GLOBAL
HEALTHCARE
INITIATIVE
for Ukraine

GLOBAL HEALTHCARE INITIATIVE for Ukraine

Ukrainian Intensive care medicine as key specialty for sustainable nationwide acute care

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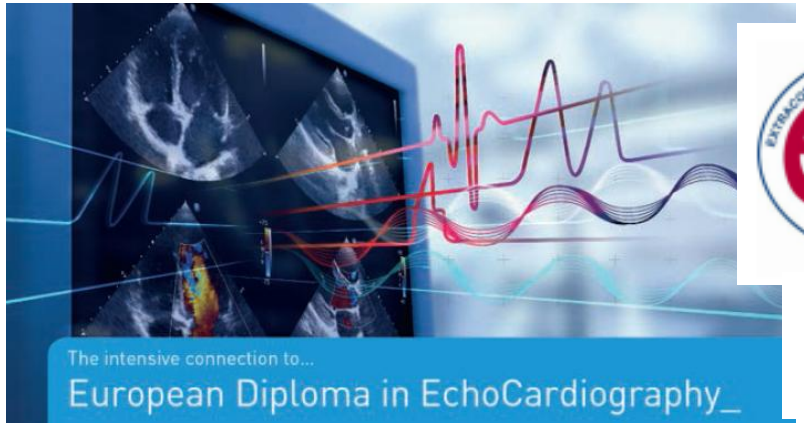


Conflict of interest

- Research grants: AZV 18-06-00417 (Prospective randomized double-blind study of efficacy and safety of 1c class antiarrhythmic agent (propafenone) for supraventricular arrhythmias in septic shock), Gilead Sciences (Immune boosting in severe Covid19), , AZV NU22-B-147 (Impact of SARS-CoV-2 viral load estimate on therapeutic effects of remdesivir)
- Research support: ESICM Stoutenbeek Award (Dutch Society of Critical Care)
- Speaker Fees: FMC, GML-Biomedica, Gilead Sciences, Bbraun, AOP Orphan
- Grant to organize educational meetings: None
- Advisory board: None
- Inventor and patent holder: Lactocitrate®, EU patent (EP2609915B1), Canadian patent (No.2799624)

What is intensive care medicine ?

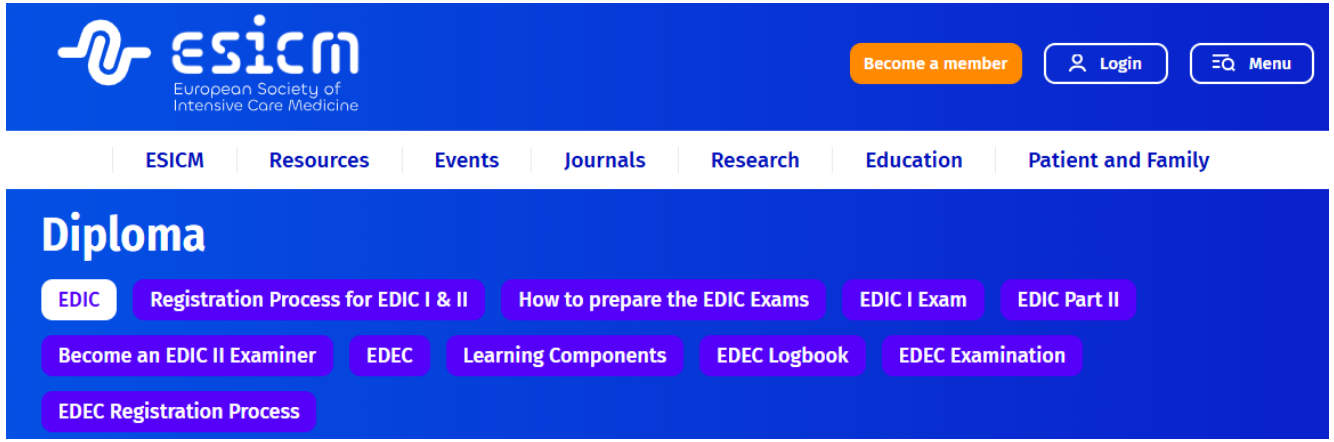
- Specialty that guarantees survival of the critically ill
- Single most expensive specialty (!)
  - …..Czechia 20% (28 billions) of all 140 billions for an acute care/year
  - …..ICU: 8-9% of hospital beds, EU 11.5 bed/100.000 inhabitants
- ICU: in time, shortest possible LOS, reserves for following hospital LOS and discharge home
- Demanding requirements for qualification
  - Supraspecialty (2 years in EU, eventually EDIC) or basic medical specialty (6-6.5 years)
  - ESICM since 1985, Cobatrice Syllabus
- <u>Smart resilience</u>: demand for lowest possible number of beds with possible expansion when required

CoBaTrICE

COMPETENCY-BASED TRAINING IN INTENSIVE CARE MEDECINE IN EUROPE

ESICM Academy

Last updated : 05/12/2024 - 13940 views



ICU: Maintaining quality for reasonable costs

Intensive Care Med
https://doi.org/10.1007/s00134-020-06042-1

Intensive Care Med
https://doi.org/10.1007/s00134-020-06163-7

ČESKÁ SPOLEČNOST INTENZIVNÍ MEDICÍNY

LESS IS MORE IN INTENSIVE CARE

ICU beds: less is more? Yes

Thomas S. Valley[1,2,3*] and Danilo T. Noritomi[4,5]

CORRESP

Rethinl
hospita
on the

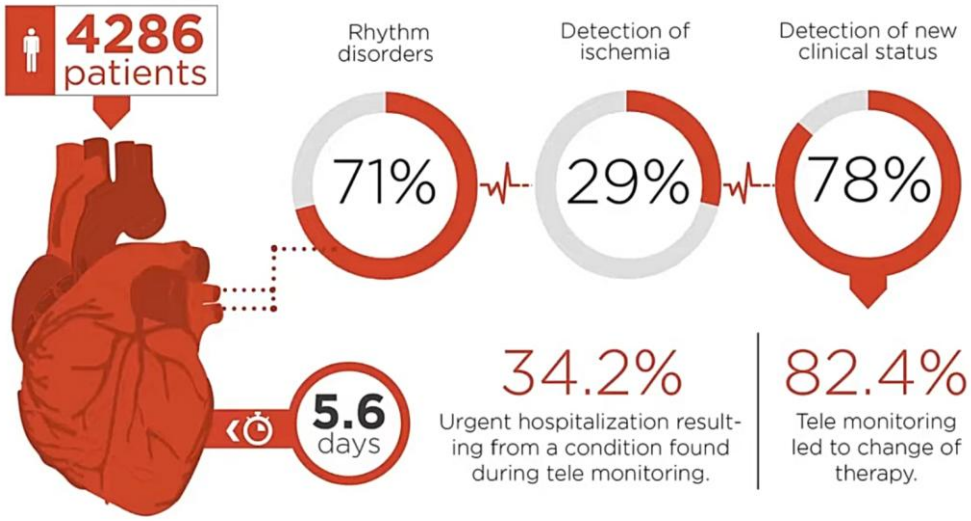
Frederic Michar

- Coordination of ICUs – central despatch centre in every hospital
- Integration of care – regional and nationwide – centralisation of
- Advanced care planning
- Rapid response systems – connected to the coordinating despatc
- To be implemented at all hospital wards – ICU on call:
  - Respiratory status: $SpO_2 \leq 93\%$ on nasal prongs ≥8 l/min
  - Haemodynamics: BPs≤100 mmHg not responding to infusion
  - Consciousness: GCS≤12
  - Urine output: Vu≤500ml/24h, or anuria/12h

WEARABLE SENSOR

Most sophisticated sensor on the market exceeding the functionality of traditional bedside monitors

- Digital stethoscope 250 Hz
- ECG – 1,3 or 12 Channels (250 Hz)
- Hearth rate 30 – 250 bpm
- Non-invasive Blood Pressure
- SpO2 (oxygen saturation)
- Respiratory rate 6 - 50 breaths/min
- Body temperature - precision 0.05 °C
- Body position and activity



Intensive Care Med
DOI 10.1007/s00134-011-2246-9

EXPERT PANEL

Expert Round Table
on Ultrasound in ICU

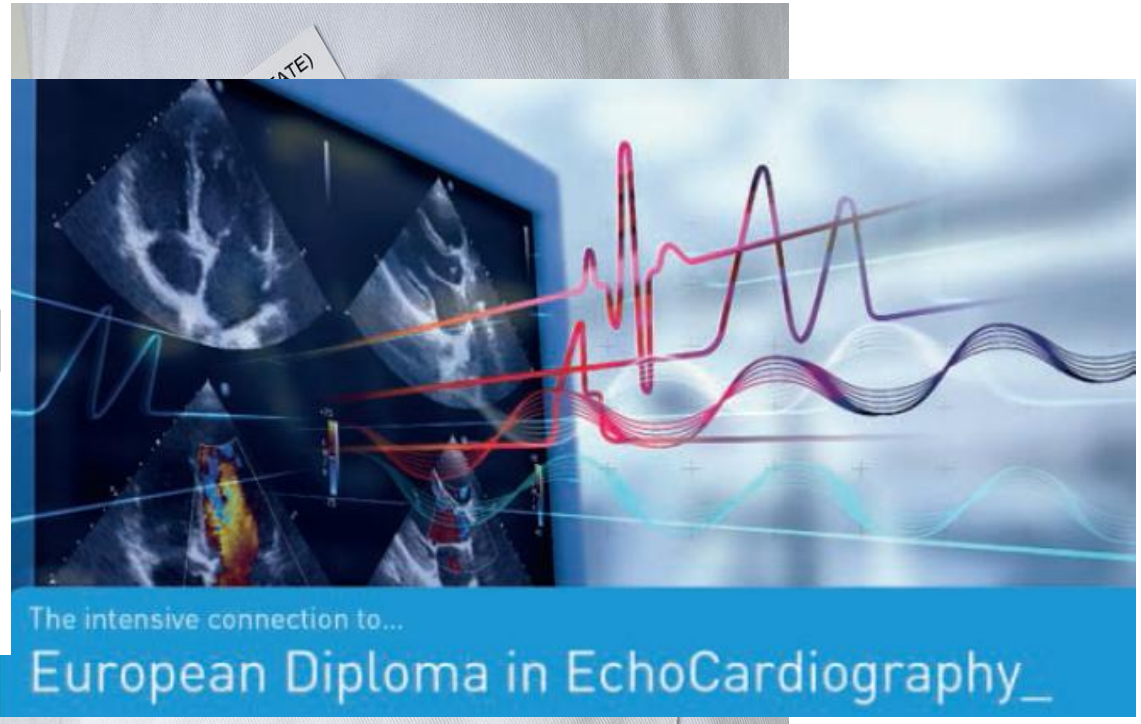
International expert statement on training standards for critical care ultrasonography

Intensive Care Med (2014) 40:654–666
DOI 10.1007/s00134-014-3228-5

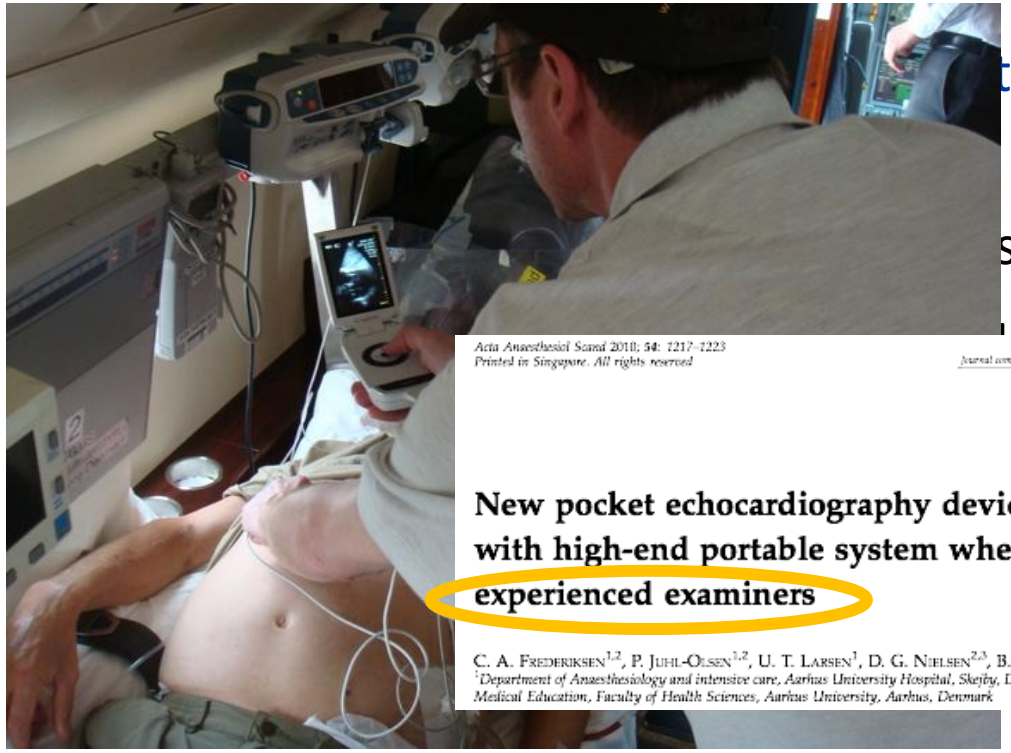
CONFERENCE REPORTS AND EXPERT PANEL

Expert Round Table on
Echocardiography in ICU

International consensus statement on training standards for advanced critical care echocardiography



FATE Card: www.fate-protocol.org



Acta Anaesthesiol Scand 2010; 54: 1217–1223
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ACTA ANAESTHESIOLOGICA SCANDINAVICA
doi: 10.1111/j.1399-6576.2010.02320.x

New pocket echocardiography device is interchangeable with high-end portable system when performed by experienced examiners

C. A. Frederiksen[1,2], P. Juhl-Olsen[1,2], U. T. Larsen[1], D. G. Nielsen[2,3], B. Eika[2,3] and E. Sloth[1,2]
[1]Department of Anaesthesiology and intensive care, Aarhus University Hospital, Skejby, Denmark, [2]Institute of Clinical Medicine and [3]Unit for Medical Education, Faculty of Health Sciences, Aarhus University, Aarhus, Denmark

+ FAST + vessels !

Multimodal sonography device: a way to provide imaging and reduce demand for radiographic methods (lives and costs…)

5 trunk regions (5 P):

- Pericardial
- Perihepatic (Morison pouch)
- Perisplenic
- Pelvic (pouch of Douglas)
- Pleural
- + paracolic bilateral
- Q: …is a fluid/blood present ?
- Extended FAST (eFAST):
- Q: ….pneumothorax ? = indication to urgent chest drain
- Q: ….pneumoperitoneum ?

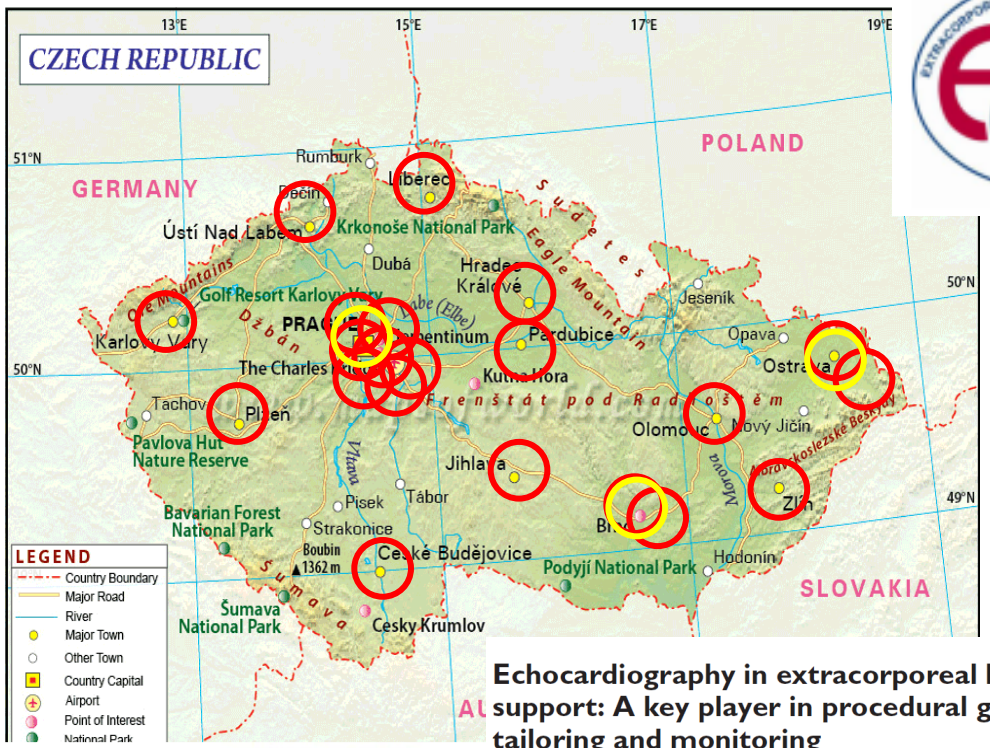
- UZ guided cannulation
- Vessels and thrombosis
- Peripheral nerve blocks
- Lung sonography and airway

- Peritoneal and retroperitoneal space
- FAST, examination in shock

- Echocardiography
- Lung sonography
- FAST, shock, trauma
- Transcranial doppler

ECLS: centralising care to achieve the results

- Population 10.450.000
- 21 cath labs operating 24/7
- 11 complex cardiac centers capable of providing ECLS – time issue in VA-ECMO in cardiogenic shock
- 3 of these 11 centers centralising ECLS pts



JAMA | Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

Effect of Intra-arrest Transport, Extracorporeal Cardiopulmonary Resuscitation, and Immediate Invasive Assessment and Treatment on Functional Neurologic Outcome in Refractory Out-of-Hospital Cardiac Arrest

A Randomized Clinical Trial

Jan Belohlavek, MD, PhD; Jana Smalcova, MD; Daniel Rob, MD; Ondrej Franek, MD; Ondrej Smid, MD; Milana Pokorna, MD, PhD; Jan Horák, MD; Vratislav Mrazek, MD; Tomas Kovarnik, MD, PhD; David Zemanek, MD, PhD; Ales Kral, MD, PhD; Stepan Havranek, MD, PhD; Petra Kavalkova, PhD; Lucie Kompelentova, MD; Helena Tomková, MD; Alan Mejstrik, MSc; Jaroslav Valasek, MD; David Peran, MSc; Jaroslav Pekara, MSc; Jan Rulisek, MD, PhD; Martin Balik, MD, PhD; Michal Huptych, PhD; Jiri Jarkovsky, PhD; Jan Malik, MD, PhD; Anna Valerianova, MD, PhD; Frantisek Mlejnsky, MSc, PhD; Petr Kolouch, MD; Petra Havrankova, MD, PhD; Dan Romportl, MD; Arnost Komarek, PhD; Ales Linhart, MD, PhD; for the Prague OHCA Study Group

Journal of Critical Care 72 (2022) 154162

Contents lists available at ScienceDirect

Journal of Critical Care

journal homepage: www.journals.elsevier.com/journal-o

The impact of obesity on the outcome of severe SARS-CoV-2 ARDS in a high volume ECMO centre: ECMO and corticosteroids support the obesity paradox

M. Balik [a,*], E. Svobodova [a], M. Porizka [a], M. Maly [a], P. Brestovansky [a], L. Volny [a], T. Brozek [a], T. Bartosova [a], I. Jurisinova [a], Z. Mevaldova [a], O. Misovic [a], A. Novotny [a], J. Horejsek [a], M. Otahal [a], M. Flaksa [a], Z. Stach [a], J. Rulisek [a], P. Trachta [a], J. Kolman [a], R. Sachl [a], J. Kunstyr [a], P. Kopecky [a], S. Romaniv [a], M. Huptych [b], M. Svarc [c], G. Hodkova [c], J. Fichtl [c], F. Mlejnsky [c], T. Grus [d], J. Belohlavek [e], M. Lips [a], J. Blaha [a]

Echocardiography in extracorporeal life support: A key player in procedural guidance, tailoring and monitoring

Perfusion
1–11
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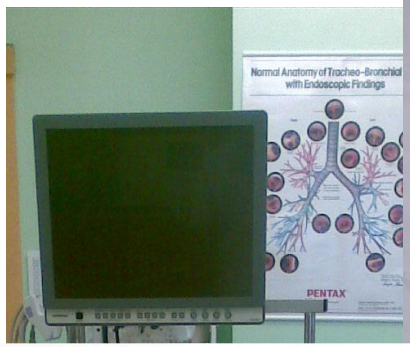
sagepub.co.uk/journalsPermissions.nav
DOI: 10.1177/0267659118766438
journals.sagepub.com/home/prf
SAGE

Dirk W. Donker,[1] Christiaan L. Meuwese,[2] Sue A. Braithwaite,[3] Michael Broomé,[4,5,6] Joris J. van der Heijden,[1] Jeannine A. Hermens,[1] Marc Platenkamp,[1] Michel de Jong,[7] Jacqueline G.D. Janssen,[1] Martin Balík[8] and Jan Bělohlávek[9]

Bronchoscopy as essential modality in critical care

- Faster weaning of the IPPV – therapeutic FOB
- Shorter ICU LOS …….related to complications (outcome ?)
- Lower antibiotic use (!)
- Airway management
- Management of bleeding complications
- Indications to invasive bronchology



Reusable FOB: advantages

Perbet *et al. Ann. Intensive Care (2017) 7:3*
DOI 10.1186/s13613-016-0228-3

Annals of Intensive Care

RESEARCH Open Access

Cost analysis of single-use (Ambu® aScope™) and reusable bronchoscopes in the ICU

S. Perbet[1,2,6*], M. Blanquet[3,4], C. Mourgues[3,4], J. Delmas[1], S. Bertran[1], B. Longère[1], V. Boïko-Alaux[5], P. Chennell[5], J.-E. Bazin[1] and J.-M. Constantin[1,2]

- Single use (24h) cost 180-200 Eur
- EU made preferred
- Reusable bronchoscope 15.000-25.000 Eur
- Expenses on reusable FOB decrease in relation to number of procedures
- >55/device-unit.year

Skipped:

- Sterilisation
- Service
- „Desinfection drowning“
- Damage
  - Kink
  - Broken fibreoptic
  - Channel perforation
  - Outside perforation (PDTS)
  - „Abrasion“ of Olympus®

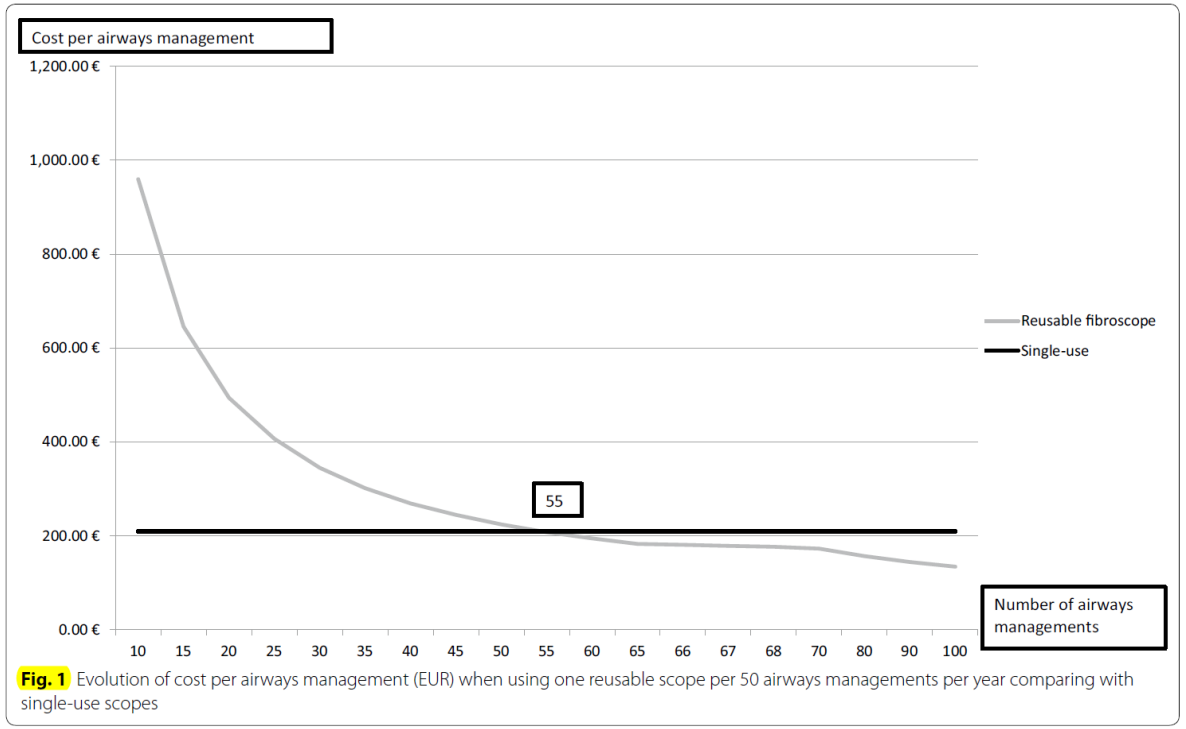
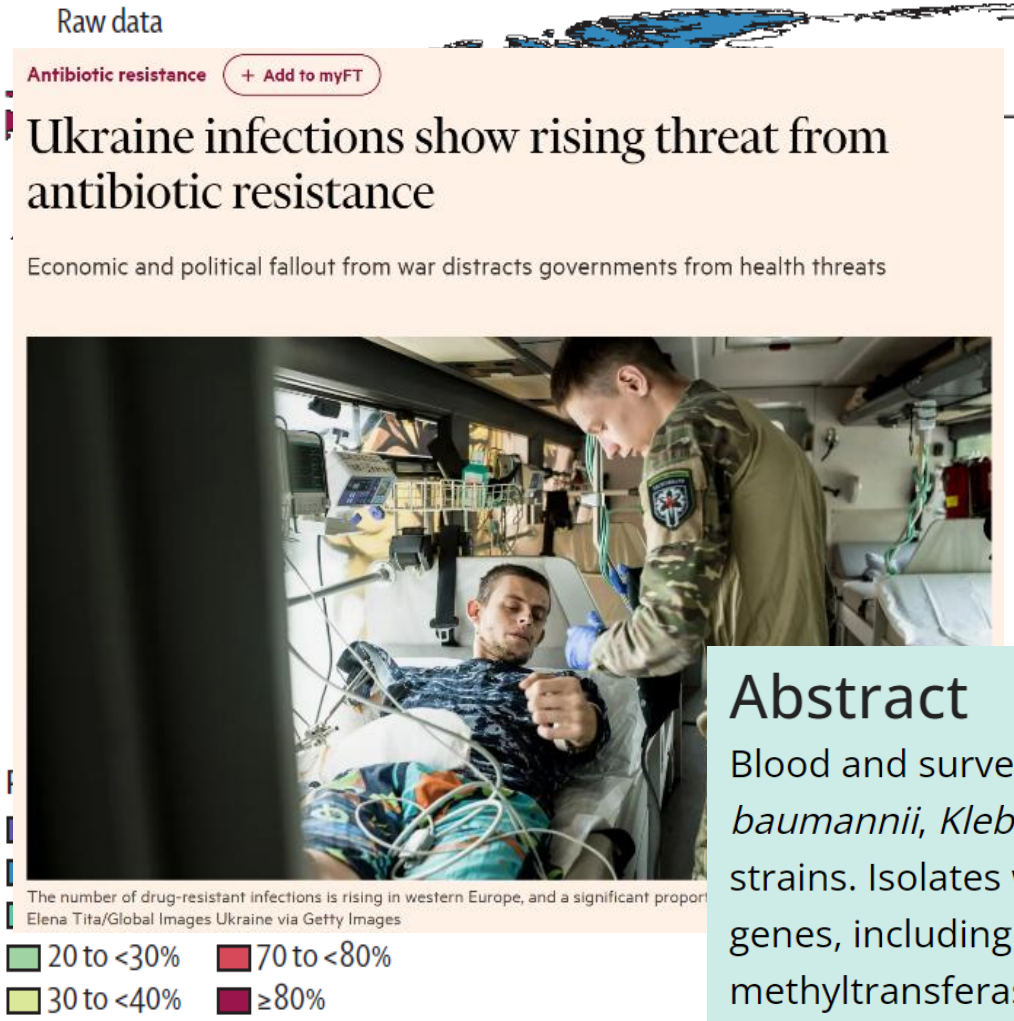


Fig. 1 Evolution of cost per airways management (EUR) when using one reusable scope per 50 airways managements per year comparing with single-use scopes

A need to curb the use of antibiotics – not indicated in every unstable patient
The only regular ICU attending specialty is clinical microbiology

D Carbapenem-resistant *Acinetobacter baumannii*

Raw data

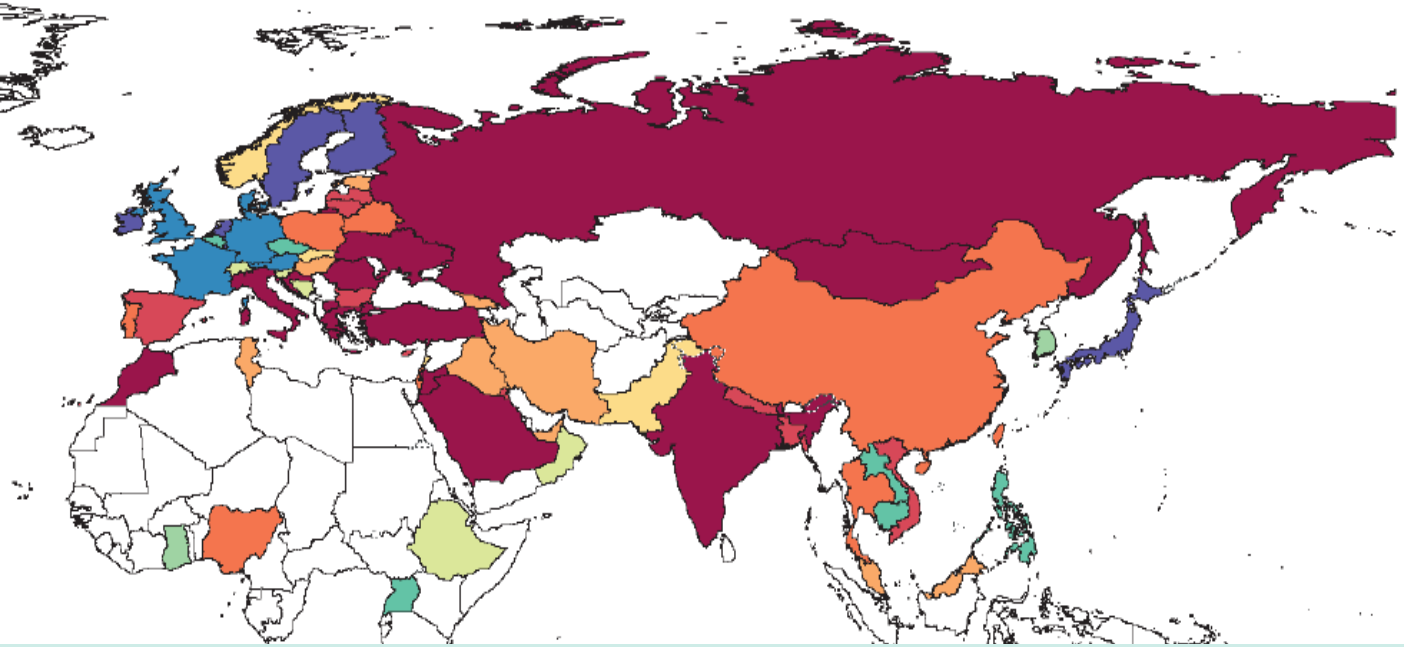


Antibiotic resistance + Add to myFT

Ukraine infections show rising threat from antibiotic resistance

Economic and political fallout from war distracts governments from health threats

The number of drug-resistant infections is rising in western Europe, and a significant propor
Elena Tita/Global Images Ukraine via Getty Images



Abstract

Blood and surveillance cultures from an injured service member from Ukraine grew *Acinetobacter baumannii*, *Klebsiella pneumoniae*, *Enterococcus faecium*, and 3 distinct *Pseudomonas aeruginosa* strains. Isolates were nonsusceptible to most antibiotics and carried an array of antibiotic resistant genes, including carbapenemases ($bla_{\text{IMP-1}}$, $bla_{\text{NDM-1}}$, $bla_{\text{OXA-23}}$, $bla_{\text{OXA-48}}$, $bla_{\text{OXA-72}}$) and 16S methyltransferases (*armA* and *rmtB4*).

Replacement and support of kidney function + plasmaseparation

- CVVH
- CVVHDF
- CVVHD
- EDD (Extended Daily Dialysis), SLEDD (Slow Efficient Daily Dialysis)
- IHD

Regional citrate anticoagulation

A safe citrate anticoagulation protocol with variable treatment efficacy and excellent control of the acid–base status*

Stanislao Morgera, MD; Michael Schneider, MD; Torsten Slowinski, MD; Ortrud Vargas-Hein, MD; Heidrun Zuckermann-Becker, MD; Harm Peters, MD; Detlef Kindgen-Milles, MD; Hans-Hellmut Neumayer, MD

- Crit Care Med 2009; 37: 2018-2024

Intensive Care Med (2012) 38:20–28
DOI 10.1007/s00134-011-2438-3

SYSTEMATIC REVIEW

Zhongheng Zhang
Ni Hongying

Efficacy and safety of regional citrate anticoagulation in critically ill patients undergoing continuous renal replacement therapy

APTT > 45s reduces risk of clotting by 50%
increases risk of bleeding 3x
Van de Wetering, JASN 1996; 7: 145-150

The cumulative evidence indicating both efficacy and safety of regional citrate anticoagulation suggests the use of citrate for prevention of filter clotting in preference to standard heparin, even in patients without an increased bleeding risk…….
Kidney Int 2012

RCA = 100% RRT on ICU

- 57-65% of CRRT costs are dialysis/substitution fluids
- Active pharmaceutical ingredients (API) for fluids should not be entirely imported from China – risk of dependence in case of an international conflict (Taiwan)

	TSC/lactocitrat	TSC/bicarb	Hep/bicarb	MW-U test p values		
	Qb 100 ml/min, CRRT 2000 ml/h	Qb 100 ml/min, CRRT 2000 ml/h	Qb 150 ml/min, CRRT 2000ml/h	1 vs 2	1 vs 3	2 vs 3
Estimated costs (EUR/24h)						
Citrate solution (4%TSC)	32.22 (28.43-37.9)	32.22 (28.43-37.9)	N/A	N/A	N/A	N/A
Replacement fluids	95 (95-95)	135.3 (135.3-135.3)	115.5 (115.5-115.5)	<0.01	<0.01	<0.01
Calcium chloride	11.13 (9.54-15.9)	11.13 (9.54-15.9)	N/A	N/A	N/A	N/A
Heparin	N/A	N/A	7.47 (5.81-8.72)	N/A	N/A	N/A
Postfilter Ca^{2+} (6 per 24h)	13.74	13.74	N/A	N/A	N/A	N/A
Extra APTT (4 per 24h)	N/A	N/A	12.56	N/A	N/A	N/A
Total costs/24h excluding circuits	152 (133-161)	195 (191-224)	136 (131-140)	<0.01	0.10	<0.01
Daily circuit cost [a]	48 (30-75)	48 (30-75)	85 (64-106)	N/A	<0.01	<0.01
Total costs/24h including circuits	200 (186-229)	243 (239-273)	221 (199-248)	<0.01	<0.05	<0.05

Balik M, et al: JCritCare2013, Intensivnews 2020

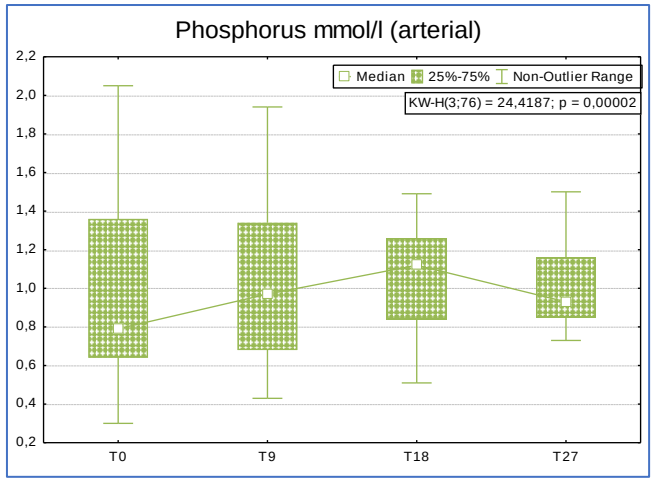
Lactocitrate: One day on CRRT+RCA (4%TSC) < cost of CRRT with heparin!

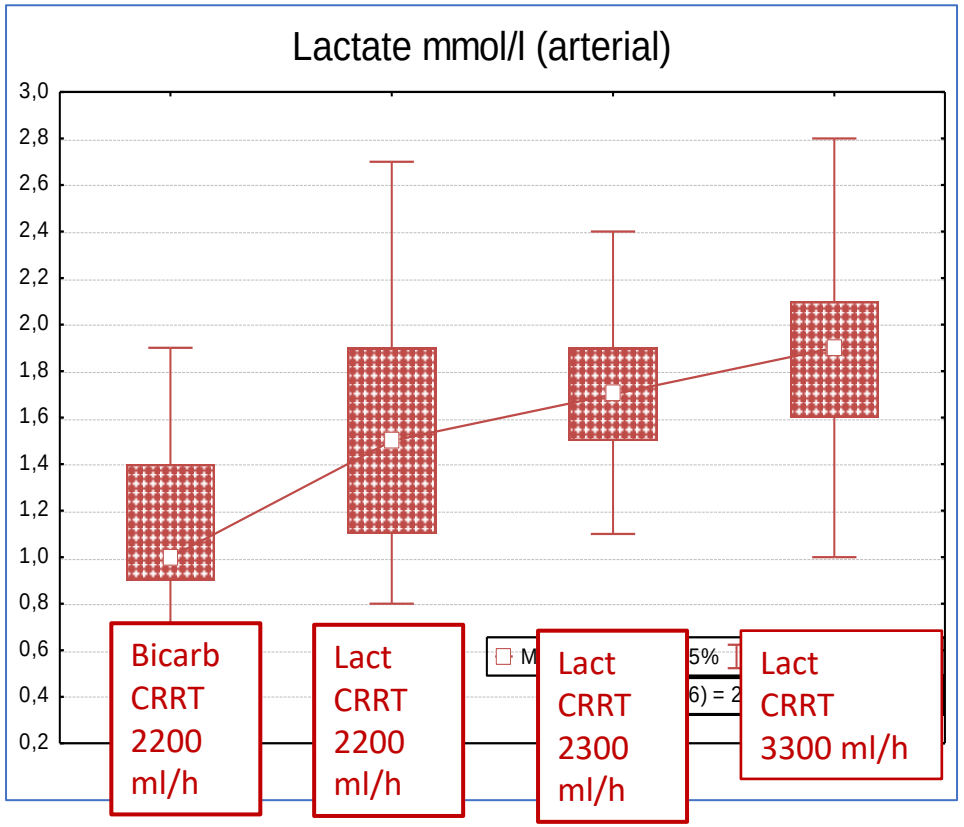
Blood Purification

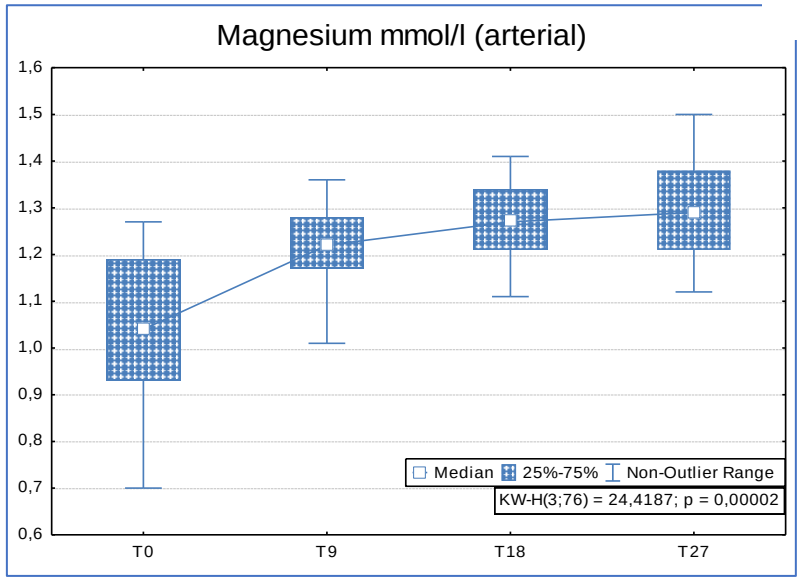
Blood Purif 2014;38:263–272
DOI: 10.1159/000369956

Received: July 22, 2014
Accepted: November 11, 2014
Published online: January 10, 2015

The Effects of a Novel Calcium-Free Lactate Buffered Dialysis and Substitution Fluid for Regional Citrate Anticoagulation – Prospective Feasibility Study







Single chamber bag 5000 ml

- Na^+ 130 mmol/l
- K^+ 2.0 mmol/l
- **Mg^{++} 1.5 mmol/l**
- P^- 1.0 mmol/l
- Cl^- 116 mmol/l
- **$Lactate^-$ 18 mmol/l**
- Glucose 5.6 mmol/l
- pH 6.8
- Osmolality 274 mosmol/l

Prague GUH ICU: savings 45.000 EUR/year on CRRT

Thank you for your attention !

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The ICF face-to-face event has been accredited by the European Board for Accreditation of Continuing Education for Health Professionals (EBAC®) with 16 CMEs.

INTENSIVE CARE FUNDAMENTALS
1217 views
ICF – Targu Mures 14/15 April

INTENSIVE CARE FUNDAMENTALS
1344 views
ICF – Waterford 02/03 May

INTENSIVE CARE FUNDAMENTALS
1463 views
ICF – Prague 05/06 May

INTENSIVE CARE FUNDAMENTALS
132 views
ICF – Merano 06/07 May

INTENSIVE CARE FUNDAMENTALS
955 views
ICF – Valletta 13/14 May

INTENSIVE CARE FUNDAMENTALS
1472 views
ICF – Lisbon 26/27 May

INTENSIVE CARE FUNDAMENTALS
1163 views
ICF – Bucharest 21/22 June

INTENSIVE CARE FUNDAMENTALS
1057 views
ICF – London 09/10 July

INTENSIVE CARE FUNDAMENTALS
1161 views
ICF – Galati 17/18 October