

Nové odporúčania ERC pre KPR 2015 v súvislostiach



Falck

Štefan Trenkler

I. klinika anestéziológie a intenzívnej medicíny

UPJŠ LF Košice

Falck Záchranná a.s. Košice

Ciel' KPR

- Obnovenie funkčného stavu ⇒ pred zastavením obehu



HEART-LUNG RESUSCITATION

Safar P, Brown TC, Holtey WJ, Wilder RJ

JAMA 1961;176:574-6

I FIRST AID: OXYGENATE THE BRAIN IMMEDIATELY

IF UNCONSCIOUS

Airway - TILT HEAD BACK

IF NOT BREATHING

**Breathe - INFLATE LUNGS 3-5 TIMES,
MAINTAIN HEAD TILT**

MOUTH-TO-MOUTH MOUTH TO NOSE
mask to adjunct, bag-mask

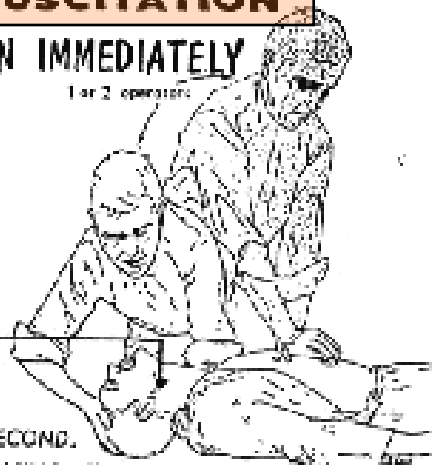
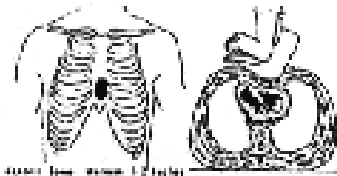
• FEEL PULSE

• IF PRESENT - CONTINUE LUNG INFLATIONS

• IF ABSENT -

Circulate - COMPRESS HEART ONCE A SECOND.

ALTERNATE 2-3 LUNG INFLATIONS WITH
15 STERNAL COMPRESSIONS UNTIL
SPONTANEOUS PULSE RETURNS.



for physician only

II START SPONTANEOUS CIRCULATION

Drugs - EPINEPHRINE: 10mg (10 CC OF 1:1000) I.V. OR 0.5mg INTRACARDIAC.
REPEAT LARGER DOSE IF NECESSARY

SODIUM BICARBONATE: APPROXIMATELY 0.75-0.50 CC (1/2 DOSE IN CHILDREN) I.V.
REPEAT EVERY 3 MINUTES IF NECESSARY

E. K. G. - + FIBRILLATION: EXTERNAL ELECTRIC DEFIBRILLATION REPEAT
SHOCK EVERY 1-3 MINUTES UNTIL FIBRILLATION REVERSED

• IF ASYSTOLE OR WEAK BEATS: EPINEPHRINE OR
CALCIUM I.V.



DO NOT INTERRUPT EXTERNAL
DEFIBRILLATION

Fluids - I.V. PLASMA, DEXTRAN, SALINE

Do not interrupt cardiac compressions and ventilation.
Tracheal intubation only when necessary.

AFTER RETURN OF SPONTANEOUS CIRCULATION USE VASOPRESSORS AS NEEDED.

e.g. NOREPINEPHRINE (Nephrad) I.V. DRIP

III SUPPORT RECOVERY

(Physician specialist)

Gauge EVALUATE AND TREAT CAUSE OF ARREST

Hypothermia START WITHIN 30 MINUTES IF NO SIGN OF CNS RECOVERY

Intensive Care SUPPORT VENTILATION: TRACHEOTOMY, PROLONGED CONTROLLED
VENTILATION, GASTRIC TUBE AS NECESSARY

SUPPORT CIRCULATION
CONTROL CONVULSIONS
MONITOR



prof. Peter Safar
(1924 - 2003)

Odporúčania pre KPR



GUIDELINES

- Standards for CPR and ECC JAMA 1974
- Standards and guidelines... JAMA 1980
- Standards and guidelines... JAMA 1986
- Guidelines... JAMA 1992
- International guidelines Resuscitation 2000
- ERC Guidelines for Resuscitation 2005
- RRC Guidelines for Resuscitation 2010
- ERC Guidelines for Resuscitation 2015

Ako vznikli odporúčania 2015



- Organizátor: ILCOR (svetové zastúpenie)
- Položených 169 otázok o KPR
- 232 posudzovateľov kvality publikácií z 39 krajín; vo dvojiciach
- Systém
PICO: pacient - intervencia - porovnanie - výsledok
GRADE: kvalita dôkazov + záťaž pre pacienta + vykonateľnosť (experti) + náklady

GRADE - prenos výskumu do praxe

Parametre

Metodologická kvalita (RCT,)

Dôležitosť stavu, ktorému opatrenie predchádza

Veľkosť liečebného efektu

Riziká spojené s liečbou

Zát'až pre pacienta

Rôzne hodnoty pacienta

Náklady

GRADE odporúčania Guyatt 2006

Odporúčanie	Kvalita evidence	Prínos, riziko zát'až
Silné odporúčanie	Vysoká	Prínos >> riziko, zát'až
	Stredná	Prínos >> riziko, zát'až
	Nízka	Prínos >> riziko, zát'až
Slabé odporúčanie	Vysoká	Prínos ≈ riziko, zát'až
	Stredná	Prínos ≈ riziko, zát'až
	Nízka	Neistota o prínose vz. riziko, zát'až

Wording in recommendations:

We recommend	We suggest	We might suggest	We do not
We should	Is reasonable	Might be	recommend
Is recommended	Is probably	reasonable	Should not be
Is indicated	recommended	Might be	performed
Is useful	Can be useful	considered	Is not useful
Is beneficial	Can be beneficial	Usefulness is	Is not beneficial
Is effective	Can be effective	unknown	Is not effective
			Is potentially harmful

BMJ

Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials

Gordon C S Smith and Jill P Pell

BMJ 2003;327;1459-1461



HULTONGETTY

Parachutes reduce the risk of injury after gravitational challenge, but their effectiveness has not been proved with randomised controlled trials

GRADE

- **Odporúčame**, aby operátori poskytli volajúcim osobám pri podozrení na NZO u dospelaj osoby - TA KPR

P: dospelá osoba s NZO

I : TA KPR

C: Bez TA KPR

O. Prežívanie 30 dní

- Kvalita evidencie:

Slabá

- Sila odporúčania:

Silná



PICO - ALS 714

- **P**acient
 - dospelý pacient s NZO
- **I**ntervencia
 - použitie supraglotickej pomôcky
- **C**omparison (porovnanie)
 - ET intubácia
- **O**utcome
 - 30-dňové (ročné) prežívanie; CPC skóre; aspirácia

J. Nolan

Ch. Deakin

ILCOR: Optimálnu metódu nie je možné stanoviť.

Najlepší postup, alebo kombinácia, bude závisieť od faktorov pacienta, fázy resuscitácie (počas, po) a zručnosti záchranára

Formulate question

Select outcomes

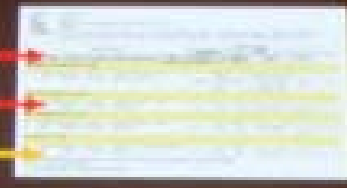
Rate importance

Outcomes across studies

Create evidence profile with GRADEpro

Rate quality of evidence for each outcome

P I C O	Outcome	Critical
	Outcome	Critical
	Outcome	Important
	Outcome	Not important



Summary of findings & estimate of effect for each outcome

High
Moderate
Low
Very low

RCT start high, obs. data start low

- Grade down**
1. Risk of bias
 2. Inconsistency
 3. Indirectness
 4. Imprecision
 5. Publication bias
- Grade up**
1. Large effect
 2. Dose response
 3. Confounders

Systematic review

Guideline development

Formulate recommendations:

- For or against (direction)
- Strong or weak (strength)

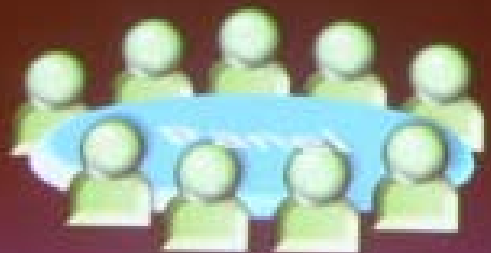
By considering:



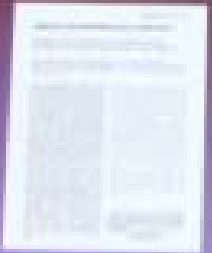
- Quality of evidence
- Balance benefits/harms
- Values and preferences

Revise if necessary by considering:

- Resource use (cost)



Rate overall quality of evidence across outcomes based on lowest quality of critical outcomes



- "We recommend using..."
- "We suggest using..."
- "We recommend against using..."
- "We suggest against using..."

Ako vznikli odporúčania 2015

- Osobné stretnutie autorov (február 2015) - konsenzus prítomných expertov
- Výsledok: dokument **CoSTR** - Vedecké závery a liečebné odporúčania
- Kontinenty/Európa: Odporúčania ERC pre KPR 2015.
Publikované 15.10.2015
- Preklady a implementácia národných resuscitačných rád (ČRR, SRR)





Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitationEUROPEAN
RESUSCITATION
COUNCIL

Part 1: Executive summary

2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations^{☆,☆☆}



Jerry P. Nolan^{*,1}, Mary Fran Hazinski¹, 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. Rea, Eunice M. Singletary, Jasmeet Soar, Andr Jonathan Wyllie, David A. Zideman

Resuscitation 95 (2015) 1–80



Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitationEUROPEAN
RESUSCITATION
COUNCIL

European Resuscitation Council Guidelines for Resuscitation 2015
Section 1. Executive summary



Koenraad G. Monsieurs^{a,b,*}, Jerry P. Nolan^{c,d}, Leo L. Bossaert^e, Robert Greiff^{f,g}, Ian K. Maconochie^h, Nikolaos I. Nikolaouⁱ, Gavin D. Perkins^{j,p}, Jasmeet Soar^k, Anatolij Truhlář^{l,m}, Jonathan Wyllieⁿ, David A. Zideman^o,
on behalf of the ERC Guidelines 2015 Writing Group¹

Kapitoly odporúčaní

1. Základná neodkladná resuscitácia dýchacích ciest a automatická externá defibrilácia
2. Rozšírená neodkladná resuscitácia
3. Zastavenie obehu
4. *Poresuscitácia*
5. *Ner*
6. *Resuscitácia novorodenca pri pôrode*
7. *Resuscitácia pri akútnych koronárnych syndrómoch*
8. *Resuscitácia pri akútnom infarkte myokardu*
9. *Resuscitácia pri akútnom mozgovom infarkte*
10. *Etika resuscitácie a rozhodovanie na konci života.*

RESUSCITATION

OFFICIAL JOURNAL OF THE EUROPEAN RESUSCITATION COUNCIL

EUROPEAN
RESUSCITATION COUNCIL
GUIDELINES FOR 2015
RESUSCITATION



EDITED BY
KONRAD G. MONSIEUR
JERRY S. ROZAN
Available online at www.sciencedirect.com
ScienceDirect

Urgentní medicína
je partnerem České
resuscitační rady



Urgentní medicína
je vydávána ve spolupráci
se Společností urgentní
medicíny a medicíny
katastrof ČSL JEP



Urgentní medicína
je vydávána ve spolupráci
se Slovenskou spoločnosťou
urgentnej medicíny
a medicíny katastrof SLS



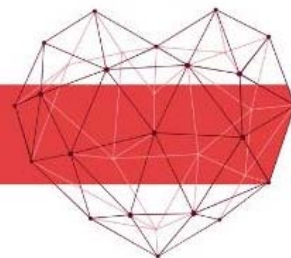
URGENTNÍ
MEDICÍNA

<http://urgentnimedica.cz/>

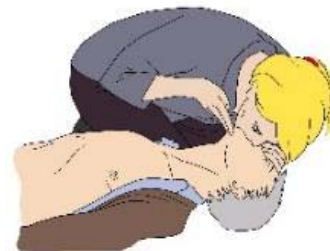


<http://www.cprguidelines.eu/>

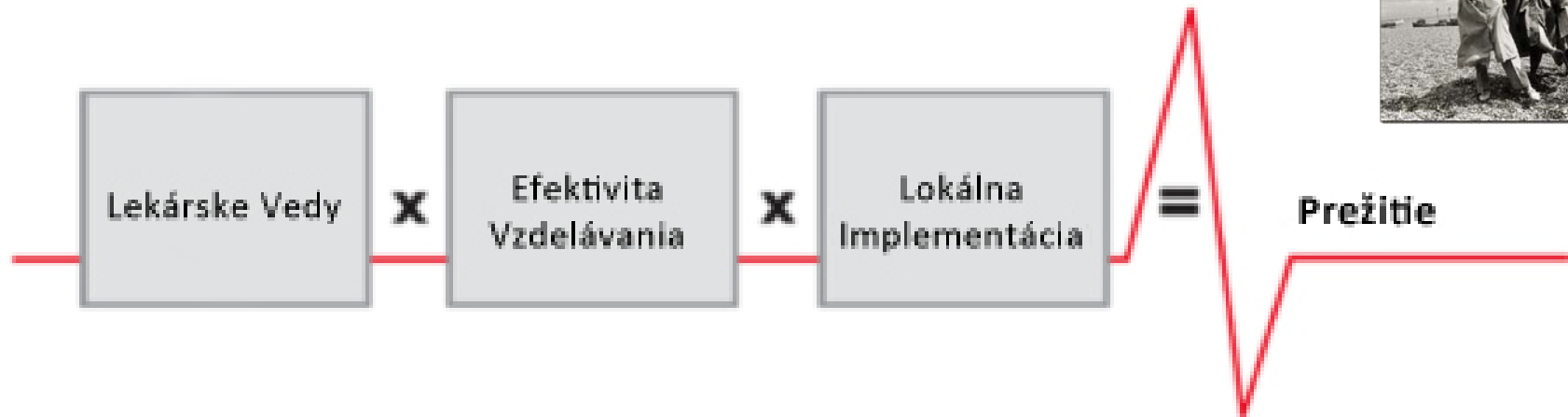
Charakteristiky odporúčaní 2015



- Sú to účinné postupy, ktoré vychádzajú zo:
 1. súčasných poznatkov
 2. výsledkov výskumu (viac ako 1000 citácií)
 3. existujúcej skúsenosti
a zároveň sú
 4. ľahko naučiteľné, zapamätateľné



Implementácia - Utstein formula



Resuscitation 84 (2013) 1487–1493

Contents lists available at [ScienceDirect](#)



ELSEVIER

Resuscitation

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

Commentary and concepts

The formula for survival in resuscitation[☆]

Eldar Søreide^{a,b,*}, Laurie Morrison^{c,d}, Ken Hillman^{e,f}, Koen Monsieurs^{g,h},
Kjetil Sundeⁱ, David Zideman^{j,k}, Mickey Eisenberg^l, Fritz Sterz^m,
Vinay M. Nadkarniⁿ, Jasmeet Soar^o, Jerry P. Nolan^p, Utstein Formula for Survival
Collaborators

9 Implementácia

- **Operačné stredisko SR**
 - rýchle rozpoznanie NZO
 - TA KPR
 - aktivácia ambulancie
 - sociálne siete, dobrovoľníci KPR?
- **ZZS**
 - kvalita resuscitácie - meranie, audit
- **Nemocnice**
 - poresuscitačné centrá (PKI, chladenie, ECLS, ...)
 - audit IHCA



Operačné stredisko
záchrannej zdravotnej služby
Slovenskej republiky



**RESUSCITATION
CENTER**

10 Princípy vzdelávania

- Nepostrádateľné
- Dospelý človek
- Nové prístupy pre 21.
- Simulácie
- Internet, sociálne sie



Najlepších 100 prostriedkov pre vzdelávanie 2014 (J. Hart)

c4lpt.co.uk/top100tools/analysis-2014/



See discussions, stats, and author profiles for this publication at: <http://www.researchgate.net/publication/262545606>

Serious Games: A New Paradigm for Education?

CHAPTER - JANUARY 2011

DOI: 10.1007/978-1-4471-2161-9_2



(a) Patient on the floor



(b) Check Response



(c) Emergency Call



(d) Open Airway



(e) CPR (30:2)



(a) Football field



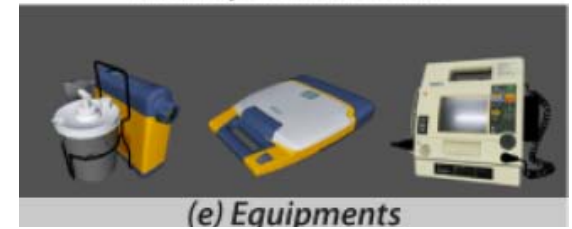
(b) Ambulance



(c) Hospital



(d) Helper and Patient



(e) Equipments

Falck Rescue 10.11.2015 Poprad



Debnáriková: Kde sa vzal, tu sa vzal

#FOAMed

Free Open Access Meducation - Medicínske vzdelanie
pre každého, všade, kedykoľvek...

**Bezplatný prístup k medicínskemu vzdelávaniu –
pre každého, kedykoľvek, kdekoľvek**



- Sociálne siete + edukačné WWW materiály
- Ak chcete vedieť, ako praktizovať medicínu:
 - pred 3 rokmi: čítajte učebnice
 - pred rokom: čítajte časopisy
 - v súčasnosti: chod'te na dobrú konferenciu (Ostrava)
 - v budúcnosti: používajte **FOAM**

Joe Lex 2012



Živé prenosy z 17th Colours of Sepsis



LOGIN

username

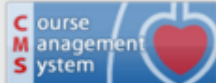


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[Guidelines 2005 articles and misc.](#)

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Registries

[Utstein Templates](#)

Please note that the new European Resuscitation Guidelines were released on 15th October 2015. Manuals will be updated accordingly between this date and the beginning of 2016. Please keep this in mind when ordering large volumes.

Free download of the ERC Guidelines 2015

Download the guidelines, summary and posters. Watch videos of the authors.

www.cprguidelines.eu

Welcome !

On this site you will find the **2015 European Guidelines on Resuscitation**. Find information on our **courses**. Register and interact with the resuscitation community through our **forum**.

Basic Life Support & AED

Advanced Life Support

Paediatric Life Support

Course Calendar

Congress

Publications

News

- [Kids save lives - Now endorsed by the WHO! \(new\)](#)
- [Jerry Nolan has become a Giant of Resuscitation](#)
- [Sad loss of ILCOR Chairman Ian Jacobs](#)
- [EuReCa ONE - European Registry of Cardiac Arrest](#)
- [Ongoing study European Dispatch Center Survey](#)
- [ERC Statement on targeted temperature management](#)

Events

Date	Title
30/05/16	EMS 2016 - From Science to Survival
24/09/16	Resuscitation 2016 - Education, Reykjavik, Iceland
28/09/17	Resuscitation 2017, Freiburg, Germany

ERC public forum

<https://www.erc.edu/forum>

Links

- [National Councils](#)
- [ILCOR](#)
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- [Newsletters](#)



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EUROPEAN RESUSCITATION ACADEMY

It takes a system to save a life.



10 krokov podľa Akadémie ERC



1. Rýchly výjazd ambulancie (< 60 sek)
2. Operátorom asistovaná KPR
3. Vysoko kvalitná KPR
4. Použitie AED záchrannými systémami
5. Prístup verejnosti k defibrilátorom
6. Zvukový záznam resuscitácie; hodnotenie
7. Financovanie z ďalších zdrojov
8. Liečebná hypotermia
9. Firemná kultúra excelentnosti (kvalita, bezpečnosť)
10. Register zastavení obehu



Stavanger 14.3.2014

Spolupráca operačné stredisko - ZZS

- Projekt Stavanger
- Krajské operačné stredisko Žilina + Falck Záchranná
 - včasné rozpoznanie NZO
 - telefonicky asistovaná KPR
 - včasné vyslanie posádky (< 1 min)



Americké odporúčania 2015 - *kvalita*



Part 4: Systems of Care and Continuous Quality Improvement

**GUIDELINES
2015** CPR & ECC

Part 5: Adult Basic Life Support and Cardiopulmonary Resuscitation Quality

Part 11: Pediatric Basic Life Support and Cardiopulmonary Resuscitation Quality

Adult Cardiac Arrest Checklist³



On Arrival ▶▶▶▶▶

CHECK

- Effective chest compressions** are ongoing and compressors changed regularly?
- Is the defib in **manual mode**?
- Have we got sufficient O₂? Is it attached to BVM and bag inflated?
- Is the chest rise adequate?
- If traumatic arrest; has HEMS been considered?
- Has a 2nd crew been requested / dispatched?
- Family supported?

After ALS initiated ▶▶▶▶▶



CHECK

- Does everyone know each other's names?** (If not, introduce self and indicate for others to state name and skill level)
- Are effective continuous compressions ongoing?
- Is there an ETCO₂ waveform present and printed? If value <10mmHg (<1.5 kPa) ...why?**
- Is the ECG rhythm being assessed every 2 mins?
- Is there bilateral air entry?
- Have we checked for tension pneumothorax?
- Have we got access yet?
Is it definitely PATENT?
- Has fluid been given if hypovolaemia suspected?
- Have we checked for gastric distension?
- Adrenaline** given and **amiodarone** if required?
- Has **BM** been checked?
Other reversible causes?

Post ROSC ▶▶▶▶▶

CHECK

- What is the respiration rate?
<10 - are we ventilating: **1 breath every 6 seconds?**
>10 - are sats titrated to 94-98%?
- Have we got a FULL set of obs? (BP, HR, Sats, BM, 12-lead ECG, ETCO₂)?
- What is the BP? If <90, have legs been raised and a 250ml bolus of fluid given?
- What is the pulse rate? If <60 and symptomatic has atropine 0.5mg been given?
- Have further fluid boluses been considered if **hypovolaemia** suspected?

Parameter	FZ 2011	FZ 2012	FZ 2013	FZ 2014	  10.2014
Primary dispatches	N=126 914	N=131 579	N=134 494	N =162000	N=40,313
Cardiac arrest	2.3	2.4	2.1	2,07	1,66
CPR	46.5	46.2	45.4	44.5	41.9
At home	73.0	71.4	69.4	69.5	68.3
Bystander CPR	65.8	56.8	53.5	54.3	55.8
Cardiac aetiology	70.0	70.1	65.2	63.8	81.4
Shockable rhythm	27.7	18.3	20.8	22	23.8
ROSC in hospital	32.5	25.5	29.3	26	23.1
30 days survival	6.5	6.8	8.7	?	8.9

European Resuscitation Academy Prague 2015

RESUSCITATION 2015
THE QUALITY CONGRESS

29-30-31 OCTOBER PRAGUE CZECH REPUBLIC

www.resuscitation2015.eu - www.ecc.edu



Radek Mathauser, ČRR



M. Ilavský, FZ



Česko-Slovenská resuscitačná akadémia



Welcome in Ostrava!!!

COLOURS of Sepsis 18th



Ostrava 2016
before as PG Course on Sepsis and MODS

Ostrava, 26.-29. leden 2016

16:00 - 16:45 PŘEDNÁŠKA S PANELOVOU DISKUSÍ

Předsedající: Prof. MUDr. P. Ševčík, CSc., (Ostrava), MUDr. Z. Šerclo
MUDr. M. Paulíny, Ph.D., (Bratislava), MUDr. I. Sas (Brno)
Prof. MUDr. P. Dítě, DrSc., (Ostrava)

Akutní pankreatitida

Prof. MUDr. P. Dítě, DrSc., (Ostrava)

16:45 - 17:00

Přestávka na kávu

17:00 - 17:45 PŘEDNÁŠKA S PANELOVOU DISKUSÍ

Předsedající: Prof. MUDr. K. Cvachovec, CSc., (Praha), Doc. MUDr. J. Firment, Ph.D., (Košice),
MUDr. R. Kula, CSc., (Ostrava), PhDr. R. Zoubková (Ostrava)
MUDr. I. Zýková (Liberec)

"Povědomí o sepsi" - nemáme kostlivce ve skříní?

MUDr. I. Zýková (Liberec)

vaše
RUKY
môžu **ZACHRÁNIŤ** ešte viac
ŽIVOTOV
S NOVÝMI ODPORUČANÍAMI



16. OKTÓBER 2015
EURÓPSKY DEŇ ZÁCHRANY ŽIVOTA
WWW.RESTARTAHEART.EU | #restartaheart

OC OPTIMA, OC GALÉRIA, PRI URBANOVEJ VEŽI – CENTRUM
KOŠICE, 16:00–18:00



**Košice: KAIM, Falck, KZ, SČK, SHZ
-1050 precvičených**



Čo ďalej



- **Operátori, záchranári, nemocnice**
- **Spoločenstvá, organizácie**
 - Ministerstvo školstva
 - komory
 - obce
- **Precvičovať KPR; povinne v školách od 12 rokov**
- **Školiť každého, inštruktori**
- **Register zastavení obehu**
- **Resuscitácia v nemocnici, prevencia zastavenia**
- **Povinná recertifikácia lekárov**
- **Etika, implementácia EOLD**



Misia pre všetkých

Kultúra bezpečnosti a kvality
Misia excelentnosti



**EXCELLENCE
IS NOT AN ACT
IT'S
A HABIT**



Viedeň 2013 - úspešne resuscitovaní





Ďakujem za pozornosť