Co mne nejvíc baví a nebaví

- na současné intenzivní medicíně

OA Dr. Stibor B.

ICU, Landesklinikum Baden bei Wien, Austria

no conflict of interest

OA Dr. Stibor B.

ICU, Landesklinikum Baden bei Wien, Austria

přehled

1. xxxxxxxx
2. xxxxxxxxxxxxxx
3. xxxxxxxxxxx
4. xxxxxxxxxx
5. xxxxxxxxxxxxxxxxxx

současné možnosti

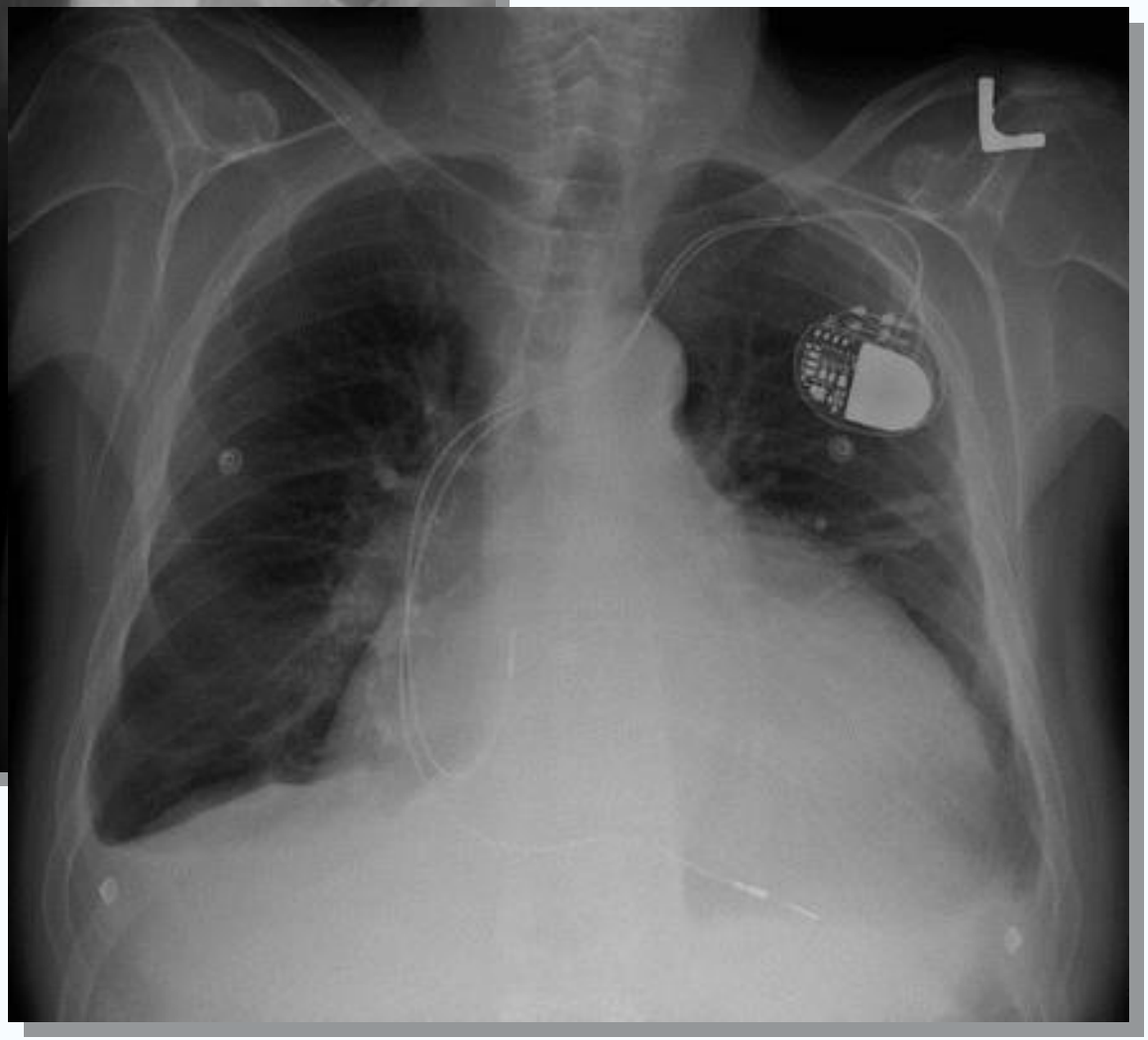

63
146/56
99
24.7
00:00:00
00:00:00
AUS


4.3
6400
ILA activ


PCCI 4.52
GEDI° 815
ELWI° 14
ScvO2 75

intensive care: big picture thinking


R


L

critical care

- no single organ specialties
- the complex interplay between all the organ systems
- considering the whole patient
- life-changing decisions must be made

evidence

- based

medicine?

Evidence-based medicine

Archie Cochrane

"Doctors must base what they do on randomized clinical trials (RCTs)"

Archie Cochrane. Effectiveness and afficiency. 1972.

BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 30 1948

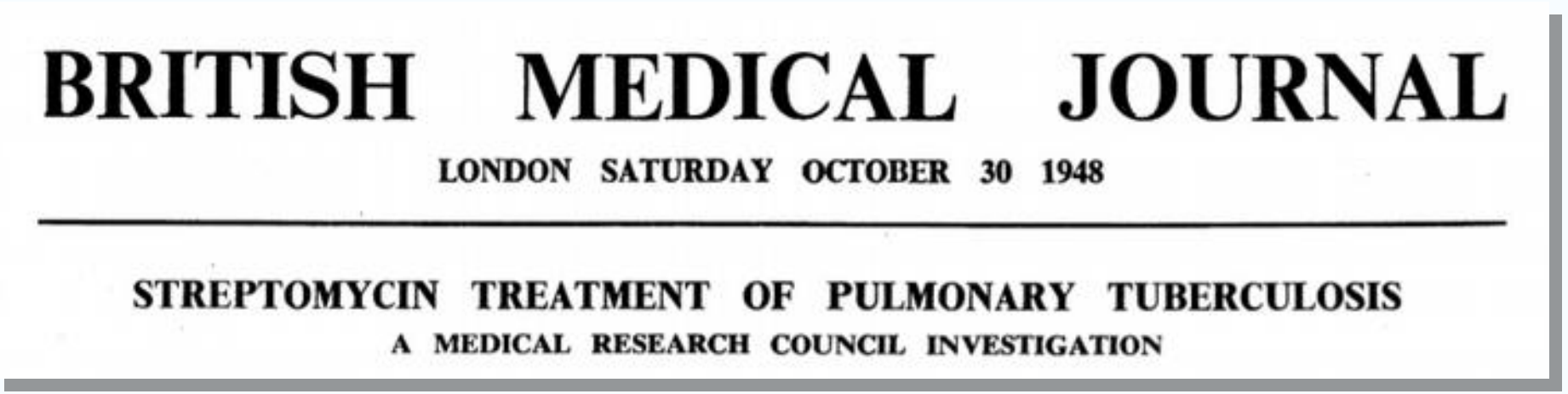
STREPTOMYCIN TREATMENT OF PULMONARY TUBERCULOSIS

A MEDICAL RESEARCH COUNCIL INVESTIGATION

TABLE II.—*Assessment of Radiological Appearance at Six Months as Compared with Appearance on Admission*

Radiological Assessment	Streptomycin Group		Control Group	
Considerable improvement ..	28	*51%*	4	*8%*
Moderate or slight improvement	10	*18%*	13	*25%*
No material change	2	*4%*	3	*6%*
Moderate or slight deterioration	5	*9%*	12	*23%*
Considerable deterioration ..	6	*11%*	6	*11%*
Deaths	4	*7%*	14	*27%*
Total	55	*100%*	52	*100%*

the first clinical trial ever (early „ICU" trial)



BRITISH MEDICAL JOURNAL

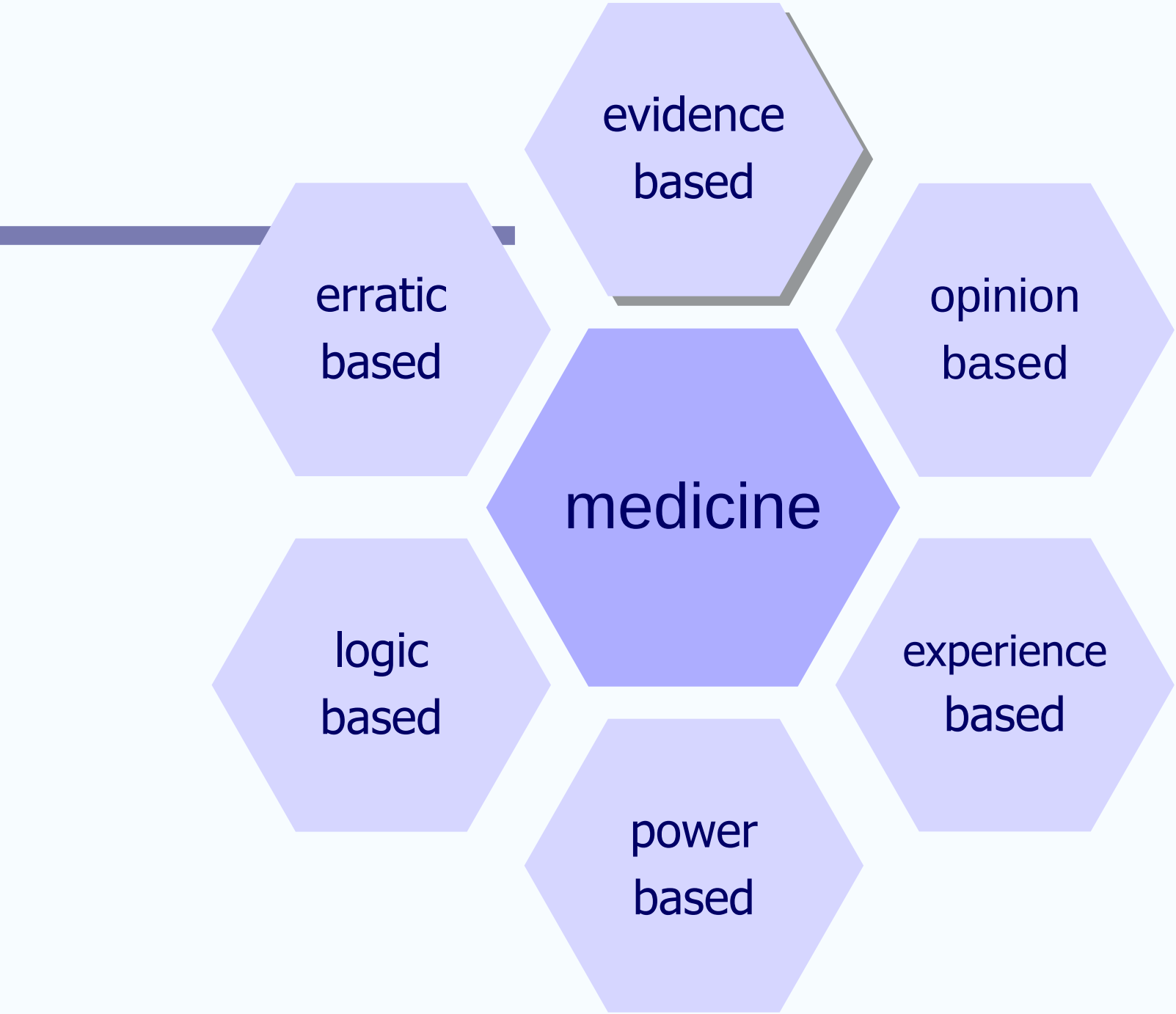
LONDON SATURDAY OCTOBER 30 1948

STREPTOMYCIN TREATMENT OF PULMONARY TUBERCULOSIS

A MEDICAL RESEARCH COUNCIL INVESTIGATION

- 1948: first trial ever
- 1972: hundreds of trials per year
- 2010: ca 37.000 trials started per year
- 2019: ca 50.000 trials started per year

massive explosion of new trials


evidence based
erratic based
opinion based
medicine
logic based
experience based
power based

The NEW ENGLAND JOURNAL of MEDICINE

If it is published in NEJM, it must be good, right?

Is this study valid…?

Are these patients the same as mine…?

Does this study mean I should change my practise…?

harmonizing
clinical experience
and
evidence-based medicine


clinical jazz

guidelines?

Nancy Carney, PhD*
Annette M. Totten, PhD*
Cindy O'Reilly, BS*
Jamie S. Ullman, MD‡
Gregory W.J. Hawryluk, MD, PhD§
Michael J. Bell, MD¶
Susan L. Bratton, MD§
Randall Chesnut, MD‖
Odette A. Harris, MD, MPH#
Niranjan Kissoon, MD**
Andres M. Rubiano, MD‡‡§§
Lori Shutter, MD¶
Robert C. Tasker, MBBS, MD¶¶
Monica S. Vavilala, MD‖
Jack Wilberger, MD‖‖
David W. Wright, MD##
Jamshid Ghajar, MD, PhD#

*Oregon Health & Science University, Portland, Oregon; ‡Hofstra North Shore-LIJ School of Medicine, Hempstead, New York; §University of Utah, Salt Lake City, Utah; ¶University of Pittsburgh, Pitts-

Guidelines for the Management of Severe Traumatic Brain Injury, Fourth Edition

The scope and purpose of this work is 2-fold: to synthesize the available evidence and to translate it into recommendations. This document provides recommendations only when there is evidence to support them. As such, they do not constitute a complete protocol for clinical use. Our intention is that these recommendations be used by others to develop treatment protocols, which necessarily need to incorporate consensus and clinical judgment in areas where current evidence is lacking or insufficient. We think it is important to have evidence-based recommendations to clarify what aspects of practice currently can and cannot be supported by evidence, to encourage use of evidence-based treatments that exist, and to encourage creativity in treatment and research in areas where evidence does not exist. The communities of neurosurgery and neuro-intensive care have been early pioneers and supporters of evidence-based medicine and plan to continue in this endeavor. The complete guideline document, which summarizes and evaluates the literature for each topic, and supplemental appendices (A-I) are available online at https://www.braintrauma.org/coma/guidelines.

KEY WORDS: Severe traumatic brain injury, Adults, Critical care, Evidence-based medicine, Guidelines, Systematic review

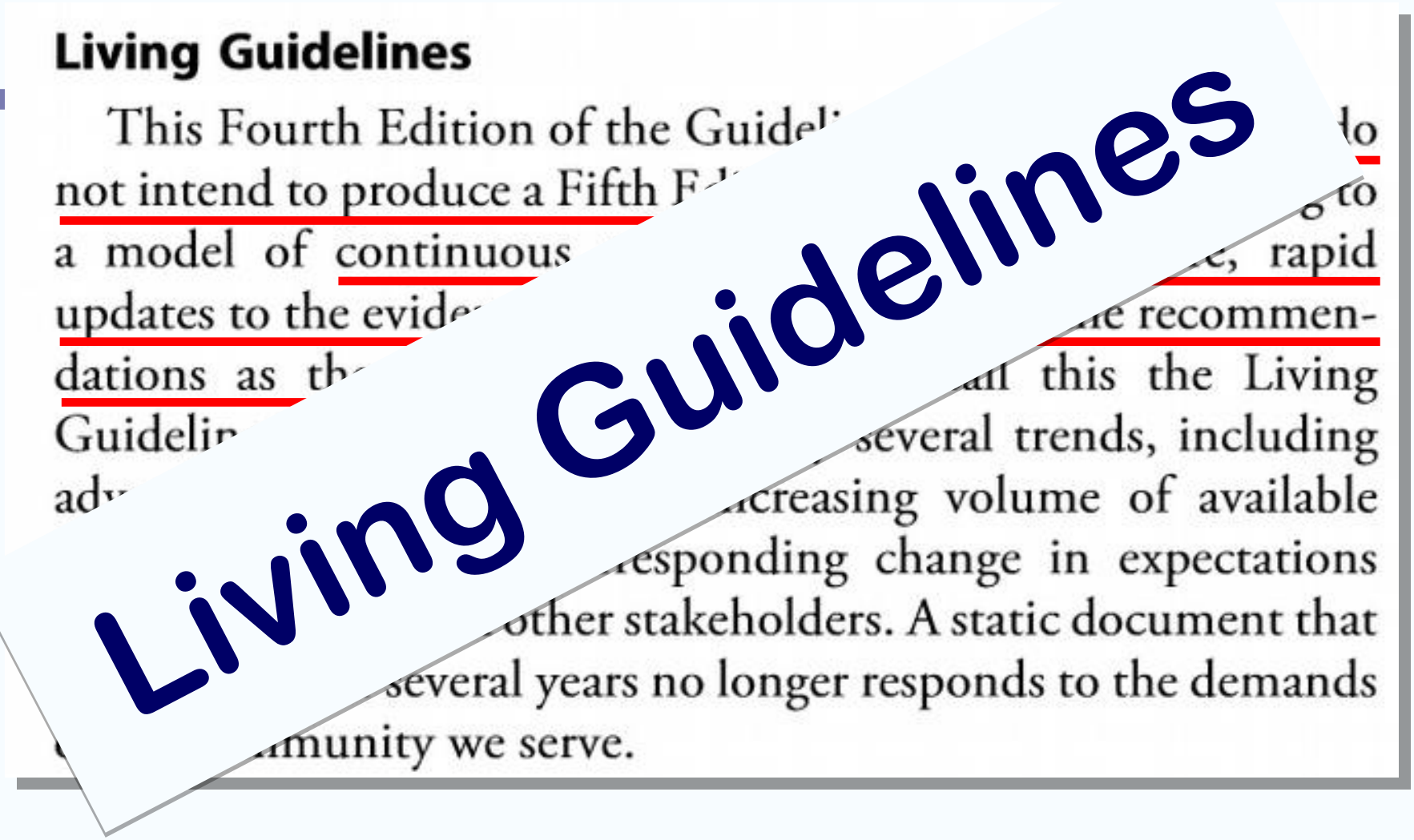
Neurosurgery 0:1–10, 2016 DOI: 10.1227/NEU.0000000000001432 www.neurosurgery-online.com

Brain Trauma Foundation:

„Guidelines for the Management of Severe Traumatic Brain Injury“

Fourth Edition

- **189** publications included as evidence to support:
- **28** recommendations covering 18 topics
- the publication reports on:
    - **5** Class 1 studies
    - **46** Class 2 studies
    - **136** Class 3 studies
    - **2** meta-analyses


Living Guidelines
This Fourth Edition of the Guide
not intend to produce a Fifth
a model of continuous
updates to the evide
dations as th
Guidelir
ad
rapid
recommen-
this the Living
several trends, including
creasing volume of available
esponding change in expectations
other stakeholders. A static document that
several years no longer responds to the demands
mmunity we serve.
Living Guidelines

klinické studie

multicentric **RCTs** targeting mortality

Glucose control is not beneficial
Activated protein C does not work
Blood transfusions do not influence outcome
Time of onset of renal replacement therapy d… …ter
The rate of renal replacement therapy d… …ter
Significant hypothermia is not bett… …ypothermia
Lower vs. higher PEEP level in … no difference
A TLR4 inhibitor does not …
Gamma-globulins in s… improve outcome
Early CVVH is not ben… septic shock
Statins are not benefici… sepsis
Albumin administration is not beneficial
ScvO2 monitoring does not improve outcome
…arget blood pressure in septic shock does not matter

NO DIFFERENCE

multicentric **RCTs** targeting mortality

- Large tidal volumes are harmful
- Hemoglobin solutions may be harmful
- High frequency oscillation may be harmful
- Administration of growth hormone may be harmful
- Saline solutions may be harmful
- HES solutions may be harmful
- Mechanical ventilation is harmful (NIV is better)
- Too much fluid may be harmful
- Early parenteral nutrition may be harmful
- Bicarbonate administration may be harmful
- Statins administration in ARDS patients may be harmful
- TNF inhibitor may be harmful

studie

- trvají příliš dlouho
- mají málo pacientů
- nešťastný design
- nedojde k publikaci
- většina je *no difference,* některá *harmful*
- nejčastější závěr: potřeba dalších studií…
- při publikaci jsou už staré, pro praxi nepoužitelné

řešení?

Adaptive Trials

Derek C. Angus, MD, MPH, FRCP

CRISMA Center, Department of Critical Care Medicine

Department of Health Policy and Management
McGowan Institute for Regenerative Medicine
Clinical and Translational Science Institute

University of Pittsburgh Schools of the Health Sciences

Rationale and Design of an Adaptive Phase 2b/3 Clinical Trial of Selepressin for Adults in Septic Shock

Selepressin Evaluation Programme for Sepsis-induced Shock—Adaptive Clinical Trial

Roger J. Lewis[1,2,3,4], Derek C. Angus[5,6], Pierre-François Laterre[7], Anne Louise Kjølbye[8], Egbert van der Meulen[8], Allan Blemings[8], Todd Graves[4], James A. Russell[9], Jan E. Carlsen[10], Karsten Jacobsen[8], Donald M. Yealy[11], Steven M. Opal[12], Nis A. Windeløv[8], Bruno François[13], Anders Perner[14], Peter Pickkers[15], and Scott M. Berry[4]

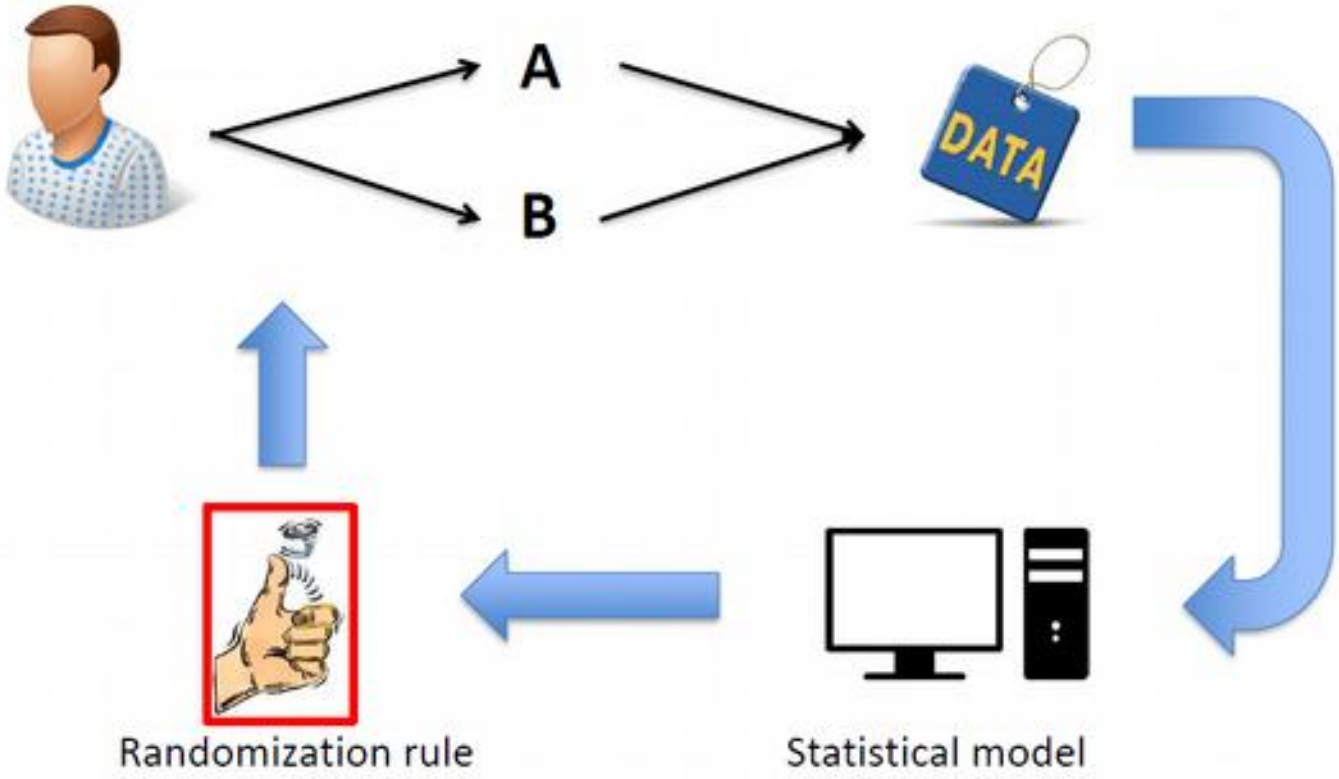
Abstract

Septic shock carries substantial morbidity and mortality. The failure of many promising therapies during late-phase clinical trials prompted calls for alternative trial designs. We describe an innovative trial evaluating selepressin, a novel selective vasopressin V_{1a} receptor agonist, for adults with septic shock. SEPSIS-ACT (Selepressin Evaluation Programme for Sepsis-induced Shock—Adaptive Clinical Trial) is a blinded, randomized, placebo-controlled, two-part, adaptive phase 2b/3 trial, evaluating up to four selepressin dosing strategies. The primary outcome is pressor- and ventilator-free days, with a value of zero assigned for death within 30 days. We calculate Bayesian probabilities of final trial success to guide interim decision-making. Part 1 (dose-finding) has an adaptive sample size based on response-adaptive randomization and prespecified rules to determine stopping for futility or selection of the best dosing regimen for Part 2. Part 2 (confirmation) randomizes a minimum of 1,000 patients equally to the selected dosing regimen or placebo. The final estimate of treatment effect compares all selepressin-treated patients with all placebo-treated patients. The sample size of 1,800 provides 91% power to detect an increase of 1.5 pressor- and ventilator-free days with a reduction in mortality of 1.5%. The trial received a Special Protocol Assessment agreement from the U.S. Food and Drug Administration Center for Drug Evaluation and Research and is underway in Europe and the United States. SEPSIS-ACT is an innovative trial that addresses both optimal dose and confirmation of benefit, accelerating the evaluation of selepressin while mitigating risks to patients and sponsor through use of response-adaptive randomization, a novel registration endpoint, prespecified futility stopping rules, and a large sample size.

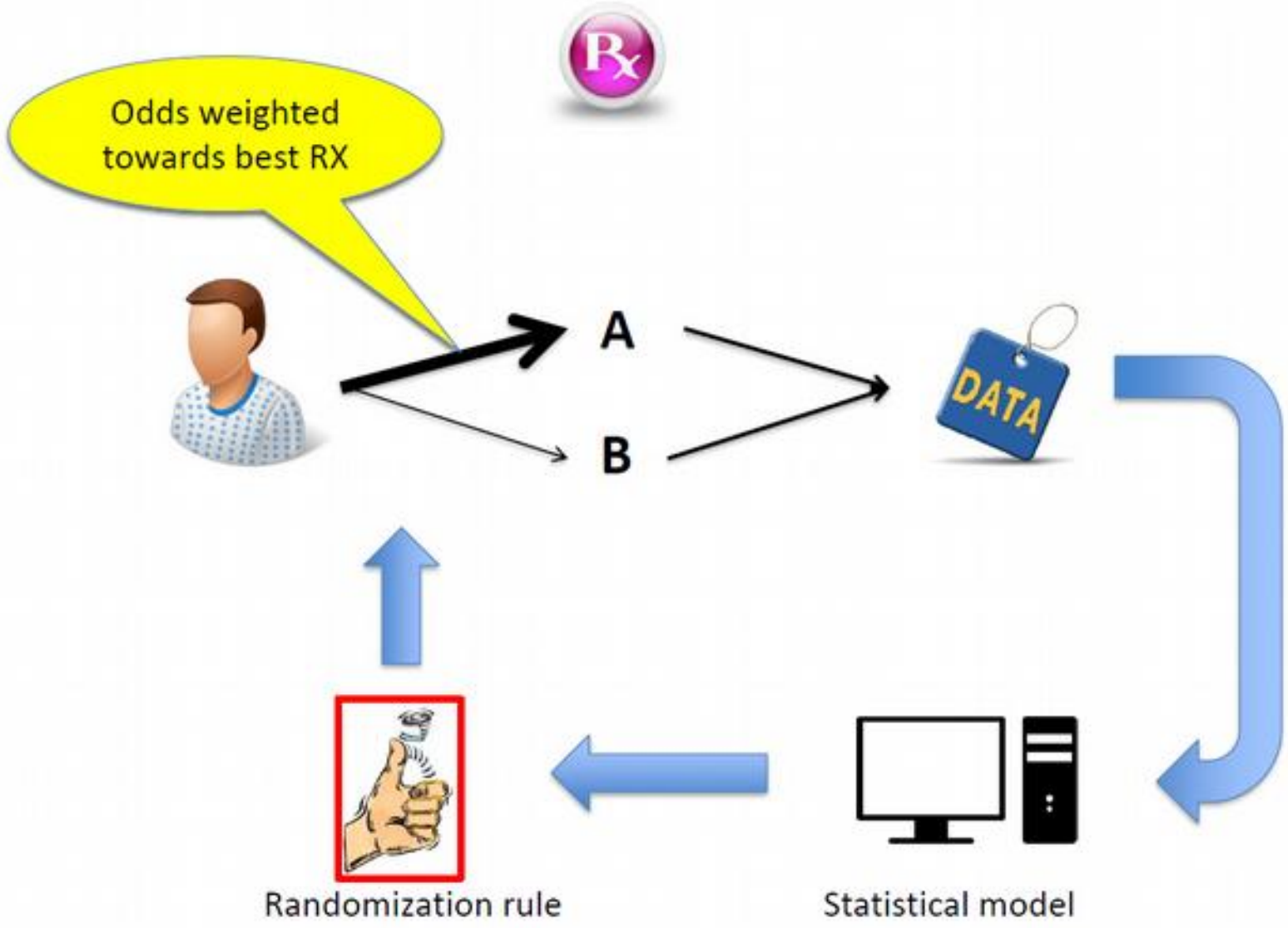
Clinical Trial registered with www.clinicaltrials.gov (NCT02508649).

Keywords: septic shock; adaptive clinical trial design; vasopressor treatment

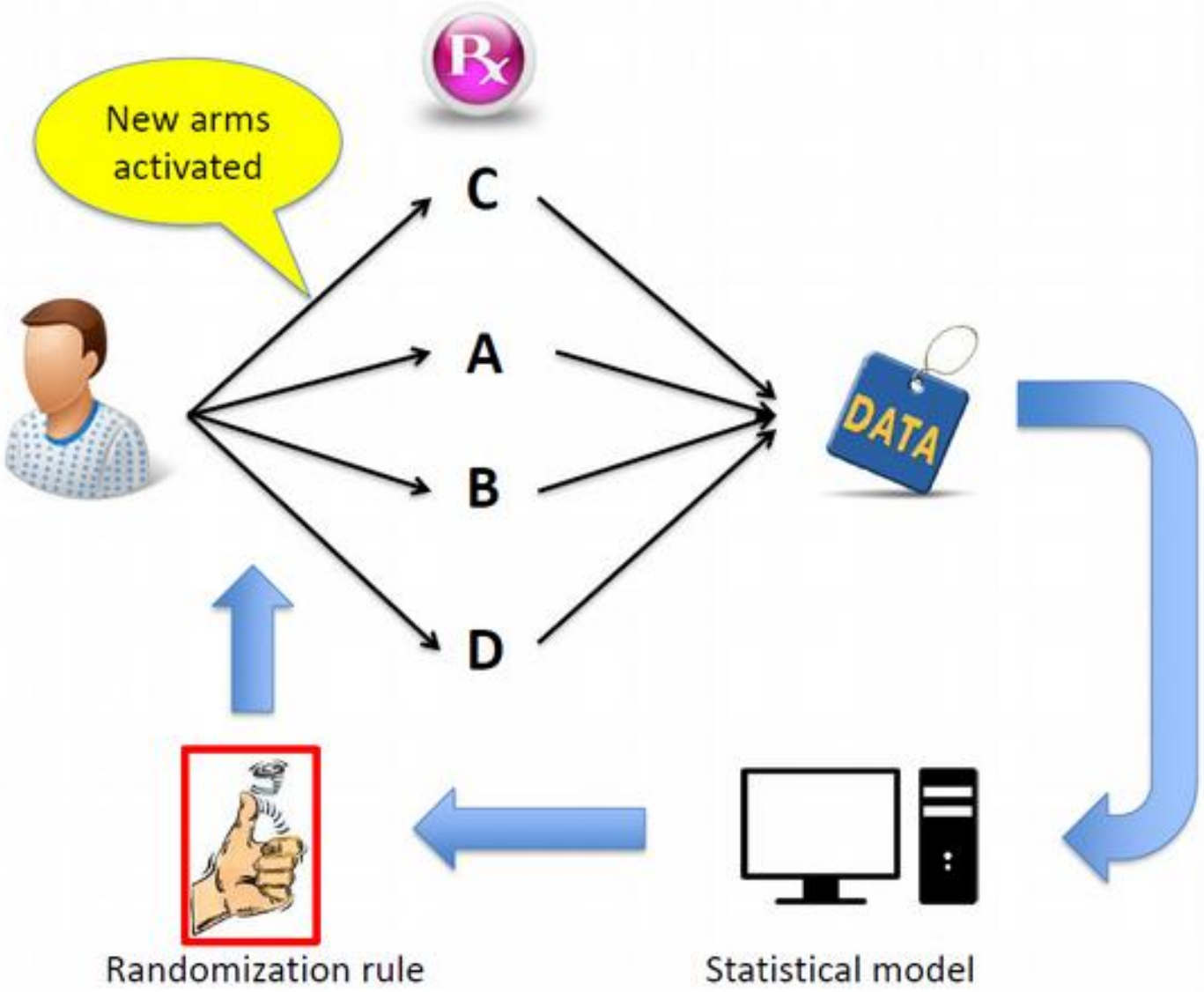
Response-adaptive randomization



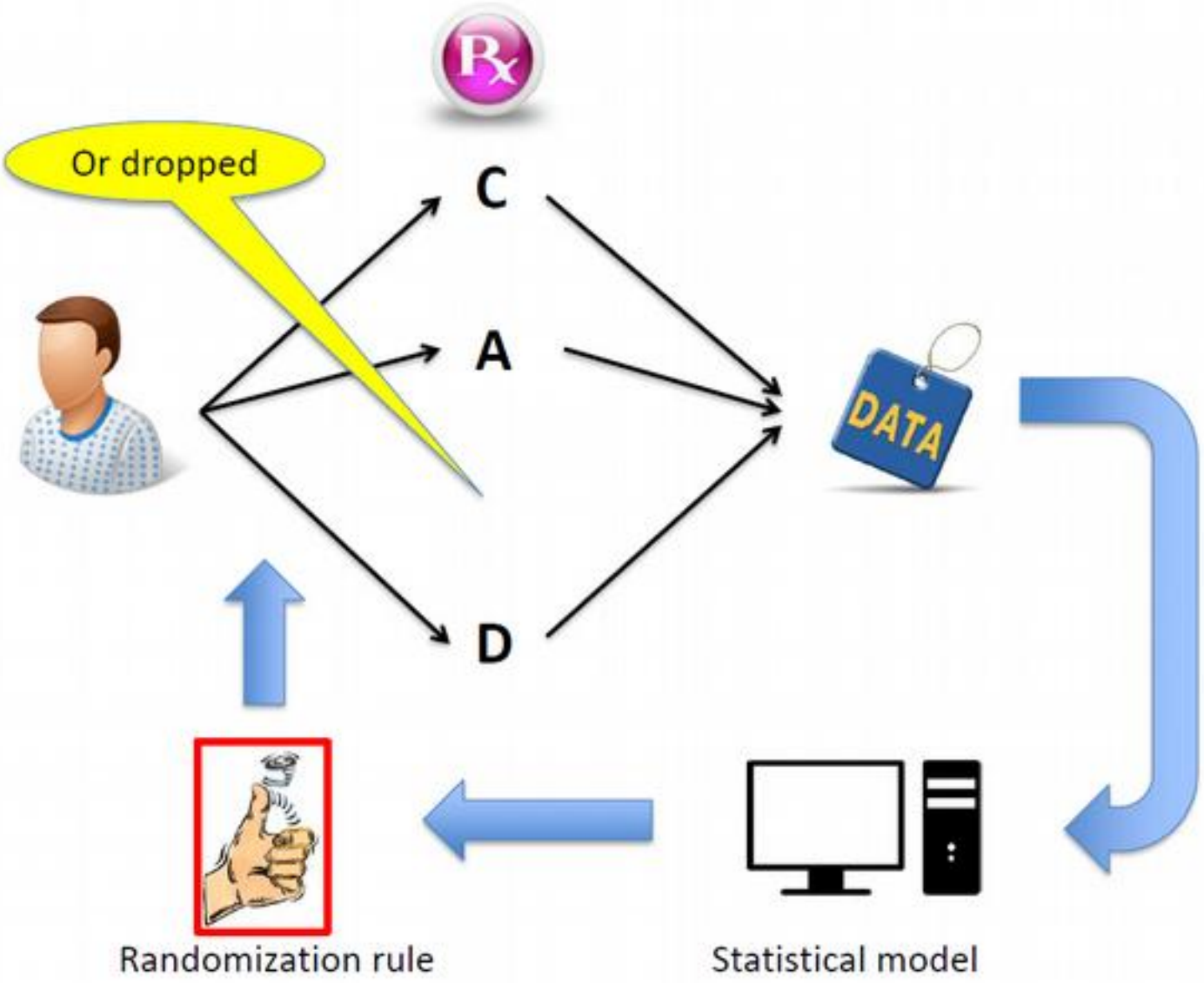
Response-adaptive randomization



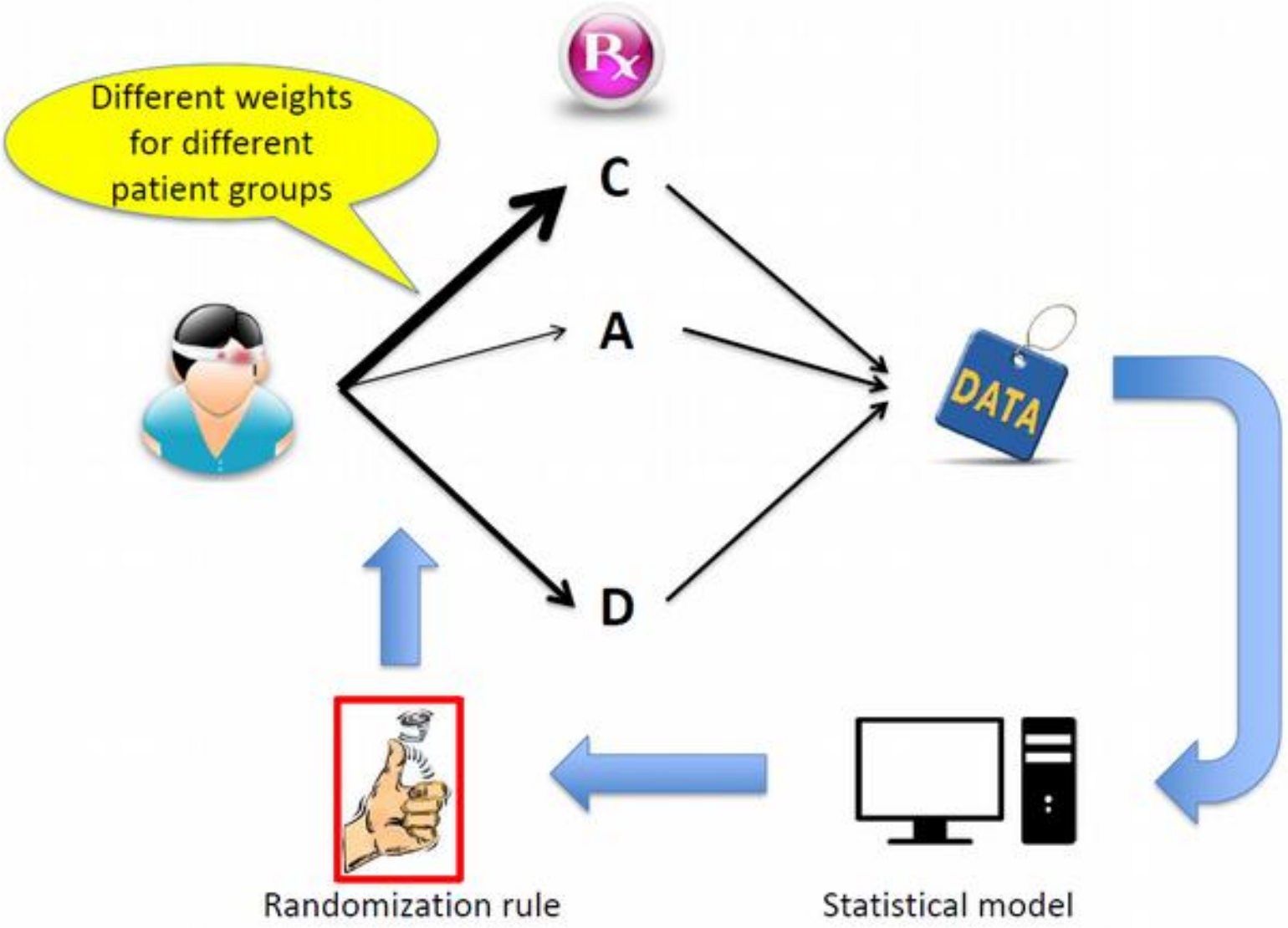
Response-adaptive randomization



Response-adaptive randomization



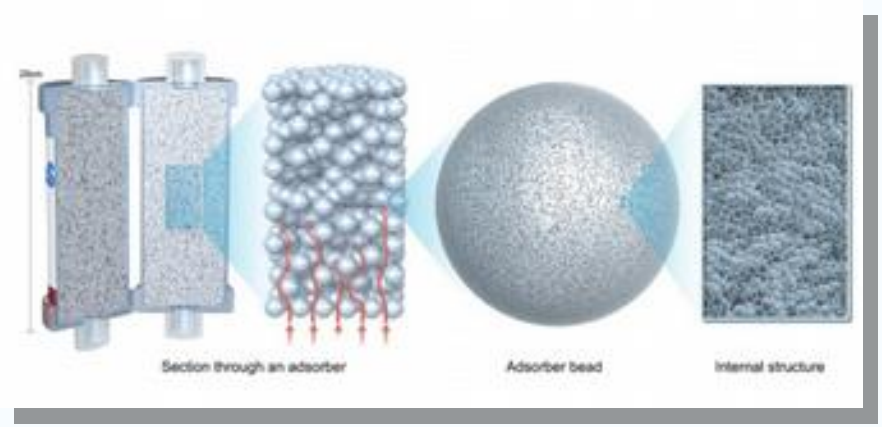
Response-adaptive randomization



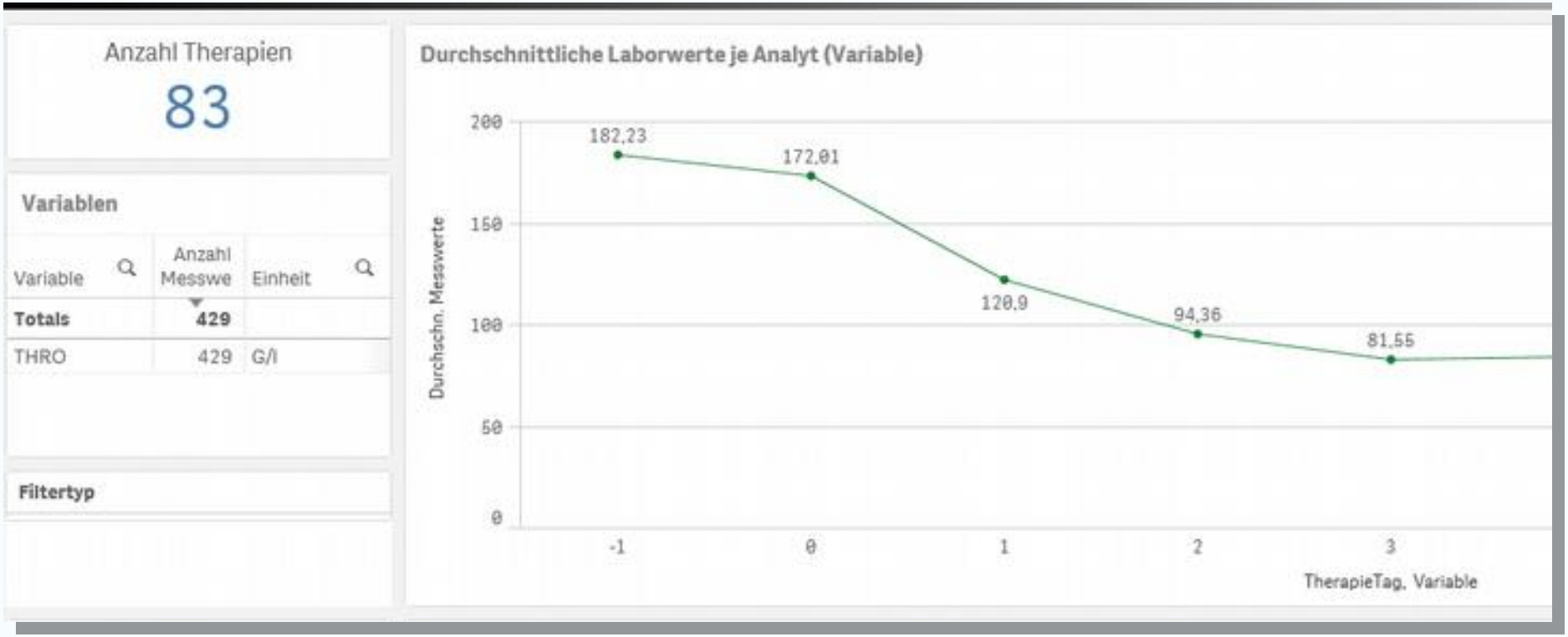
real life

data

cytokine removal therapy



cytokine removal vs platelets?



Cytosorb® pre-filter, Cytosorb® post-filter, Jafron® post-filter

finance

ICU

Eliquis (apixaban)

10 hours later

andexanet alfa?

2019

Ondexxya®

andexanet alfa

European Commission approval on April 26, 2019

Landeskliniken-Holding

IHRE GESUNDHEIT. UNSER ZIEL.

boj s větrnými mlýny


IT
Service


return
Insurance
control

radiologická vyšetření

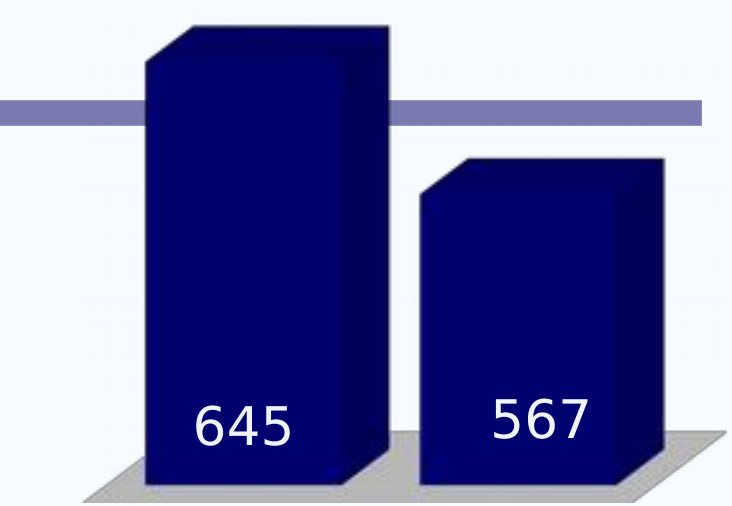
- ✓ **každý** pacient na ICU **každý** den předozadní snímek plic
- ✓ + snímek při **příjmu**
- ✓ + snímek po zavedení **katetrů** *(CVK, CoolGuard, ECLS…)*
- ✓ + snímek při náhlé **změně** zdravotního stavu
- ✓ + **ostatní** radiol. vyšetření *(CT)*

radiologická vyšetření

- ✓ pac. *Helga A., 1958*
- ✓ *Fournierova gangréna (+MOF)*
- ✓ 1.12.2018 – 27.5.2019 (178 dnů)

C/P	CT
198 x	**9 x**

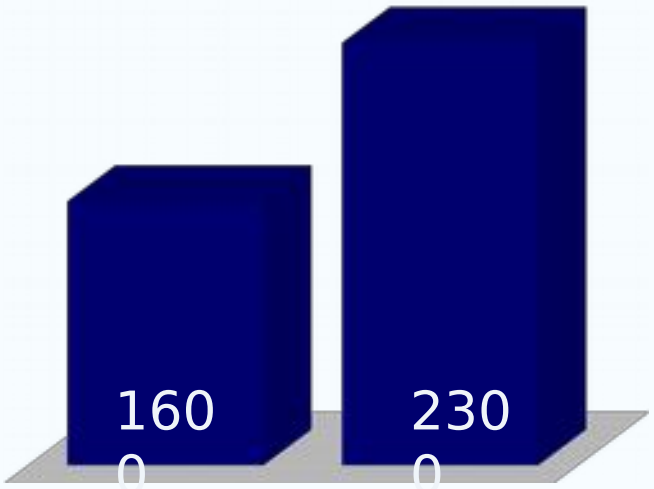
2000 2009



počet alogenních transfuzí klesl

o 12%

(v tisících)



počet hospitalizací vzrostl

o 44% (!)

(hospital. na 10 tis. obyv.)

to save a net cost of

€100 million

nationwide every year

BJA,2012;109(1):55-68

possible to save a net cost of

€200 million

nationwide every year

Prof. Gombotz, persönlich X/2015

shit

happens

Eporatio 30.000 I.E./1ml	1170000 I.E.	17.01.2015 10:52	11.05.2015 08:00	39	3 d	sc-inj
Fenistil 4 mg Amp	12 mg	22.02.2015 10:07	23.02.2015 08:00	3	12 h	iv-inf
NaCl 0.9 %	300 ml					
Ferinject 500mg	7000 mg	17.01.2015 10:52	18.04.2015 08:00	14	7 d	ad-inf
NaCl 0.9 %	1400 ml					

Eporatio 30.000 IU s.c. á 3d (17.1. – 11.5.2017)

celkem **1.170.000 IU**

Ferinject 500 mg i.v. á 7d (17.1. – 18.4.2017)

celkem **7.000 mg**


with permission


with permission


S
THERMENKLINIKUM BADEN
CT
LWS
Age:66 years
M
27 Sep 2006
18:18:37.000
P
A
kVP:135
mA:150
msec:1000
mAs:150
Thk:1 mm
Asteion
Orient: 87°,-2°,16°
Vitrea®
W/L:347/366
As
I
im


Age:66 years
M
27 Sep 2006
18:18:37.000
S
THERMENKLINIKUM BADEN
CT
LWS
A
P
kVP:135
mA:150
msec:1000
mAs:150
Thk:1 mm
Asteion
Orient: -100°,-12°,-3°
Vitrea®
W/L:240/190
As
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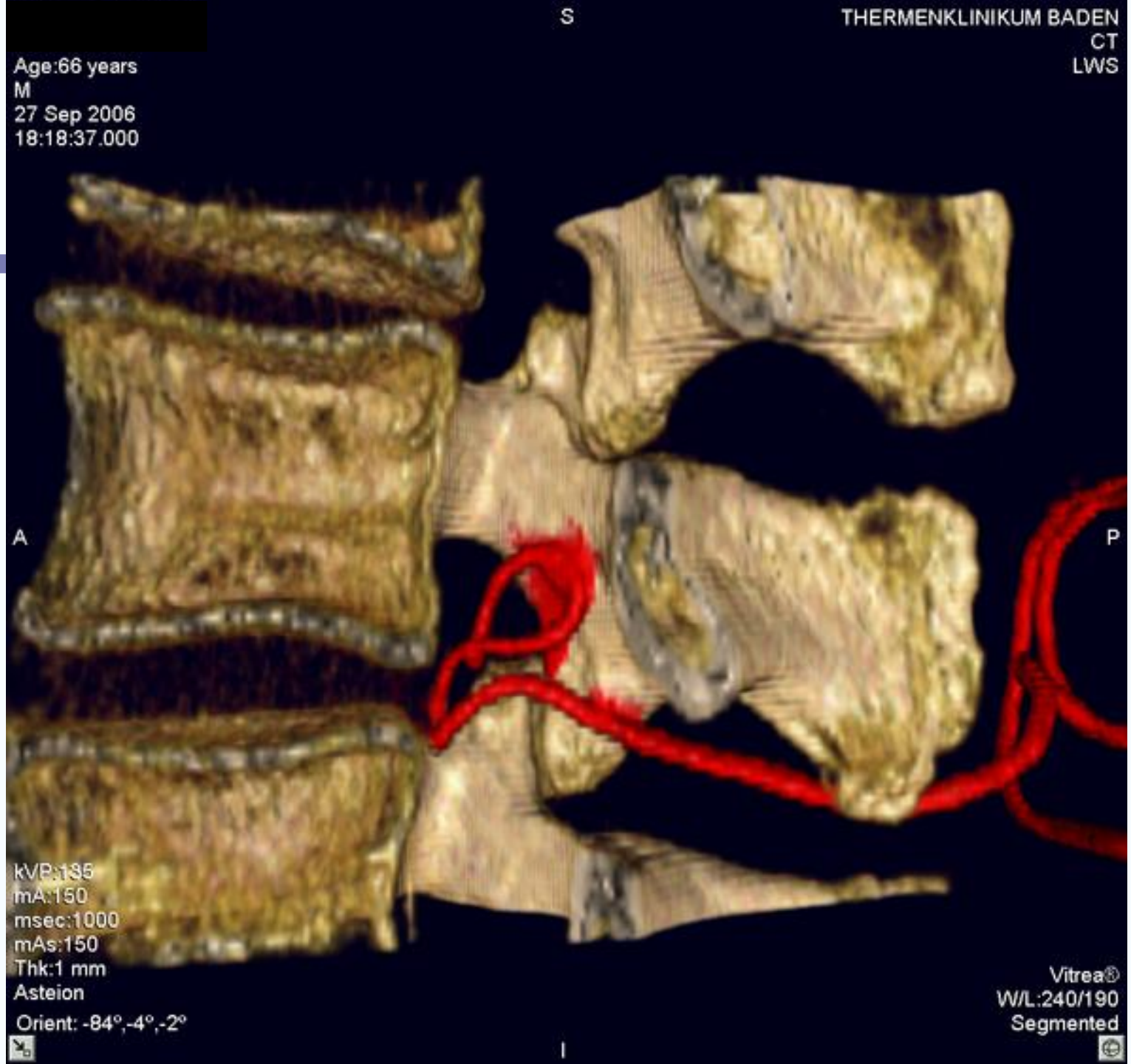
im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Age:66 years
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27 Sep 2006
18:18:37.000
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kVP:135
mA:150
msec:1000
mAs:150
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Asteion
Orient: -84°,-4°,-2°
Vitrea®
W/L:240/190
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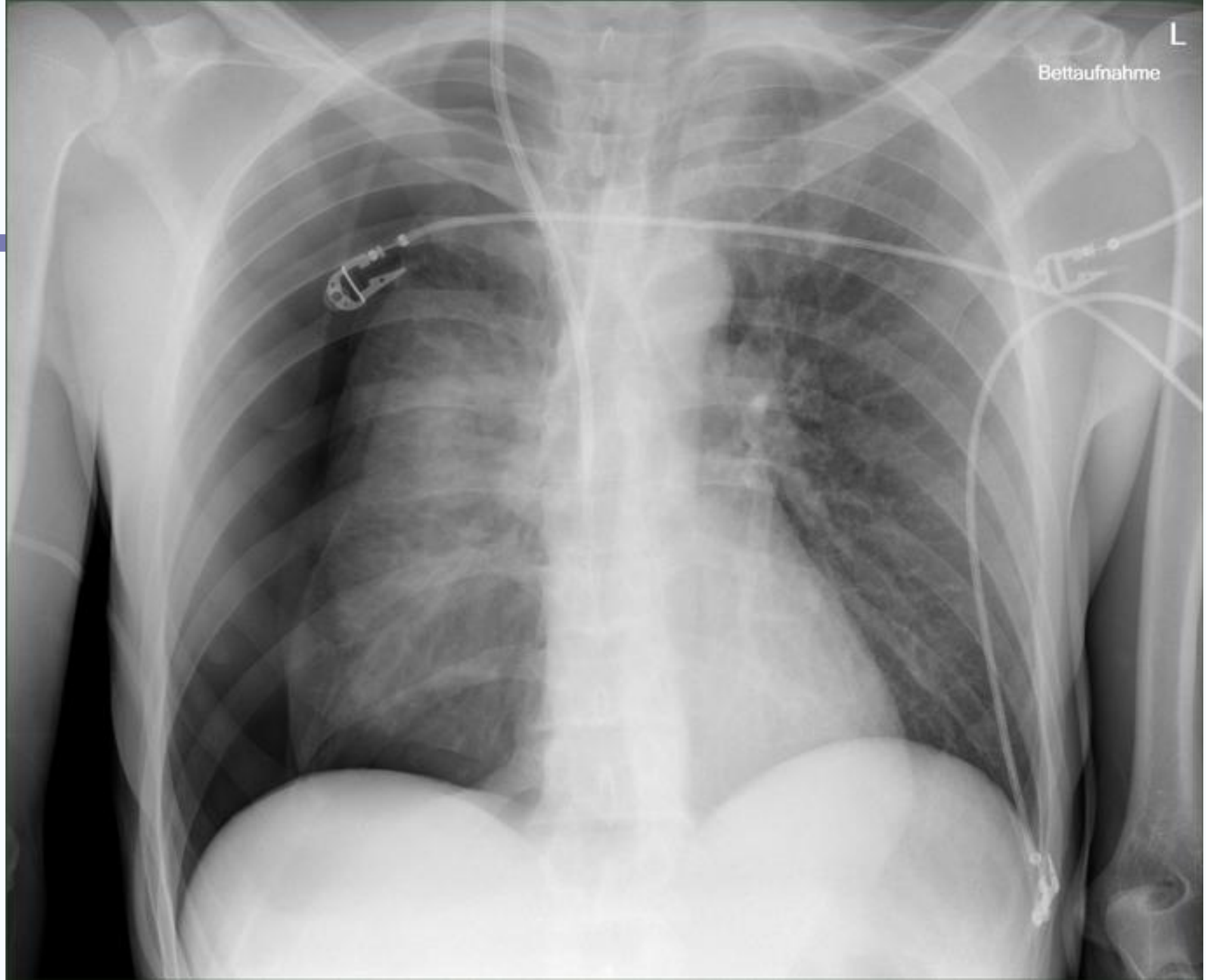
o

dokonalost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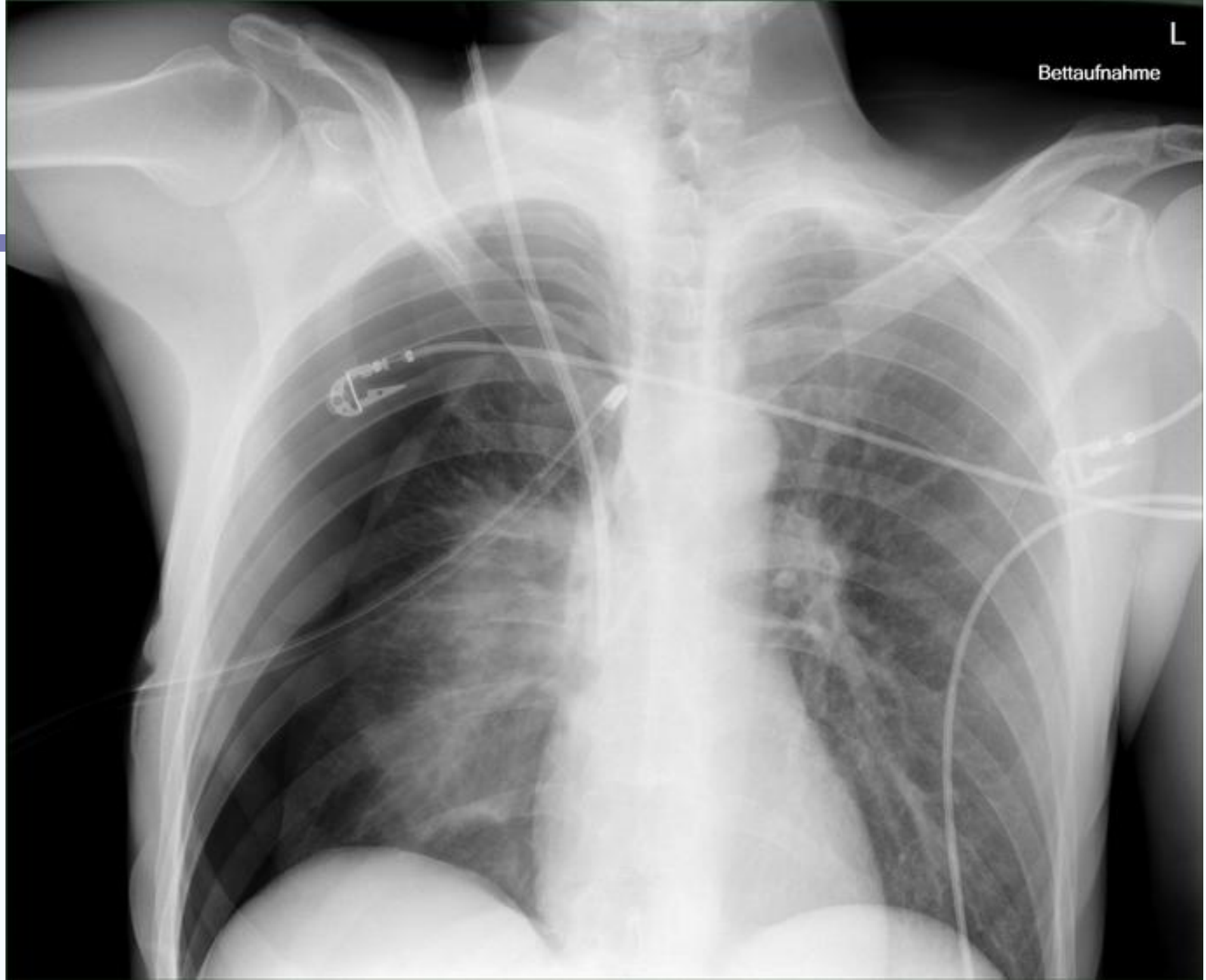
Bettaufnahme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Bettaufnahme


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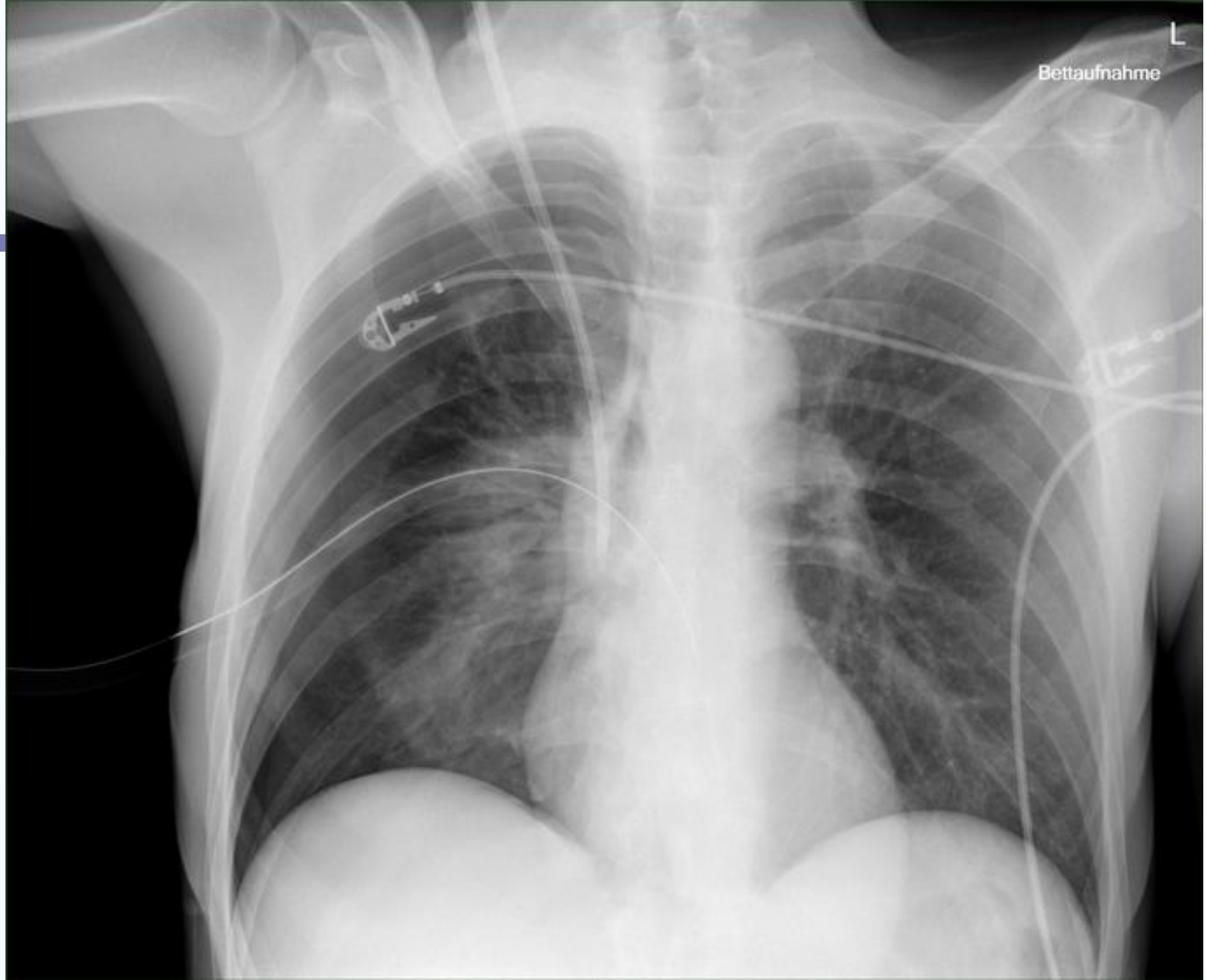
Bettaufnahme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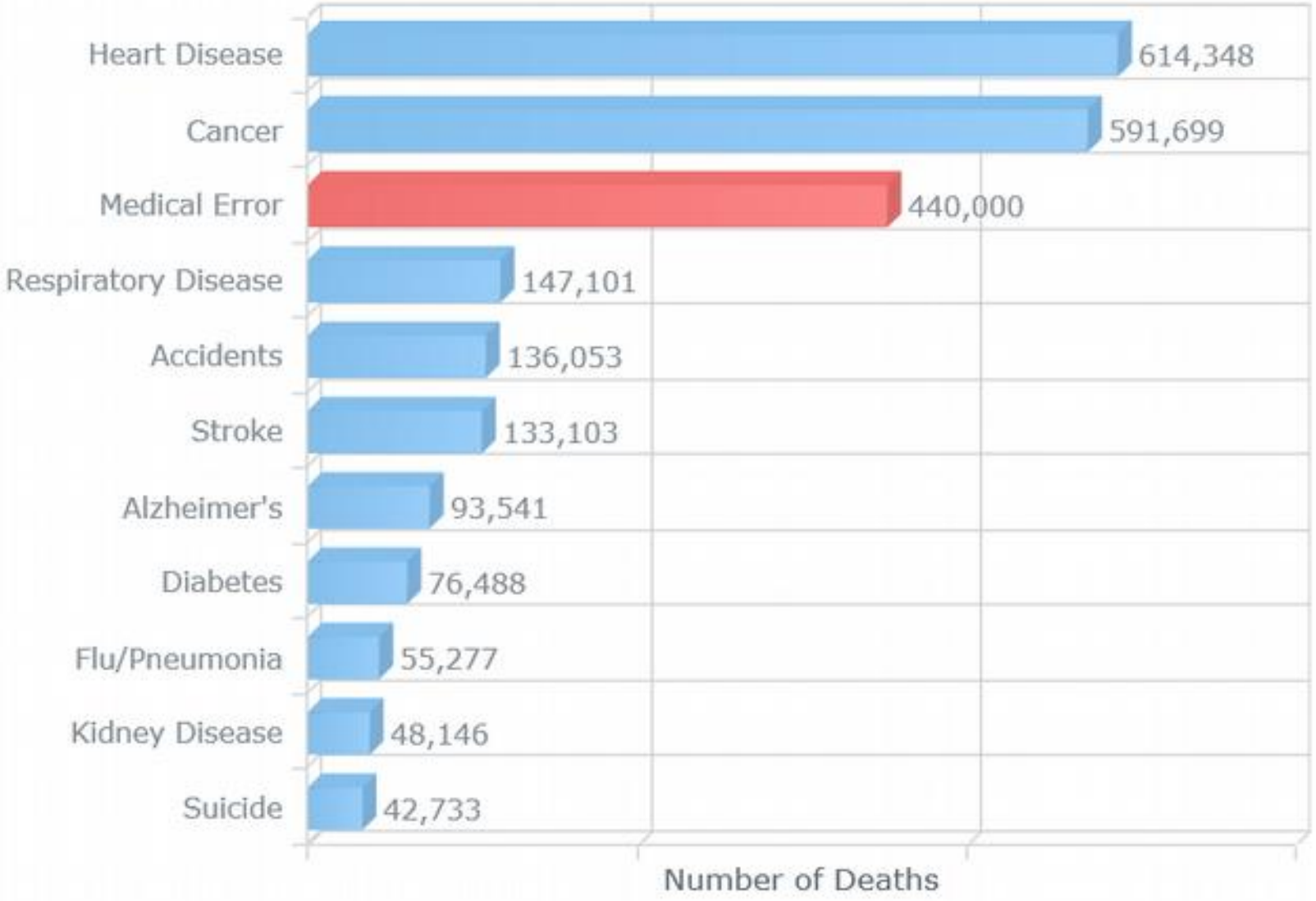
Bettaufnahme


L
Bettaufnahme

Causes of Death in USA

Researches estimate medical error as the third leading cause of death



defensive medicine

defensive medicine

diagnostic test or **medical treatment** that is not necessarily the best option for the patient, but an option that mainly serves the function to protect the physician against the patient as potential plaintiff

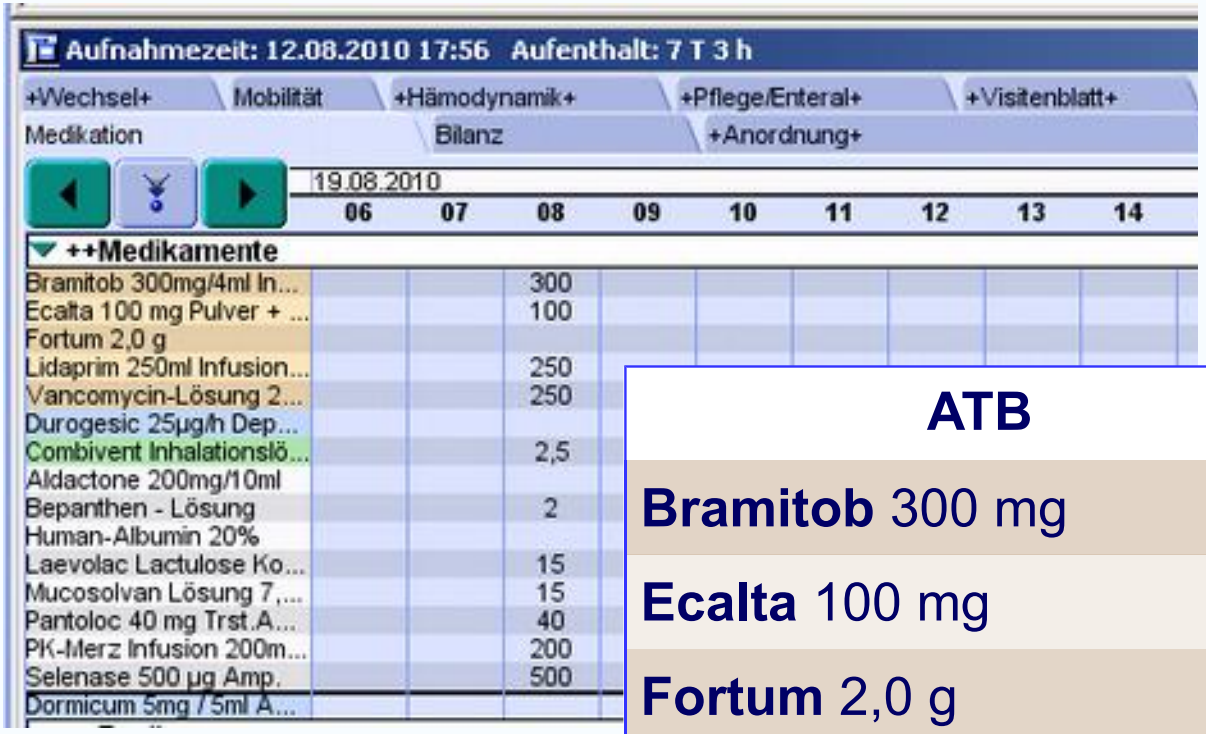
ordering unnecessary CT scans, biopsies, and MRIs, and prescribing more e.g. antibiotics than medically indicated

in Switzerland, for instance, the rate of **hysterectomy** in the general population is **16%**, whereas among female doctors and female partners of doctors it is only **10%**

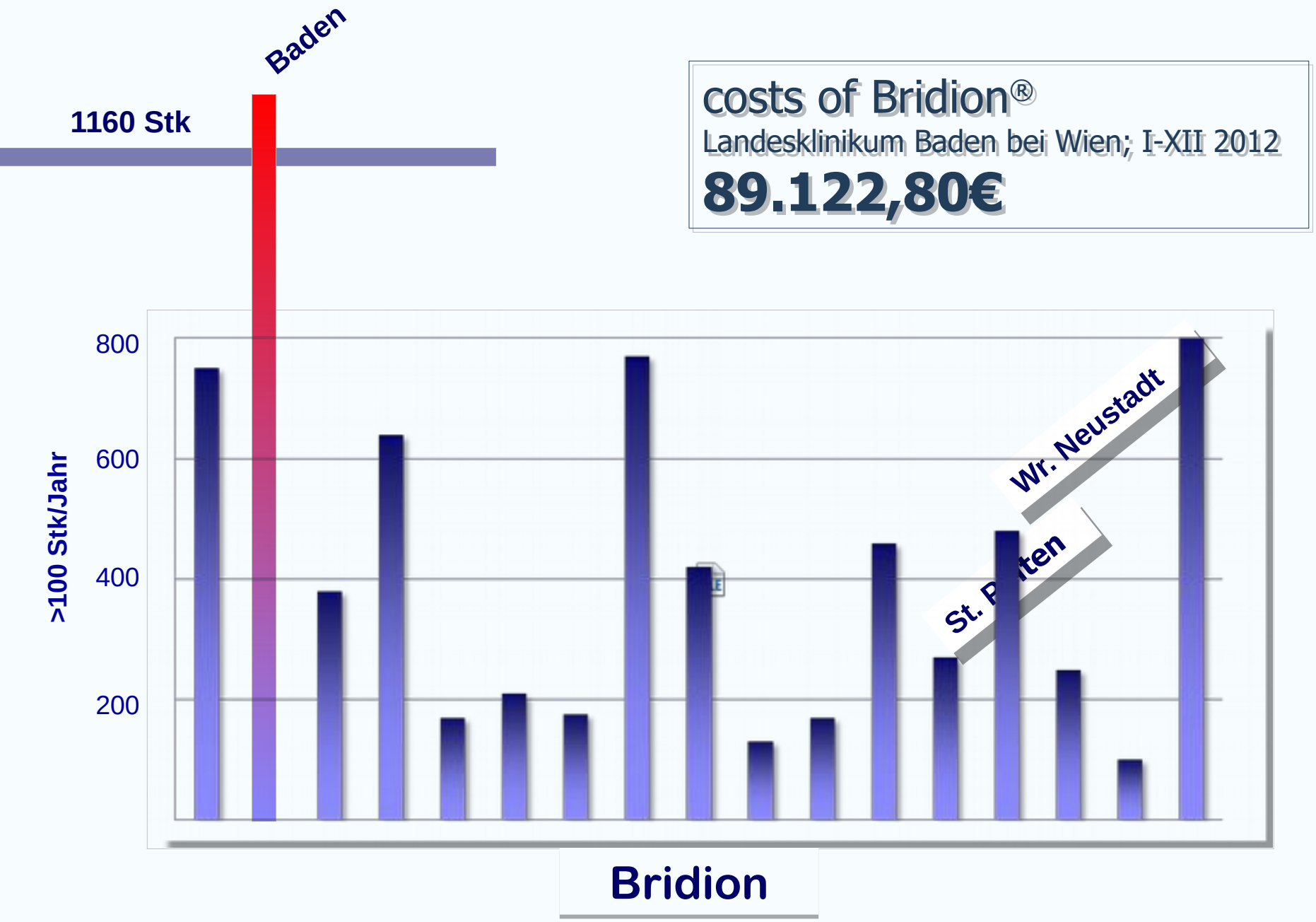

NÖ Patienten- und Pflegeanwaltschaft
PPA
Ihre Rechte
Ihr Anliegen
Über uns
Publikationen
Filme
Unabhängig
Weisungsfrei
Für Ihr Anliegen

polypragmazie

polypragmazie



ATB	*dosis*
Bramitob 300 mg	3x
Ecalta 100 mg	1x
Fortum 2,0 g	3x
Lidaprim 250 ml	2x
Vancomycin 250 mg p.o.	4x
Doribax 3 x 2g	kontin.


Baden
1160 Stk
costs of Bridion®
Landesklinikum Baden bei Wien; I-XII 2012
89.122,80€
800
600
400
200
>100 Stk/Jahr
Wr. Neustadt
St. Pölten
Bridion

marná léčba

When we become
very sick, or very old,
we are programmed to die.

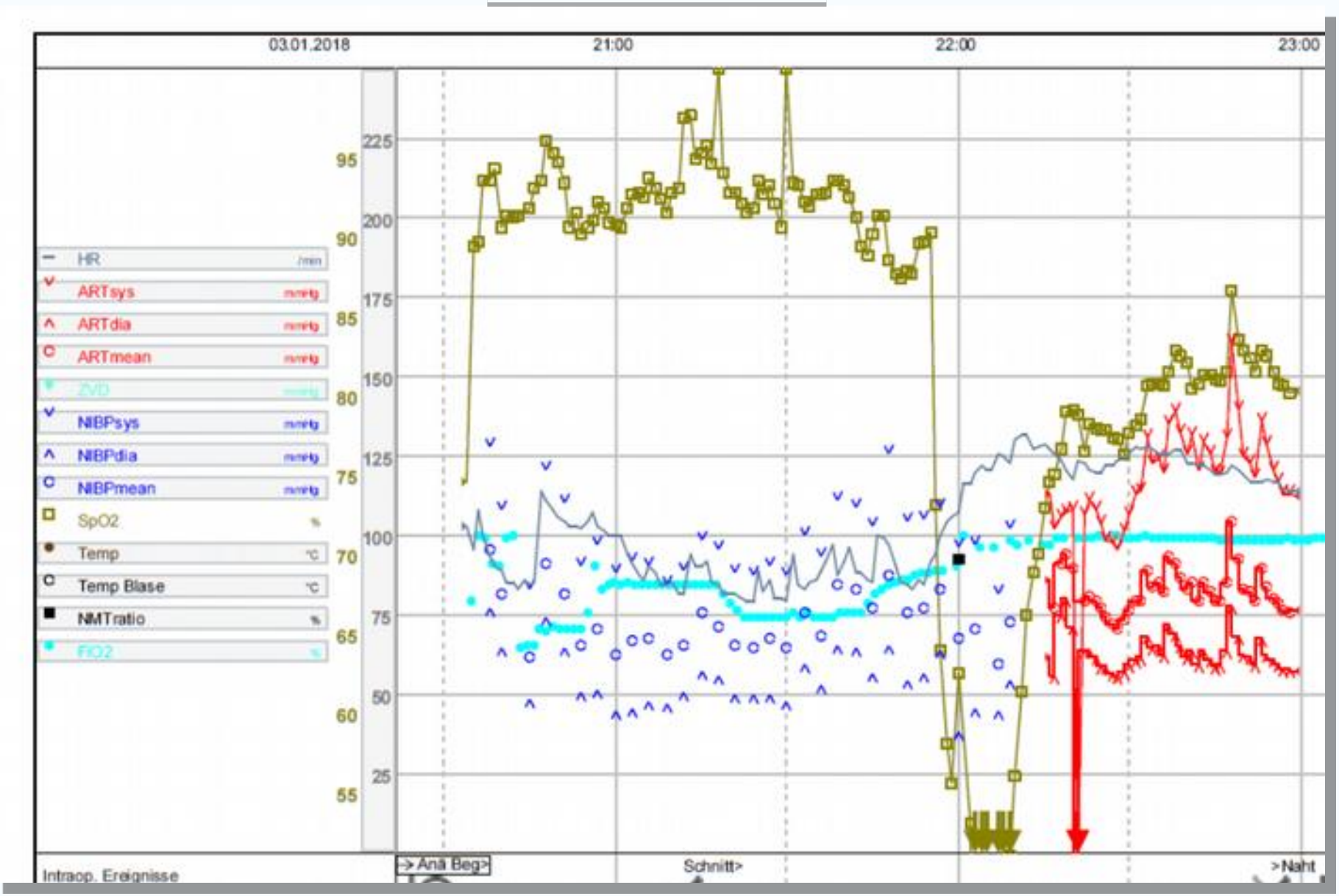

L


erschwerte Aufnahmebedingung
L


L
post op


post op
L

OP


03.01.2018
21:00
22:00
23:00
HR
ARTsys
ARTdia
ARTmean
ZVD
NIBPsys
NIBPdia
NIBPmean
SpO2
Temp
Temp Blase
NMTratio
FIO2
95
90
85
80
75
70
65
60
55
225
200
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150
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50
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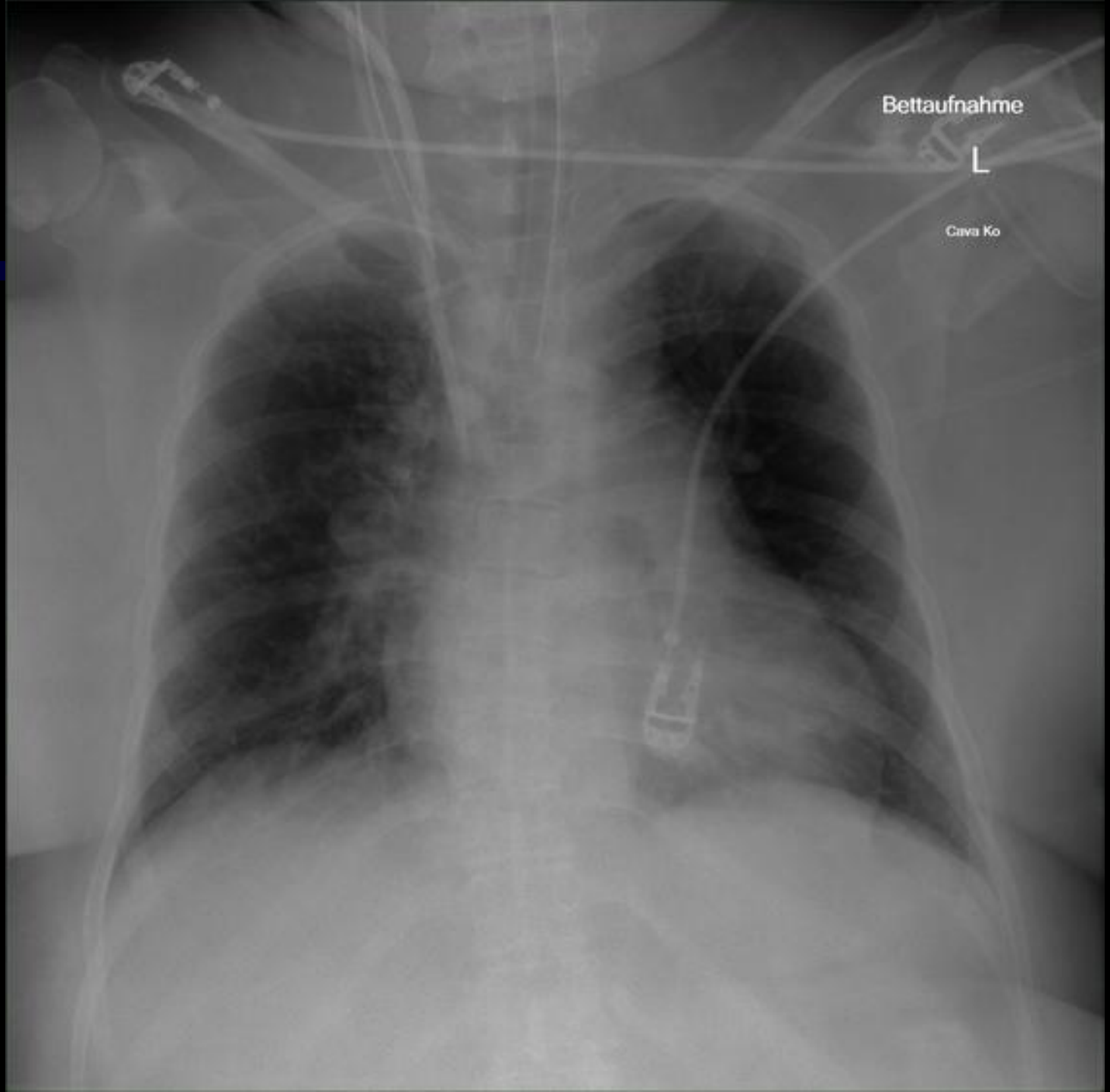
Intraop. Ereignisse
->Anä Beg>
Schnitt>
>Naht


Bettaufnahme
L
Cava Ko

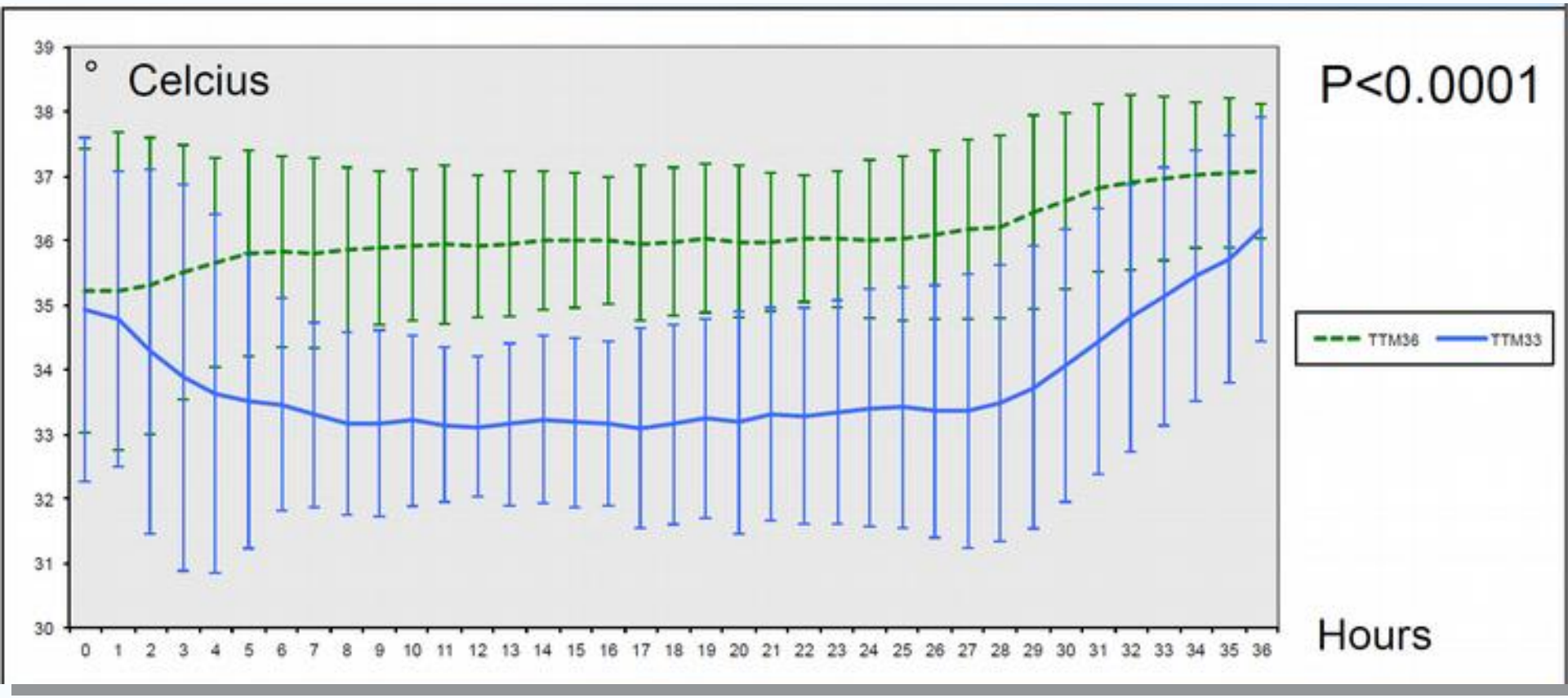
ICU


Resp Messung 1 – AZ: 1855001547 – 05.01.18 17:57
FIO2 (m)
%
#PCO2I-A
mmHg
SpO2
%
#PO2I-A
mmHg
BN
100
90
80
70
60
50
40
30
20
10
0
80
73.5
67
60.5
54
47.5
41
34.5
28
21.5
15
100
98
96
94
92
90
88
86
84
82
80
300
275
250
225
200
175
150
125
100
75
50
#PCO2I-A
FIO²(m)
00:00
02:00
04:00
06:00
08:00
10:00
12:00
#PO2I-A
16:00
18:00
05.01.2018 00:00 – 06.01.2018 00:00


R
10mm
F

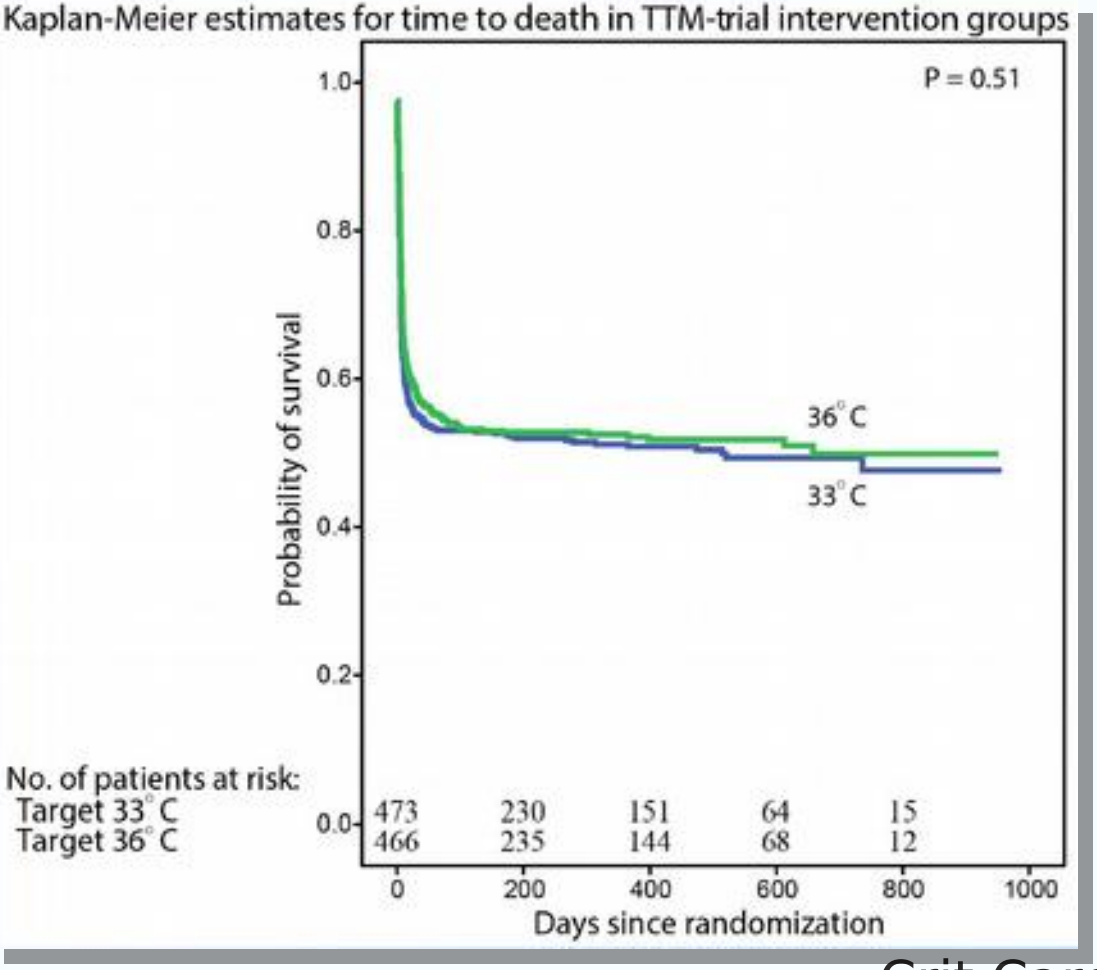
vývoj poznání

33 ºC vs 36 ºC

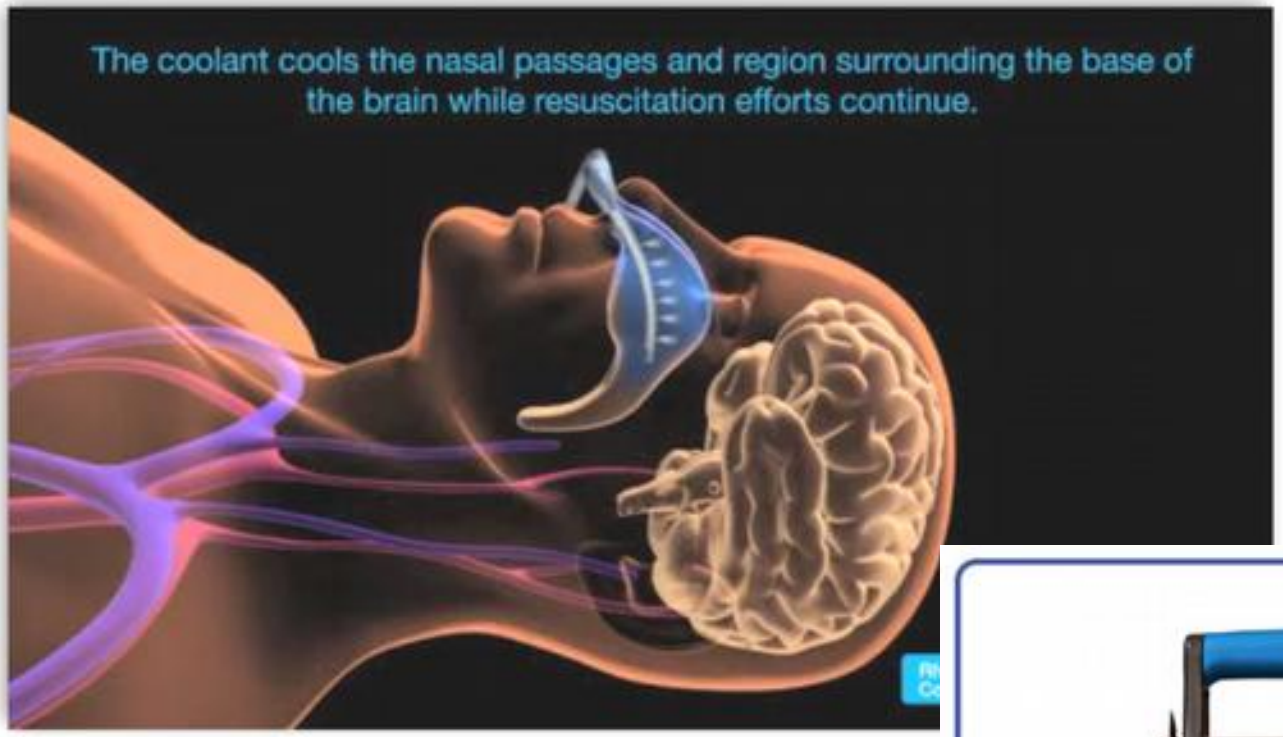


Crit Care Med. 2013;*41:99-115*.

33 ºC vs 36 ºC



Crit Care Med. 2013;*41:99-115*.


The coolant cools the nasal passages and region surrounding the base of the brain while resuscitation efforts continue.

RhinoChill


RhinoChill

Resuscitation Science

Intra-Arrest Transnasal Evaporative Cooling

A Randomized, Prehospital, Multicenter Study (PRINCE: Pre-ROSC IntraNasal Cooling Effectiveness)

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Coclusions:

Prehospital intra-arrest transnasal cooling is safe and feasible and is associated with a significant improvement in the time intervals required to cool patients.

Circulation.2010;122:729-736.

Research

JAMA | Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

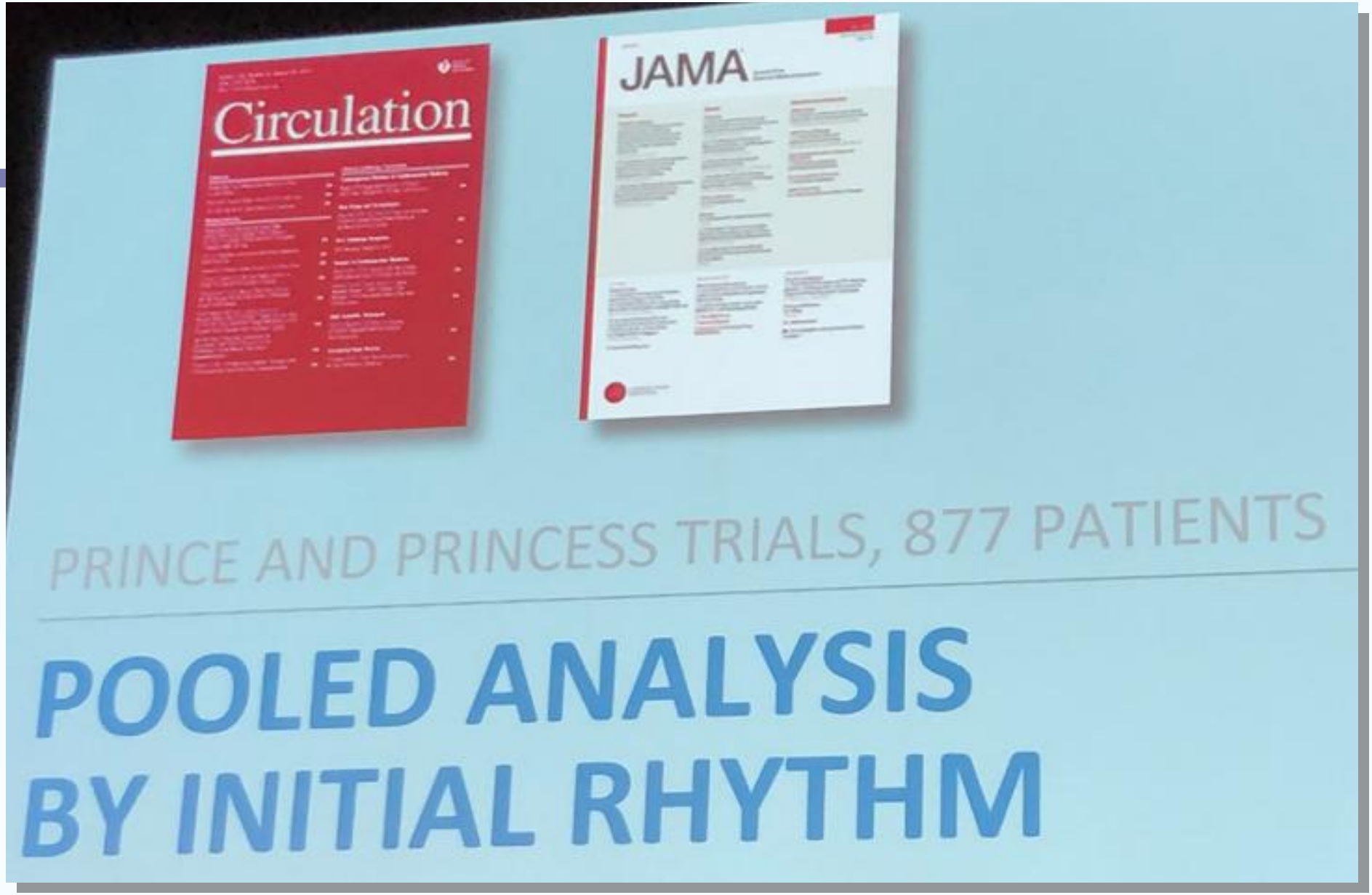
Effect of Trans-Nasal Evaporative Intra-arrest Cooling on Functional Neurologic Outcome in Out-of-Hospital Cardiac Arrest

The PRINCESS Randomized Clinical Trial

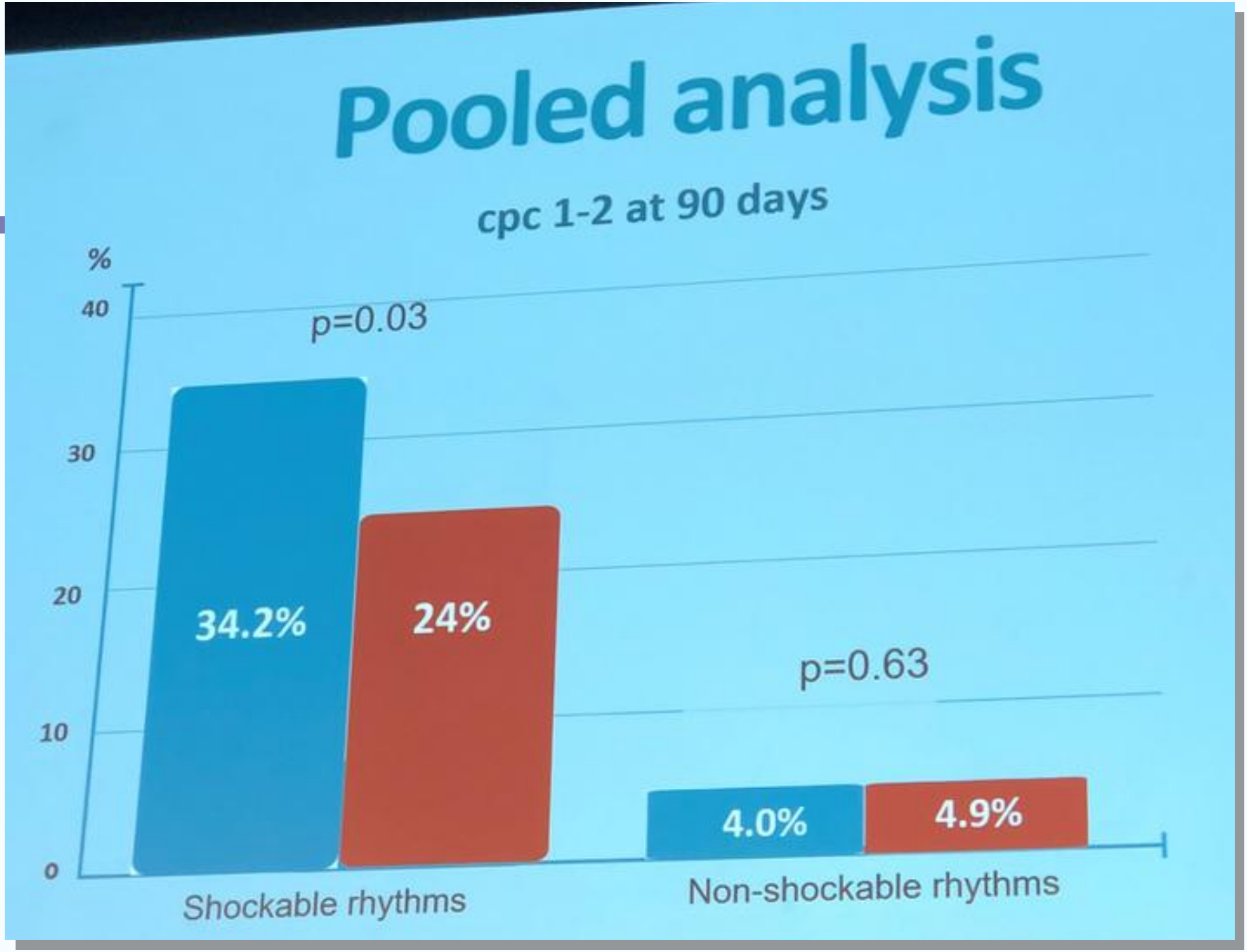
INTERVENTIONS Patients were randomly assigned to receive trans-nasal evaporative intra-arrest cooling (n = 343) or standard care (n = 334). Patients admitted to the hospital in both groups received systemic therapeutic hypothermia at 32°C to 34°C for 24 hours.

CONCLUSIONS AND RELEVANCE Among patients with out-of-hospital cardiac arrest, trans-nasal evaporative intra-arrest cooling compared with usual care did not result in a statistically significant improvement in survival with good neurologic outcome at 90 days.

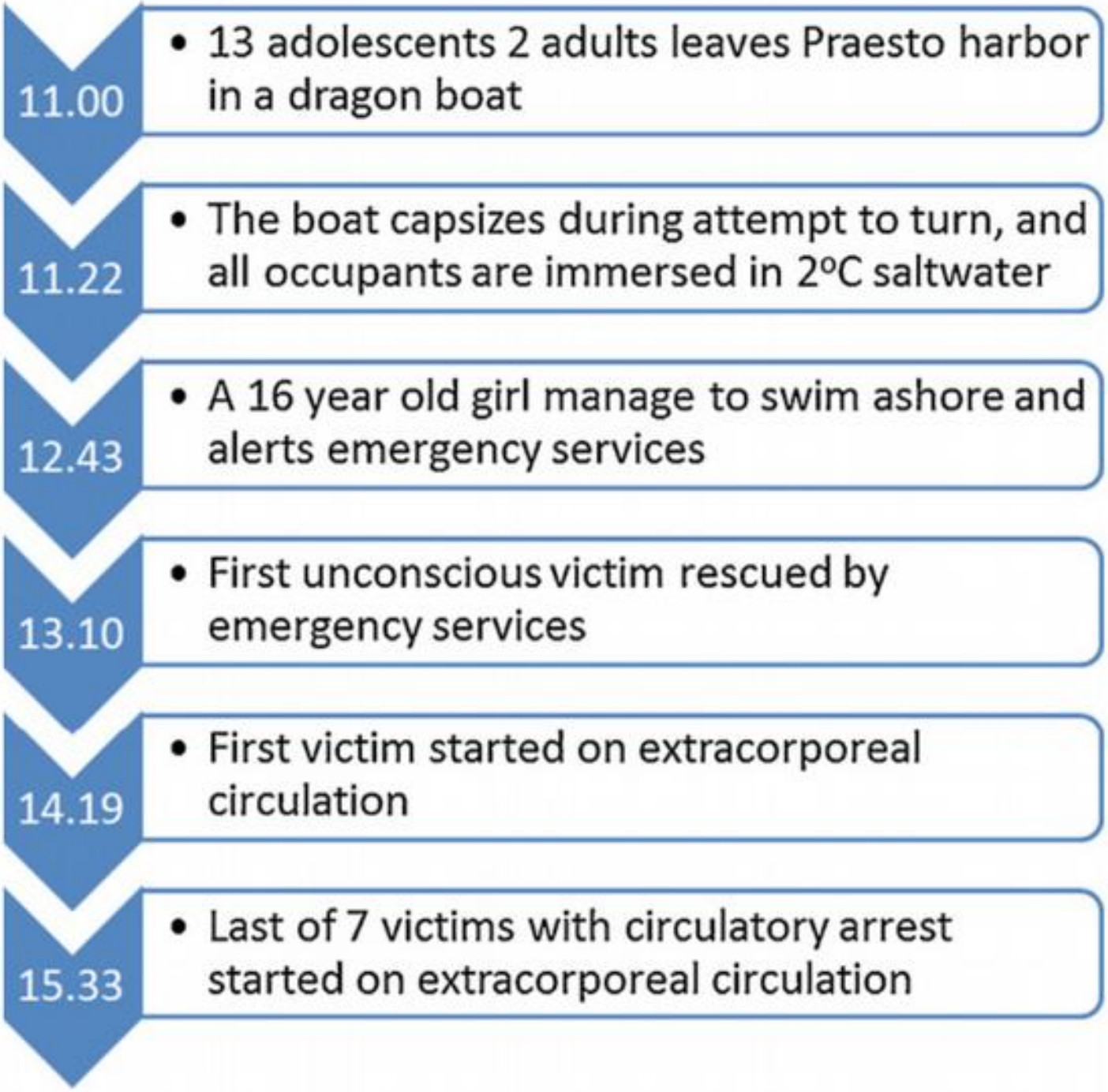
JAMA.2019;321(17):1677-1685.


Circulation
JAMA
PRINCE AND PRINCESS TRIALS, 877 PATIENTS
POOLED ANALYSIS
BY INITIAL RHYTHM

Pooled analysis



11.02.2012


11.00
• 13 adolescents 2 adults leaves Praesto harbor in a dragon boat
11.22
• The boat capsizes during attempt to turn, and all occupants are immersed in 2°C saltwater
12.43
• A 16 year old girl manage to swim ashore and alerts emergency services
13.10
• First unconscious victim rescued by emergency services
14.19
• First victim started on extracorporeal circulation
15.33
• Last of 7 victims with circulatory arrest started on extracorporeal circulation

- seven ECMO
- warming (one degree per 10 minutes)
- six hours after the accident ROSC
- everybody awoke at the same day
- 100% survival
- good neurological outcome in six of seven

ELSEVIER

Resuscitation

Volume 83, Issue 9, September 2012, Pages 1078-1084

Clinical paper

Outcome of accidental hypothermia with or without circulatory arrest: Experience from the Danish Præstø Fjord boating accident ☆

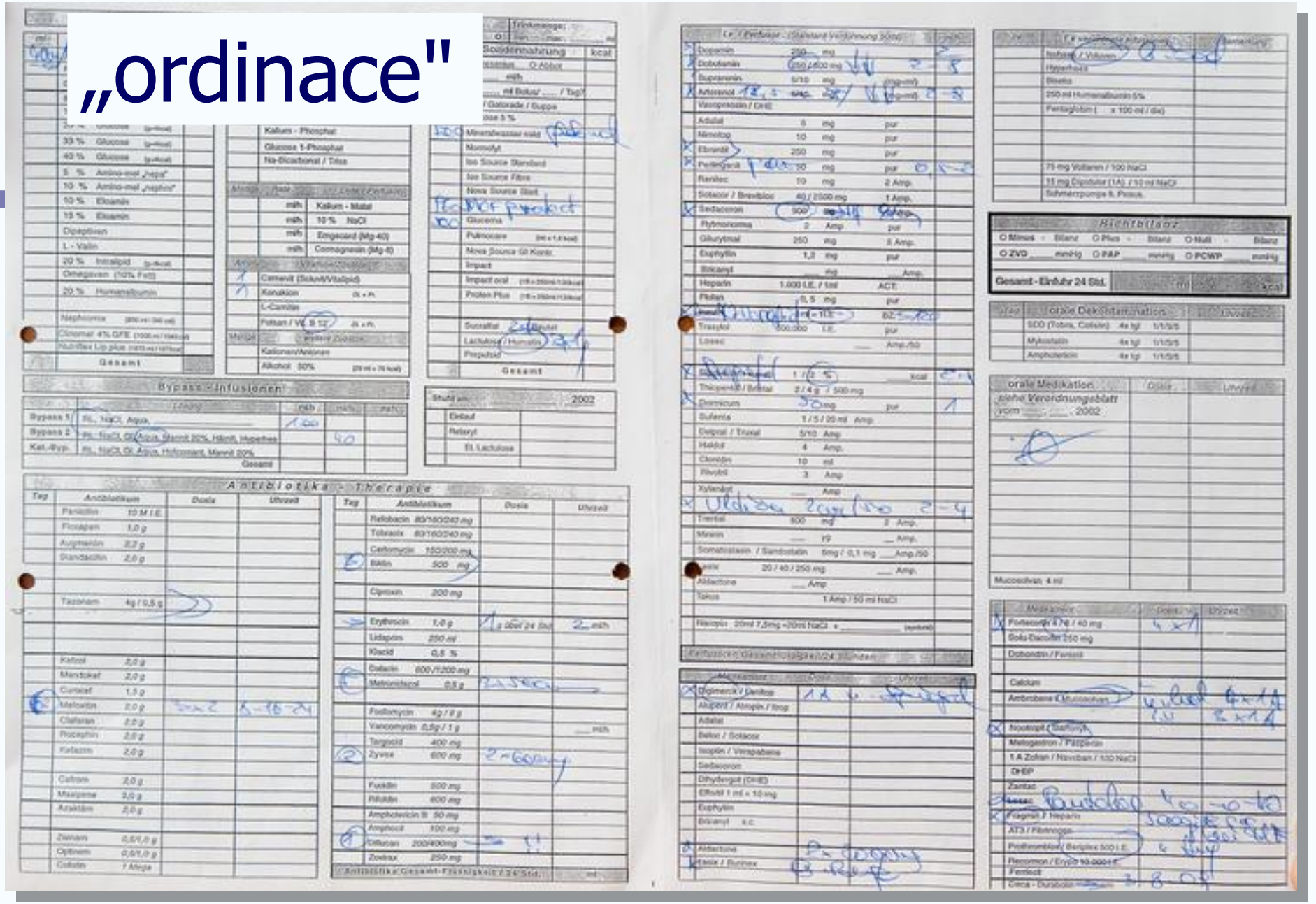
Michael Wanscher [a], Lisbeth Agersnap [f], Jesper Ravn [a], Stig Yndgaard [a], Jørgen Feldbæk Nielsen [f], Else R. Danielsen [b], Christian Hassager [a], Bertil Romner [c], Carsten Thomsen [b], Steen Barnung [d], Anne Grethe Lorentzen [g], Hans Høgenhaven [e], Matthew Davis [a], Jacob Eifer Møller [a] ✉

Accidental Hypothermia: 'You're Not Dead Until You're Warm and Dead'

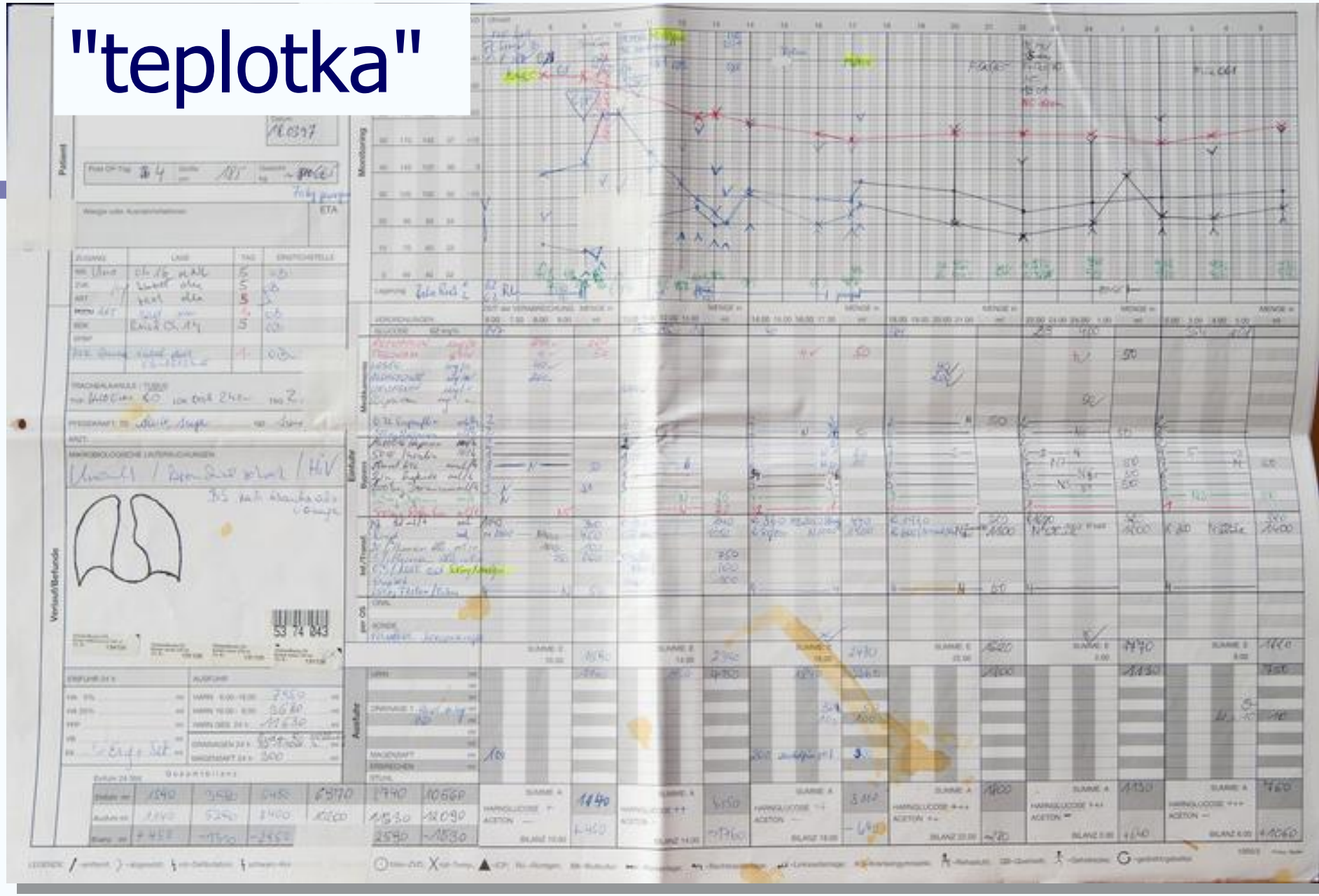
JOHN L. FOGGLE, MD, MBA, FACEP

Patient data monitoring system

„ordinace"


Bypass - Infusionen
Antibiotika - Therapie
Richtblatt
orale Medikation
Gesamt - Einfuhr 24 Std.

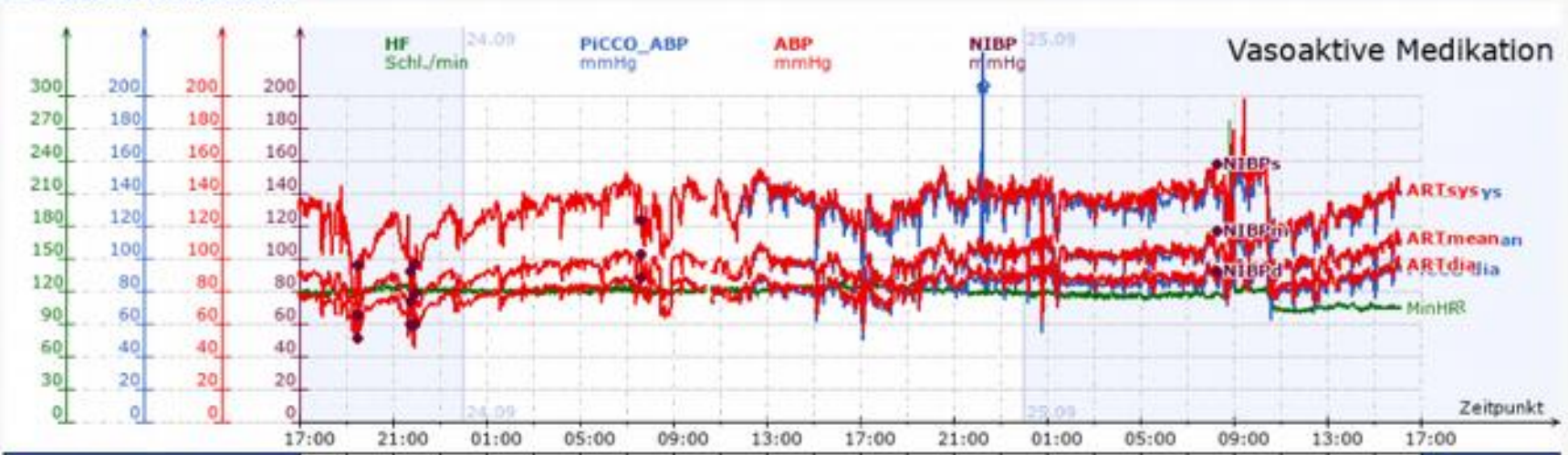
"teplotka"



☑ **HÄMODYNAMIK**

☐ Trend PICCO

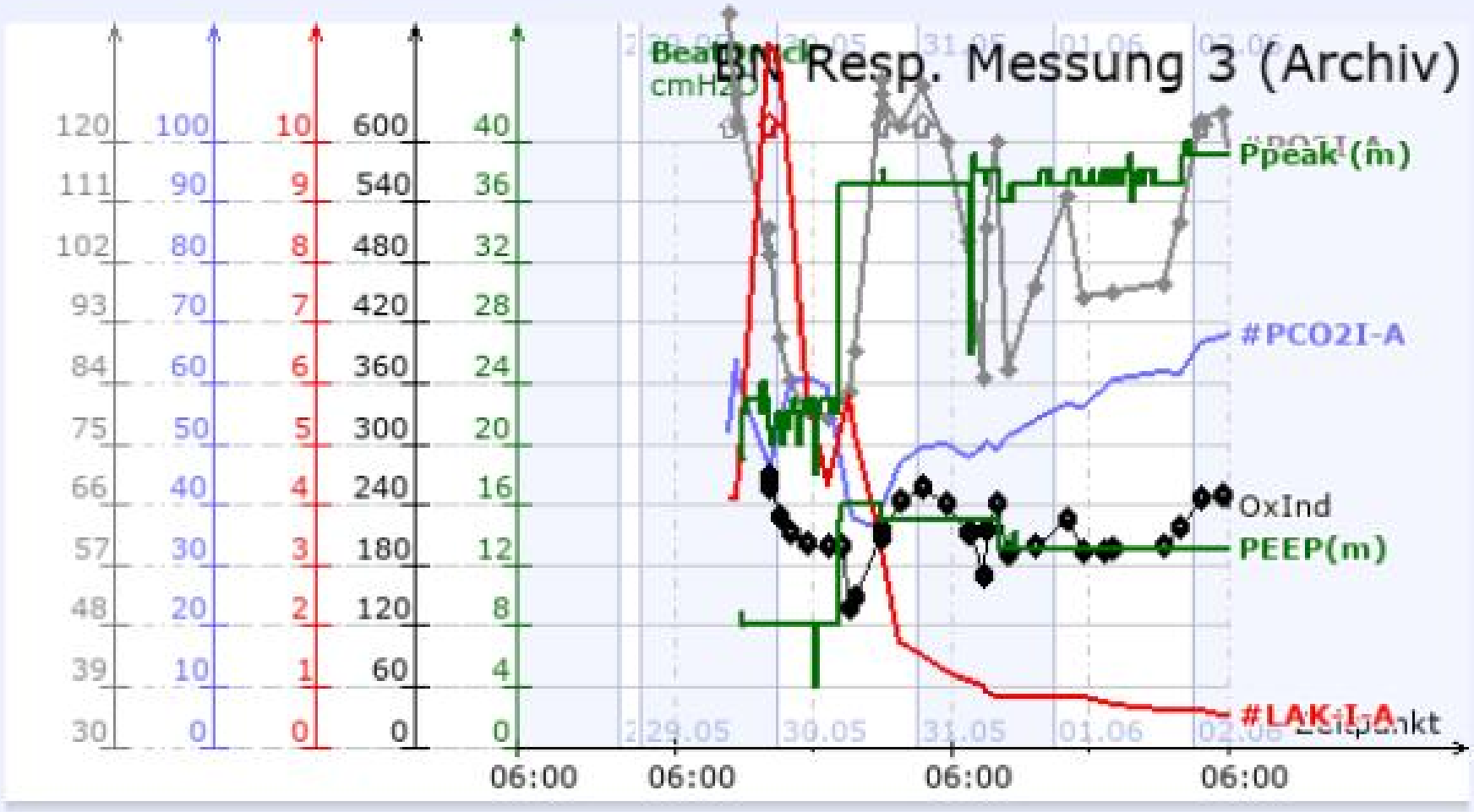
☑ Vasoaktive Medikation



23.09.2019 - 25.09.2019	17	19	21	23	01	03	05	07	09	11	13	15	17	19	21	23	01	03	05	07	09	11	13	15	Gesamt
Medikamente																									
Regelmässig																									
Cormagnesin 400 mg / 100 ml NaCl KI 4 mg/ml		400						400																	800 mg
Inspra 50 mg - Filmtbl. 50 mg/Tabl									25											25					50 mg
Solu-Cortef 1 mg/ml NaCl 0.9 % 1 ml/ml		100																							100 mg 100 ml
Medikamenteninfusionen																									
Ziel																									
Dobutamin 250 mg / 50 ml 5 mg/ml Perfusor	6	15 !		15 !	15 !			15 !	15 !		15 !			15 !	10	10 !					10 !		10 !		2921 mg
	4	10		10	10			10	10		10			10	6.667	6.667					6.667		6.667		[µg/kg/min]
NORadrenalin 5mg Perfusor 0.1 mg/ml Perfusor								8 !	8 !	8 !						8 !	8 !		7 !			7 !			24.5 mg
								0.107	0.107	0.107						0.107	0.107		0.093			0.093			[µg/kg/min]
NORadrenalin 5mg Perfusor 0.1 mg/ml Perfusor	10 !	8 !	8 !	7 !			7 !		7 !	7 !			7 !			7 !	7 !		8 !	8 !		9 !			35.4 mg
	0.133	0.107	0.107	0.093			0.093		0.093	0.093			0.093			0.093	0.093		0.107	0.107		0.12			[µg/kg/min]
Rapibloc 300 mg Perfusor 6 mg/ml Perfusor																							2 !		68.7 mg
Simdax 0.23 mg/ml Glukose 5% 0.91 ml/ml 12,5mg/50ml	1.5							2 !	2 !					1 !					2 !						15.6 mg 62.4 ml
	0.045							0.061	0.061					0.03					0.061						[µg/kg/min]

Beatmung

19.05.2018 06:00 - 02.06.2018 06:00



osobnosti

Prof. Tobias Welte

Professor of Pulmonary Medicine
Director of the Department of Pulmonary and Infectious Diseases at Hannover University School of Medicine, Hannover, Germany
President of the European Respiratory Society
Past President of the German Society of Pneumology
Vice President of the German Society of Sepsis
Past President of the German Society of Internal Intensive Care (DGIN)
executive board of the German Society of Critical Care (DIVI)
executive board member of the German Center for lung research (DZL)
internal advisory board member of the German Center for Infectious Disease Research (DZIF)
member of the review panel for clinical studies of the German Research Foundation (DFG)
chairman of the Community-acquired Pneumonia (CAPNETZ) foundation
editorial board of the European Respiratory Journal
editorial board Respiratory Medicine
editorial board Thoracic Cardiovascular Surgeon
published: ca 800 papers and over 150 books.

Balzan Prize

Balzan Prize
2019

Tobias Welte

Director of the German Center for Lung Research

"Pathophysiology of respiration:

from basic sciences to the bedside "

« Critical care is not hard. It is just about doing the simple things really well - and not doing anything stupid »

Dr Dan Mullany 2002

selský rozum	common sense	sentido común
Hausverstand	buo senso	здра́вый смысл


…děkuji Vám za pozornost