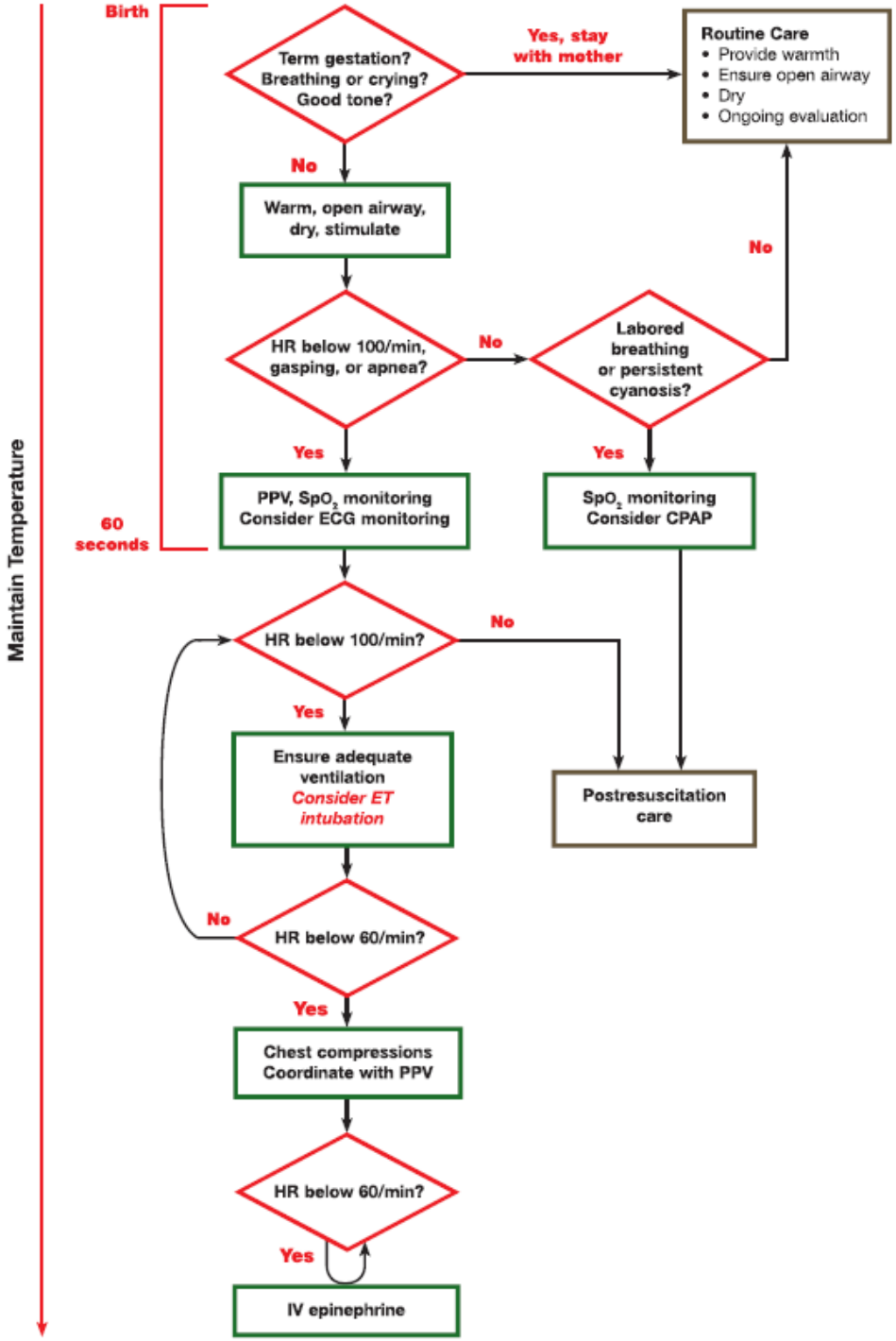
1. **evaluarea initiala si interventia in primele 60 secunde de la nastere**

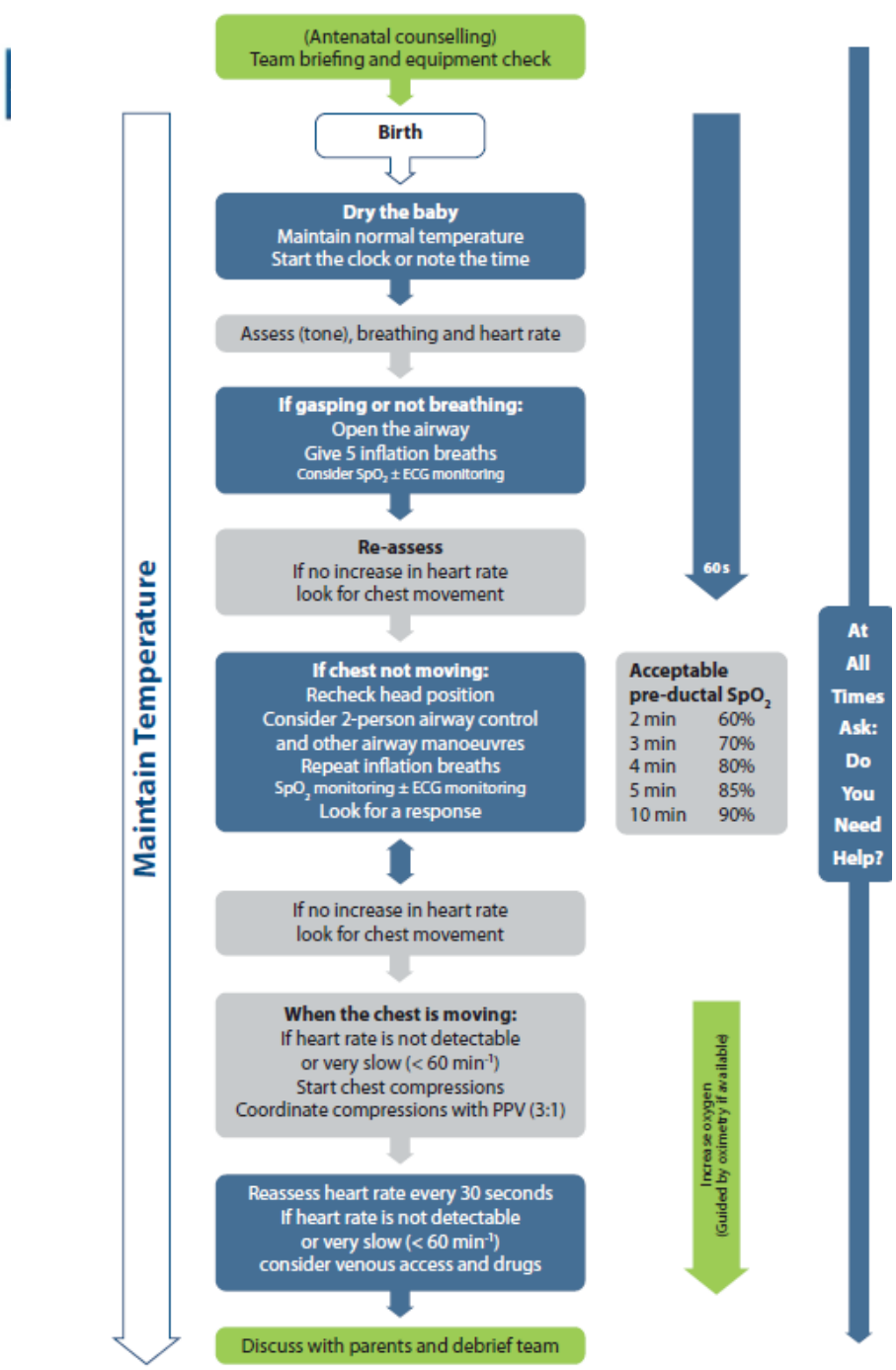
" the golden minute"

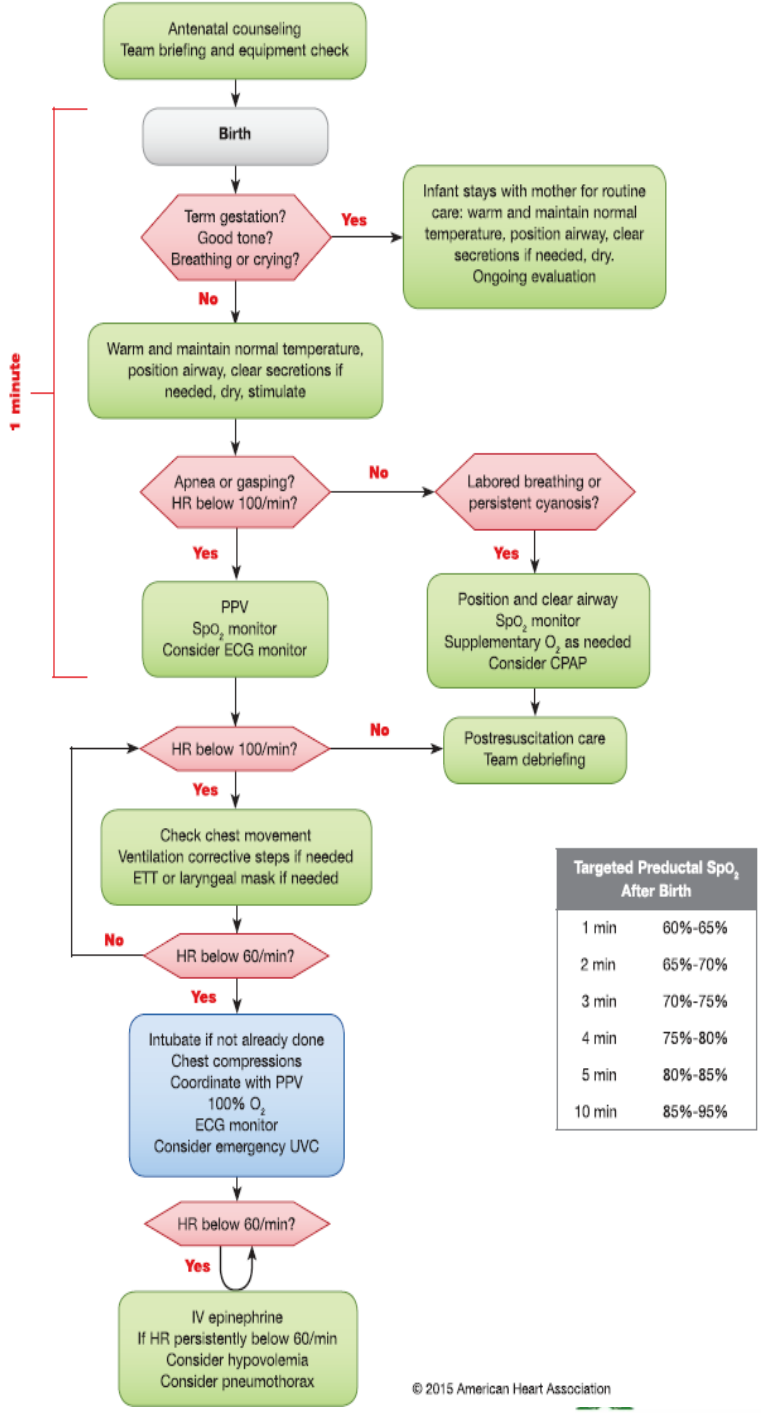
- **ingrijire de rutina**
- **prezenta sau nu a respiratiei si suport ventilator initial**
  - **prezenta meconiului si calea aeriana**
- **evaluarea frecventei cardiace**

2. **masuri de mentinere a temperaturii corporale si de evitare a hipotermiei**

Algoritm de resuscitare nou nascut




(Antenatal counselling)
Team briefing and equipment check
Birth
Dry the baby
Maintain normal temperature
Start the clock or note the time
Assess (tone), breathing and heart rate
If gasping or not breathing:
Open the airway
Give 5 inflation breaths
Consider SpO2 ± ECG monitoring
Re-assess
If no increase in heart rate
look for chest movement
If chest not moving:
Recheck head position
Consider 2-person airway control
and other airway manoeuvres
Repeat inflation breaths
SpO2 monitoring ± ECG monitoring
Look for a response
If no increase in heart rate
look for chest movement
When the chest is moving:
If heart rate is not detectable
or very slow (< 60 min-1)
Start chest compressions
Coordinate compressions with PPV (3:1)
Reassess heart rate every 30 seconds
If heart rate is not detectable
or very slow (< 60 min-1)
consider venous access and drugs
Discuss with parents and debrief team
Maintain Temperature
60s
Increase oxygen
(Guided by oximetry if available)
At All Times Ask: Do You Need Help?
Acceptable pre-ductal SpO2
2 min 60%
3 min 70%
4 min 80%
5 min 85%
10 min 90%


Antenatal counseling
Team briefing and equipment check
Birth
Term gestation?
Good tone?
Breathing or crying?
Yes
Infant stays with mother for routine care: warm and maintain normal temperature, position airway, clear secretions if needed, dry. Ongoing evaluation
No
Warm and maintain normal temperature, position airway, clear secretions if needed, dry, stimulate
1 minute
Apnea or gasping?
HR below 100/min?
No
Labored breathing or persistent cyanosis?
Yes
Yes
PPV
SpO2 monitor
Consider ECG monitor
Position and clear airway
SpO2 monitor
Supplementary O2 as needed
Consider CPAP
HR below 100/min?
No
Postresuscitation care
Team debriefing
Yes
Check chest movement
Ventilation corrective steps if needed
ETT or laryngeal mask if needed
No
HR below 60/min?
Yes
Intubate if not already done
Chest compressions
Coordinate with PPV
100% O2
ECG monitor
Consider emergency UVC
HR below 60/min?
Yes
IV epinephrine
If HR persistently below 60/min
Consider hypovolemia
Consider pneumothorax
Targeted Preductal SpO2 After Birth
1 min 60%-65%
2 min 65%-70%
3 min 70%-75%
4 min 75%-80%
5 min 80%-85%
10 min 85%-95%
© 2015 American Heart Association

Managementul cordonului ombilical

Clamparea cordonului ombilical

ILCOR 2015-CoSTR

- La nou născutul la termen și prematur care nu necesită resuscitare, clamparea cordonului ombilical se va face tardiv, (dupa 30- 60 secunde) de la momentul nașterii

  grad slab de recomandare, nivel de evidență foarte scăzut

- nu exista recomandare in privinta eficientei sau sigurantei clamparii tardive a cordonului ombilical in cazul nou nascutului prematur care necesita resuscitare dupa nastere

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.

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“Mulgerea”cordonului ombilical la prematurii sub 28 sapt de gestatie

ILCOR 2015 –CoSTR

- **Nu se recomanda acest procedeu de rutina la toti prematurii sub 28 sapt de gestatie (insuficiente evidente privind eficienta si siguranta procedurii)**

  grad slab de recomandare, nivel de evidenta redus (AHA clasa IIb, LOE-B LD)

  - **se va considera in situatii individuale sau in scop de cercetare**
    - **amelioreaza TAM , indicii hematologici, reduce hemoragia intracraniana**
    - **nu amelioreaza outcome-ul pe termen lung**

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.

Importanta mentinerii temperaturii nou nascutului si strategii de evitare a hipotermiei

ILCOR 2015 CoSTR- new!

- **inregistrarea valorii temperaturii nou nascutului la admiterea in unit neonatologica**
  - **reprezinta un predictor al morbiditatii si mortalitatii la toate grupele de varsta gestationala precum si un indicator de calitate**

  grad de recomandare puternic, nivel de evidenta moderat (AHA clasa I LOE B NR)

- **nou nascutul fara fenomeme de asfixie la nastere trebuie mentinut normotermic (36,5-37,5°C) pe parcursul admiterii in unitatea de TI neonatologica si al stabilizarii**

  grad de recomandare puternic, nivel de evidente foarte redus (AHA clasa I LOE C LD)

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.
Wyckoff MH, Aziz K, Escobedo MB, et al. Part 13: neonatal resuscitation: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2015;132(suppl 2):S543–S560.
Willie J, Bruinenberg J, Roehr CC, Rüdiger M, Trevisanuto D, Urlesberger B. European Resuscitation Council Guidelines for Resuscitation 2005. Section 7. Resuscitation and support of transition of babies at birth. Resuscitation 2015; 95: 249-263.

Interventii de mentinere a temperaturii nou nascutului in sala de nastere

ILCOR 2015 - CoSTR

- La prematurul sub 32 saptamani de gestatie pentru **prevenirea hipotermiei** la admiterea in TI este utila combinarea mai multor interventii: caldura radianta, acoperire cu folie de plastic si caciulita pe cap, temperatura ambianta 23-25° C, paturi incalzite , saltelute incalzite

  grad de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb, LOE B-R,NR, LD,)

- se va evita hipertermia (temperatura peste 38 grade)

  grad de recomandare puternic, nivel de evidenta foarte redus (AHA clasa III-daunator LOE-EO)

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.
Wyckoff MH, Aziz K, Escobedo MB, et al. Part 13: neonatal resuscitation: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2015;132(suppl 2):S543–S560.
Willie J, Bruinenberg J, Roehr CC, Rüdiger M, Trevisanuto D, Urlesberger B. European Resuscitation Council Guidelines for Resuscitation 2005. Section 7. Resuscitation and support of transition of babies at birth. Resuscitation 2015; 95: 249-263.

Incalzirea nou nascutului hipotermic (temp sub 36 °C)

ILCOR 2015 CoSTR-new!

- **in cazul nou nascutului cu hipotermie neintentionata nu exista recomandari de consens in privinta rapiditatii incalzirii (mai mult sau mai putin de 0,5°C/h). Oricare metoda este potrivita**

  grad de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb, LOE C-LD)

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.
Wyckoff MH, Aziz K, Escobedo MB, et al. Part 13: neonatal resuscitation: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2015;132(suppl 2):S543–S560.
Willie J, Bruinenberg J, Roehr CC, Rüdiger M, Trevisanuto D, Urlesberger B. European Resuscitation Council Guidelines for Resuscitation 2005. Section 7. Resuscitation and support of transition of babies at birth. Resuscitation 2015; 95: 249-263.

Nasterea in spatii care nu ofera toate facilitatile de ingrijire ale unei sali de nastere moderne si complet echipate

ILCOR 2015 CoSTR -new!

pentru mentinerea normotermiei sau prevenirea hipotermiei la nou nascutul peste 30 sapt de gestatie , se recomanda:

- **introducerea membrelor si a trunchiul intr-un "sac de plastic " si apoi infasarea vs infasarea si plasarea intr-un patut deschis sau inchis**

  grad de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb, LOE C-LD)

- **contact tegumentar direct mama-nou nascut cu purtarea nou nascutului ca intr-un marsupiu vs infasare si asezare in patut sau incubator**

grad de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb, LOE C-LD)

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.
Wyckoff MH, Aziz K, Escobedo MB, et al. Part 13: neonatal resuscitation: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2015;132(suppl 2):S543–S560.
Willie J, Bruinenberg J, Roehr CC, Rüdiger M, Trevisanuto D, Urlesberger B. European Resuscitation Council Guidelines for Resuscitation 2005. Section 7. Resuscitation and support of transition of babies at birth. Resuscitation 2015; 95: 249-263.

CEEA

European Society of Anaesthesiology ESA

World Federation of Societies of Anaesthesiologists

Importanta mentinerii temperaturii nou nascutului si strategii de evitare a hipotermiei

ILCOR 2015 CoSTR- nou nascutul provenit din mame hipotermice sau hipertermice

- **nu exista recomandari de consens privind managementul hipertermiei materne chiar daca aceasta poate determina efecte adverse neonatale (cresterea mortalitatii, risc de convulsii, status neurologic alterat)**

  nu exista suficiente evidente

- **nu exista recomandari de consens privind managementul hipotermiei materne**

  nu exista suficiente evidente

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.
Wyckoff MH, Aziz K, Escobedo MB, et al. Part 13: neonatal resuscitation: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2015;132(suppl 2):S543–S560.
Willie J, Bruinenberg J, Roehr CC, Rüdiger M, Trevisanuto D, Urlesberger B. European Resuscitation Council Guidelines for Resuscitation 2005. Section 7. Resuscitation and support of transition of babies at birth. Resuscitation 2015; 95: 249-263.

Evaluare initiala si interventii

- Evaluarea prezentei respiratiei si strategii de asigurare a ventilatiei adecvate

- Evaluarea frecventei cardiace

1. Evaluare respiratiei si strategii de ventilatia

Managementul respirator al nou născutului depinde de prezența sau nu a respirațiilor spontane și de efortul respirator

a. Aplicare CPAP

ILCOR 2015-CoSTR

- **la nou nascutul prematur care prezinta sd de detresa repiratorie utilizarea initial a CPAP in locul intubatiei si ventilatiei controlate**

grad de recomandare slab, nivel de evidenta moderat (AHA clasa IIb LOE-B R)

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.
Morley CJ, Davis PG, Doyle LW, Brion LP, Hascoet JM, Carlin JB. Nasal CPAP orintubation at birth for very preterm infants. N Engl J Med 2008;358:700
Network SSGotEKSNNR, Finer NN, Carlo WA, et al. Early CPAP versus surfactantin extremely preterm infants. N Engl J Med 2010;362:1970–9.
Dunn MS, Kaempf J, de Klerk A, et al. Randomized trial comparing 3approaches to the initial respiratory management of preterm neonates. Pediatrics 2011;128:e1069–76.219.

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STRATEGII VENTILATORII IN SALA DE NASTERE

b. Aplicarea ventilatiei cu presiune pozitiva (PPV)±PEEP

PPV se poate aplica prin intermediul mastii faciale /tub traheal, masca laringiana cu ajutorul balon Ambu, balonului care utilizeaza flux de oxigen pentru expansiune, dispozitiv mecanic de ventilatie cu piesa in T

STRATEGII VENTILATORII IN SALA DE NASTERE

b. Aplicarea ventilatiei cu presiune pozitiva (PPV)±PEEP

ILCOR 2015-CoSTR

- aplicarea PPV este eficienta cu oricare din dispozitivele de ventilatie utilizate

  grad de recomandare slab, nivel de evidenta foarte scazut (AHA clasa IIa LOE B-R)

ILCOR 2015-C0STR- new!

- monitorizarea ventilatiei – (presiunea inspiratorie, VC, val CO2 exhalat) este utila dar eficienta lor in privinta evol nu este stabilita

  grad de recomandare slab, nivel de evidenta foarte scazut (AHA clasa IIb LOE C-LD)

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.
Szyld E, Aguilar A, Musante GA, Vain N, Prudent L, Fabres J, Carlo WA; Delivery Room Ventilation Devices Trial Group. Comparison of devices for newborn ventilation in the delivery room. *J Pediatr. 2014;165:* 234–239

STRATEGII VENTILATORII IN SALA DE NASTERE

b. Aplicarea ventilatiei cu presiune pozitiva (PPV)±PEEP

ILCOR 2015-CoSTR-new!

- nu recomanda utilizarea de rutina a insuflatiei sustinute peste 5 secunde pentru nou nascutul prematur care nu respira spontan imediat dupa nastere
- insuflarea prelungita se va lua in considerare in circumstante clinice individuale sau in scop de cercetare

grad de recomandare slab, nivel de evidenta foarte scazut (AHA clasa II b LOE B-R)

ILCOR 2015-CoSTR

- Utilizarea PEEP (5 cm H2O) pentru nou nascutul prematur in sala de nastere

grad de recomandare slab, nivel de evidenta foarte scazut (AHA clasa IIb LOE B-R)

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.
Lista G, Boni L, Scopesi F, et al. Sustained lung inflation at birth for preterminfants: a randomized clinical trial. Pediatrics 2015;135:e457–64.19.
Harling AE, Beresford MW, Vince GS, Bates M, Yoxall CW. Does sustained lunginflation at resuscitation reduce lung injury in the preterm infant? Arch DisChild Fetal Neonatal Ed 2005; 90: F406–10
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STRATEGII VENTILATORII IN SALA DE NASTERE

b. Aplicarea ventilatiei cu presiunie pozitiva (PPV)±PEEP pe masca laringiana la nou nascutul la termen sau prematur peste 34 sapt

ILCOR 2015-CoSTR

- **atunci cand ventilatia pe masca este nesatisfacatoare, masca laringiana reprezinta o alternativa la intubatia traheala**

grad de recomandare slab, nivel de evidenta redus (AHA IIb, LOE B-R)

- **masca laringiana este recomandata atunci cand nu se poate realiza ventilatie cu presiune pozitiva pe masca si intubatia traheala nu este posibila sau nu s-a putut realiza**

grad de recomandare puternic bazat pe opinia expertilor (AHA clasa I, LOE C-EO)

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.

Prezenta meconiului in lichidul amniotic si abordarea caii aeriene in vederea aspirarii meconiului

ILCOR 2015 CoSTR

- Nou nascut vigoros la nastere nu necesita intubatie pt aspirarea meconiului

- Nou nascut nevigoros cu detresa respiratorie
  - nu necesita intubatie si aspiratie traheala a meconiului de rutina

    nivel de recomandare slab, nivel de evidenta foarte scazut (AHA clasa IIb, LOE –LD)

  - necesita initierea ventilatiei cu presiune pozitiva in primul minut de viata daca respiratia este inadecvata sau nu respira sau daca FC este sub 100/min
  - necesita IOT si aspiratie traheala doar daca exista suspiciunea unei obstructii cu dop de meconiu

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular art 13: neonatal resuscitation: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2015;132(suppl 2).
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Concentratia de oxigen in cadrul resuscitarii

Nou nascut la termen

- daca necesita suport respirator cu presiune pozitiva- utilizare initial oxigen 21 % (nu 100%)
  - Cresterea conc de oxigen titrata pt atingerea saturatiei la nivel preductal in limitele procentuale masurate la nou nascutul la termen la nivelul marii dupa nastere vaginala

daca este nevoie si de masaj cardiac- ILCOR 2015 CoSTR new!

- utilizarea O2 in concentratii crescute pana la 100% in cursul resuscitarii - grad de recomandare slab bazat pe opinia expertilor grupului de lucru (AHA clasa Iia, LOE EO
- reducerea concentratiei de oxigen imediat ce FC este restabilita -grad de recomandare puternic, nivel de evidenta foarte redus

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.
Mariani G, Dik PB, Ezquer A, et al. Pre-ductal and post-ductal O2saturation inhealthy term neonates after birth. J Pediatr 2007;150:418–21.
Dawson JA, Kamlin CO, Vento M, et al. Defining the reference range for oxygens aturation for infants after birth. Pediatrics 2010;125:e1340–7.158.

Concentratia de oxigen in cadrul resuscitarii

Nou nascut prematur (sub 35 sapt de gestatie)

ILCOR 2015 CoSTR new!

- initierea resuscitarii cu aer atmosferic sau conc scazute de O2 (sub 30 %) -
  - Conc de oxigen se va titra pentru a atinge saturatia in oxigen la nivel preductal masurata la nivelul marii comparativ cu nou nascutul la termen

    grad de recomandare puternic, nivel de evidenta moderat (AHA clasa 1, LOE B-R)
- nu se recomanda initierea resuscitarii cu conc crescute de O2 (65-100%)

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.
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Evaluare initiala si interventii

- Evaluarea prezentei respiratiei si strategii de asigurare a ventilatiei adecvate

- Evaluarea frecventei cardiace

Evaluarea frecventei cardiace

- ascultatie, EKG, pulsoximetrie?
- cresterea FC –cel mai sensibil indicator al eficientei masurilor terapeutice

ILCOR 2015 CoSTR –new!

- La nou nascutul la termen si prematur care necesita resuscitare EKG (3 derivatii) permite evaluarea rapida si cu acuratete a FC

  grad de recomandare slab, nivel de evidenta foarte scazut (AHA clasa IIb, LOE C-LD)

  - Utilizarea EKG nu exclude utilizarea pulsoximetrului pt evaluarea oxigenarii

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.
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Suportul circulator

ILCOR 2015 CoSTR

- **in cazul masajului cardiac este de preferat metoda cu cele 2 police la nivelul sternului si palmele care inconjoara toracele**

  grad de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb, LOE C-LD).

- **compresiunile toracice se vor realiza in 1/3 inferioara a sternului cu o profunzime de 1/3 din diametrul anteoposterior al toracelui**

  grad de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb, LOE C-LD).

- **mentinerea raportului 3:1 (compresiuni/ventilatie)**

  grad de recomandare slab, nivel de evidenta foarte redus (AHA clasa IIb, LOE C-LD).

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.

Hipotermia terapeutica in conditiile nou nascutului aflat in locatii cu posibilitati terapeutice limitate

ILCOR 2015-CoSTR

- hipotermia terapeutica se va aplica la nou nascutul la termen sau aproape de termen care prezinta fenomemene de encefalopatie post leziuni hipoxico-ischemice moderate/severe

- protocol de realizare clar definit, similar celui din locatii cu posibilitati de ingrijire si monitorizare

- racire inceputa cat mai precoce (in primele 6 ore, control strict al temperaturii 33-34°C pentru 72 ore, reincalzire lenta cel putin in 4 ore)

grad de recomandare slab, nivel de evidenta foarte redus (AHA Clasa IIb, LOE B-R)

Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: Neonatalresuscitation: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation 2015;95:e169–e201.

Concluzii

La sugar si copilul peste 1 an

- calitatea CPR mai importanta decat o anumita secventa a masurilor de suport vital bazal
- masuri de prevenire a instalarii stopului cardiac in cazul copiilor aflati in stare critica
- importanta modalitatilor de resuscitare extracorporeala si de monitorizare avansata cand sunt disponibile

La nou nascut

- strategiile de evaluare initiala si interventie precoce
- mentinerea normotermiei

Va multumesc !