

Accademia dei Direttori SIMEU Bologna 2017

*Dalle idee alla vita reale: cosa serve davvero
per una gestione efficace della sepsi*

Fernando Schiraldi

Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016

Surviving Sepsis Campaign

- Great Expertise
- Great Literature Review
- Mostly Therapy-focused (less on Diagnosis/Monitoring)
- Puzzling Epidemiology & Setting
- To be continuously updated



EGDT 2001

....where EARLY
is conceptual
REVOLUTION...

The River's work was useful....

- As it provided us a construct on how to understand resuscitation:
 - **Start early** (give antibiotics)
 - Correct hypovolaemia
 - Restore perfusion pressure
 - And in some cases a little more may be required..!
- These concepts are as important today as they ever were.



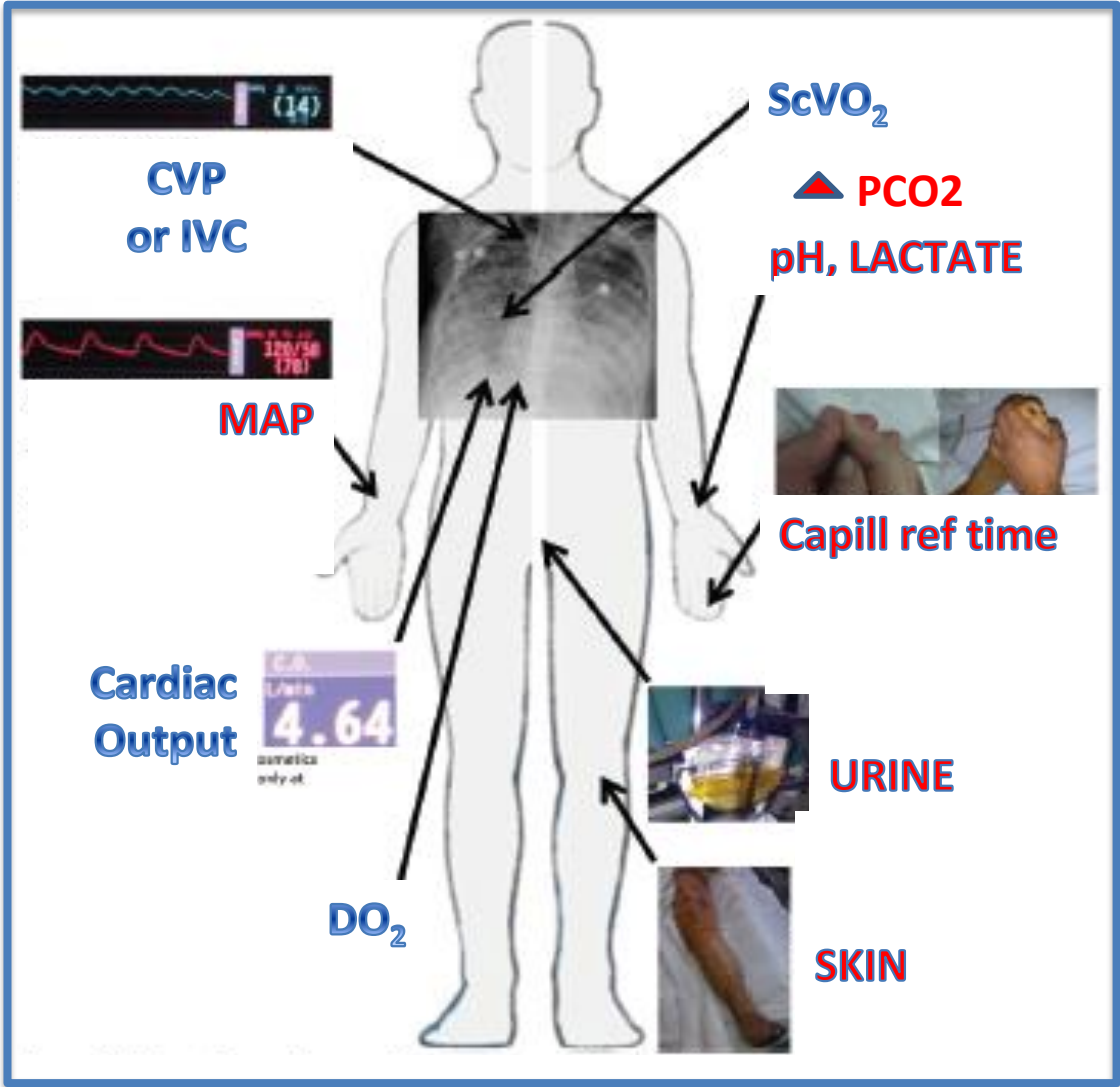
Issues

- 90% of cases with poor outcome in the Australian sepsis database, inadequate recognition was found to be the most common feature

HEAD TO TOE

NEWS
GCS
HR
RR
BP
T
US

plus





Actors

- Micro-organism
 - Virulence
 - Inoculation dose
 - Multi-drug resistance
- Host
 - Genetic polymorphisms
 - Co-morbidities
 - Age
 - Chronic health status
 - Immuno-modulatory medications

plus good doctors & nurses
& dynamic protocols
(GRAM + vs GRAM -)



Prompt treatment

- Sepsis is a time-dependent medical emergency
- **Mortality increases by 7.6% for each hour delay to appropriate antibiotics** (Kumar CCM 2006)

Initial Resuscitation

- We recommend that in the resuscitation from sepsis-induced hypoperfusion, **at least 30ml/kg of intravenous crystalloid fluid be given within the first 3 hours.**

(Strong recommendation; low quality of evidence)

- **We recommend that following initial fluid resuscitation, additional fluids be guided by frequent reassessment of hemodynamic status.**

(Best Practice Statement)

Groeneveld *Critical Care* 2010, 14:101
<http://ccforum.com/14/1/101>



COMMENTARY

Fluids in septic shock: too much of a good thing?

AB Johan Groeneveld*

PREDICTORS OF FLUID RESPONSIVENESS

STATIC
(pre-load)

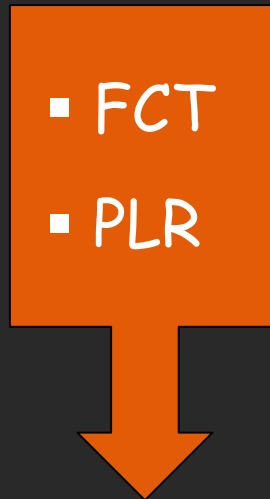


- PVC/RAP
- RVEDV
- PAOP
- LVEDA

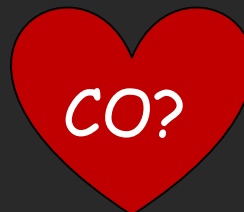
DYNAMIC
(H-L interactions)



- Δ CVP
- Δ SP
- Δ PP
- Δ IVC



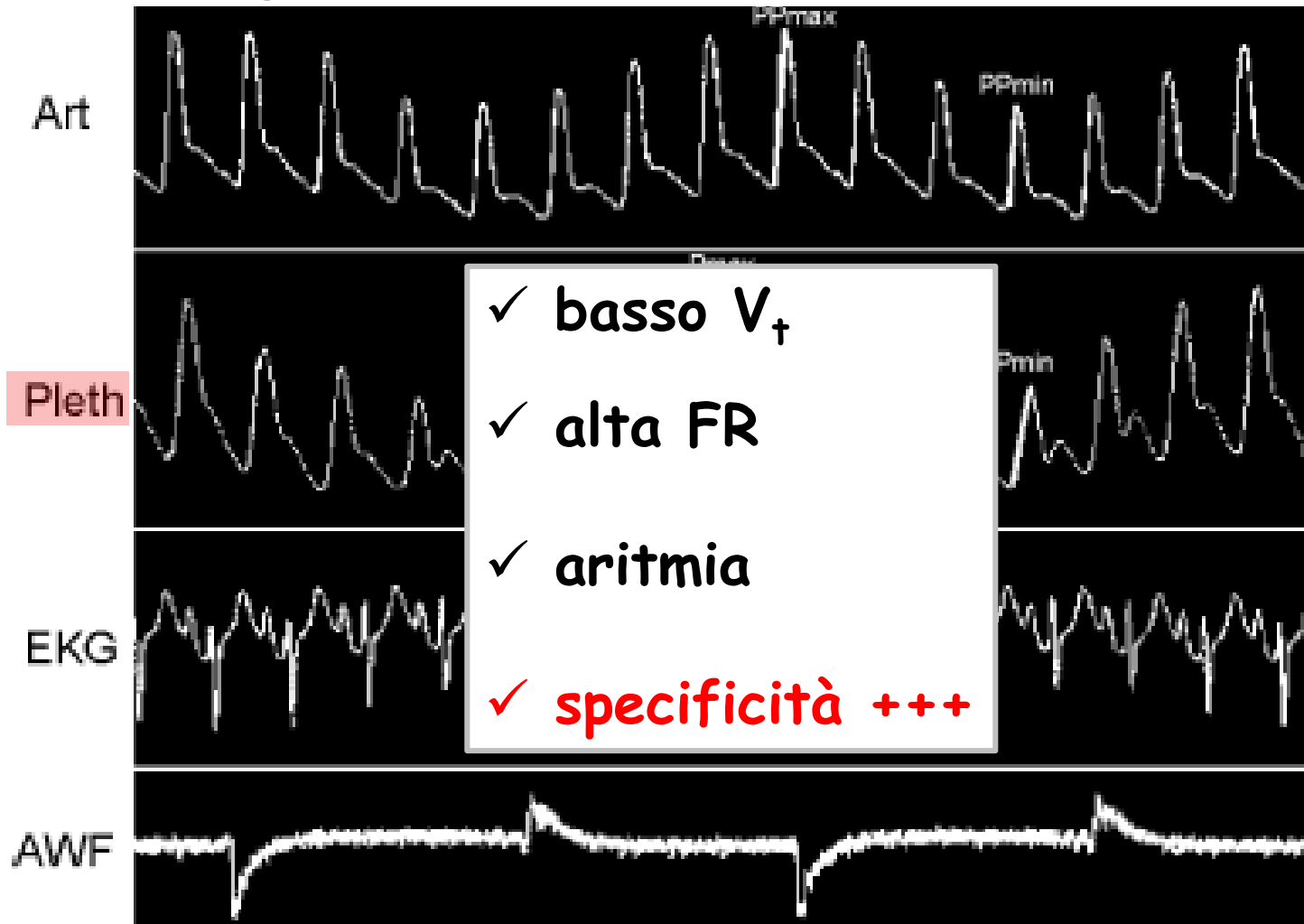
- FCT
- PLR



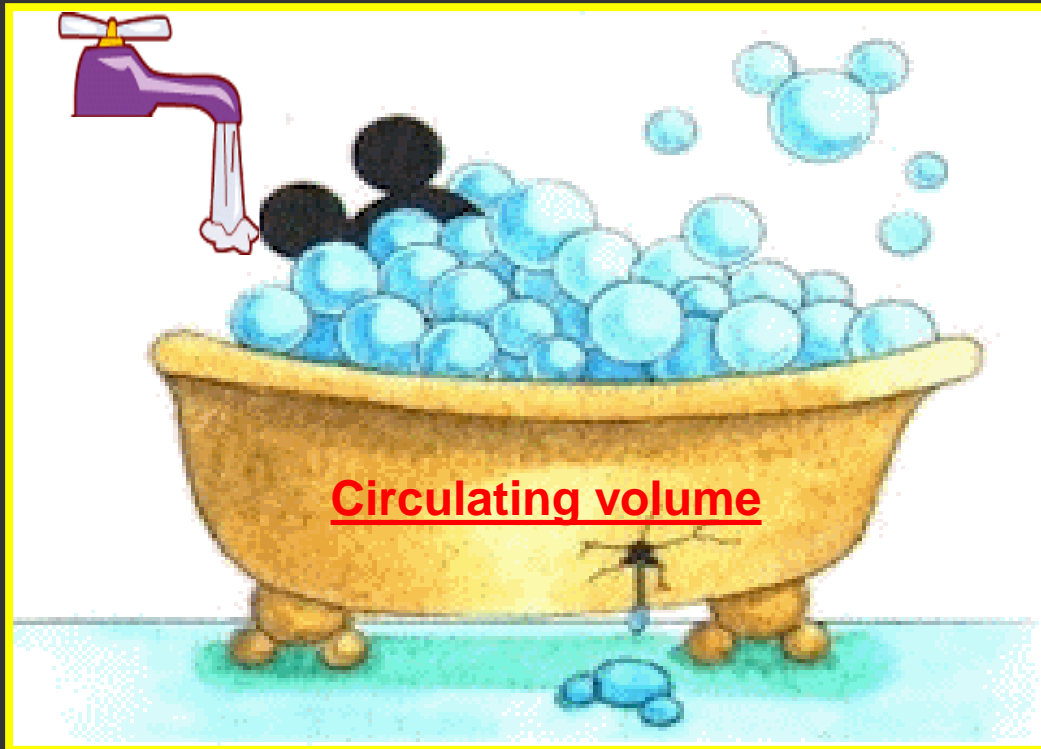
CO?

Marc Feissel
Jean-Louis Teboul
Paolo Merlani
Julio Badie
Jean-Pierre Fallier
Karim Bendjelid

Plethysmographic dynamic indices predict fluid responsiveness in septic ventilated patients

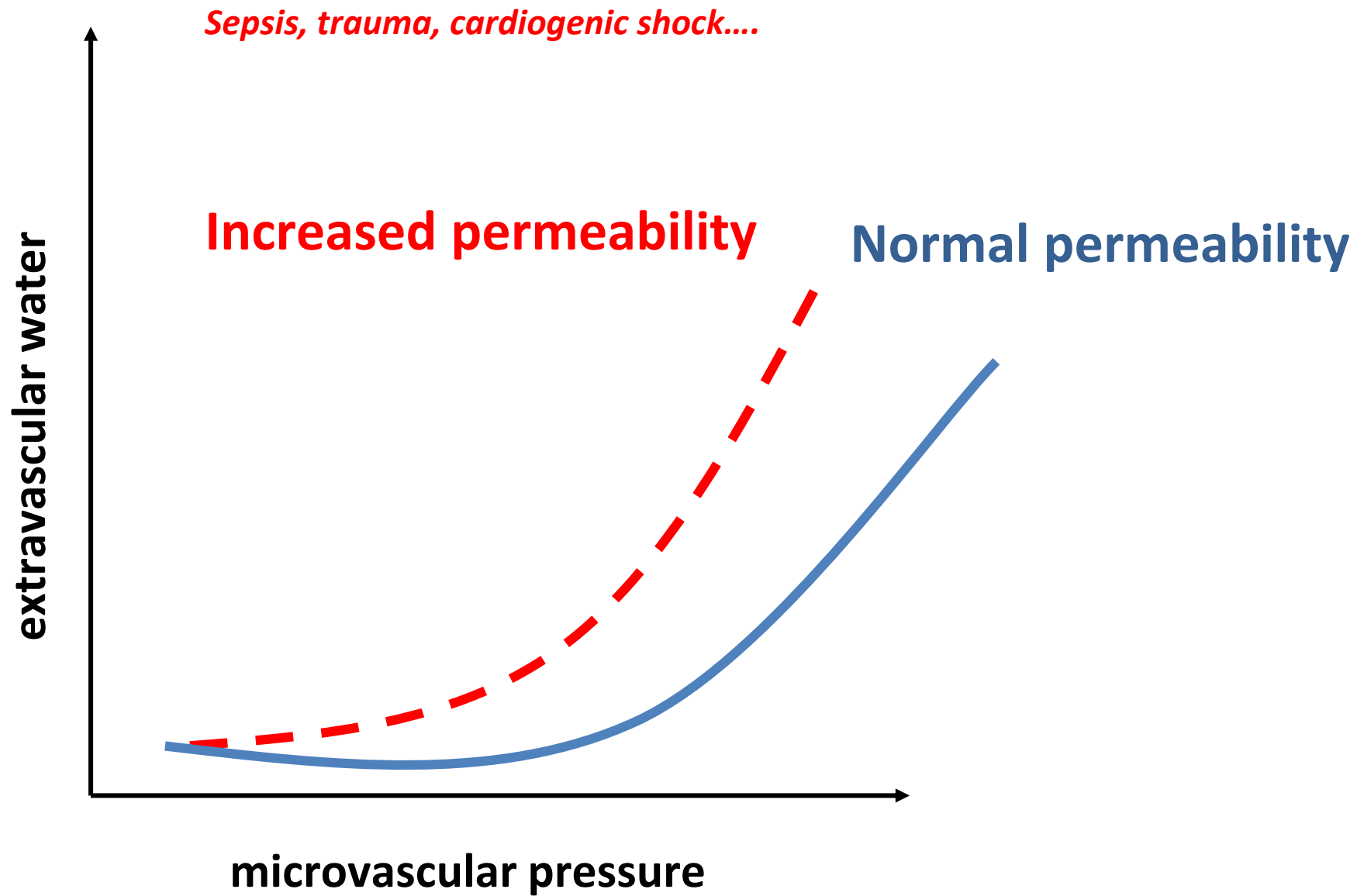


Persistence of fluids in blood



after 60 minutes

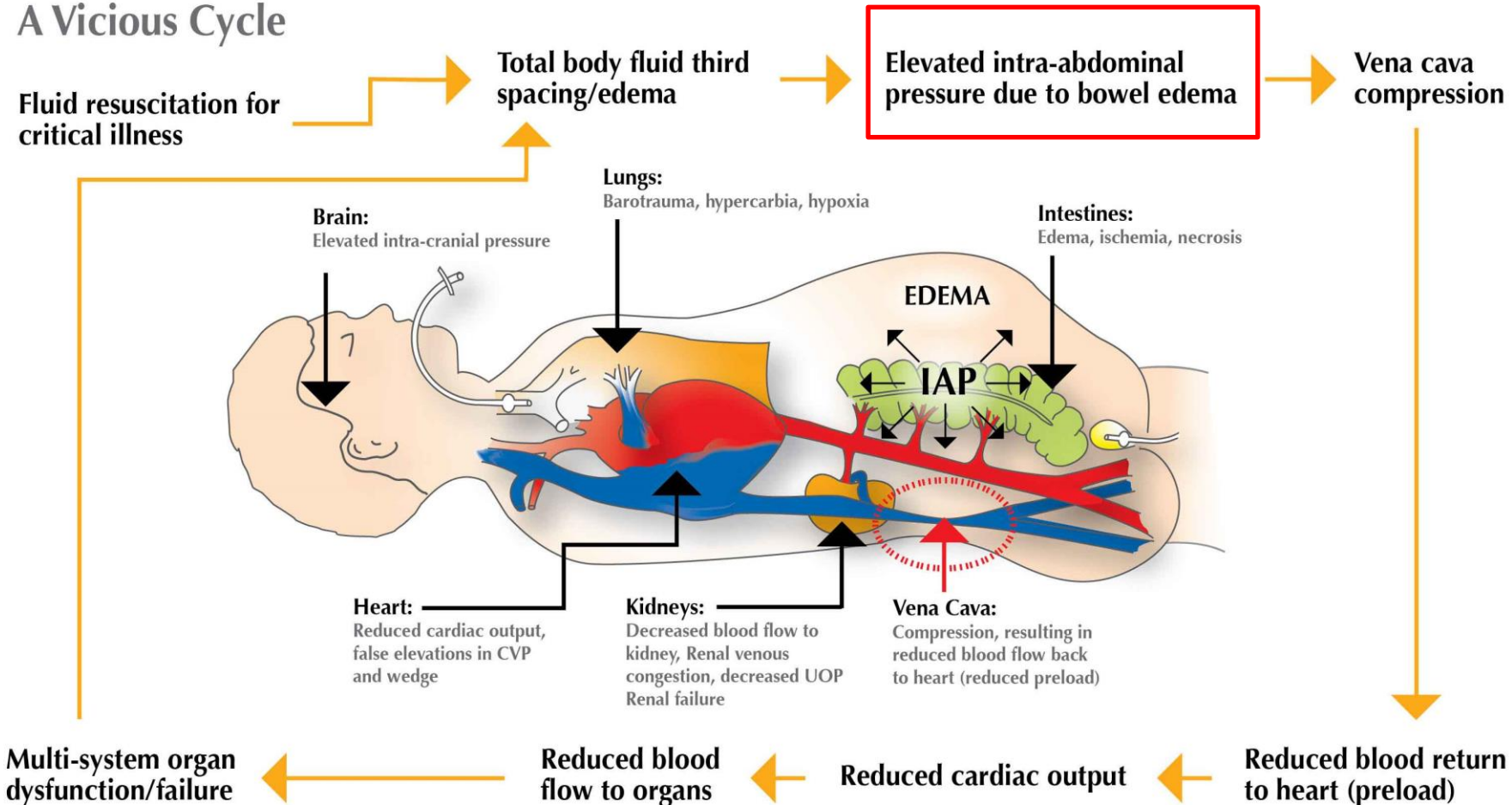
- 5% dextrose = 5%
- NS = 16%
- Colloids = 30-50%
- Albumin = 75-100%



The "messy" cross-talk among organs (be sure not to 'overflow')

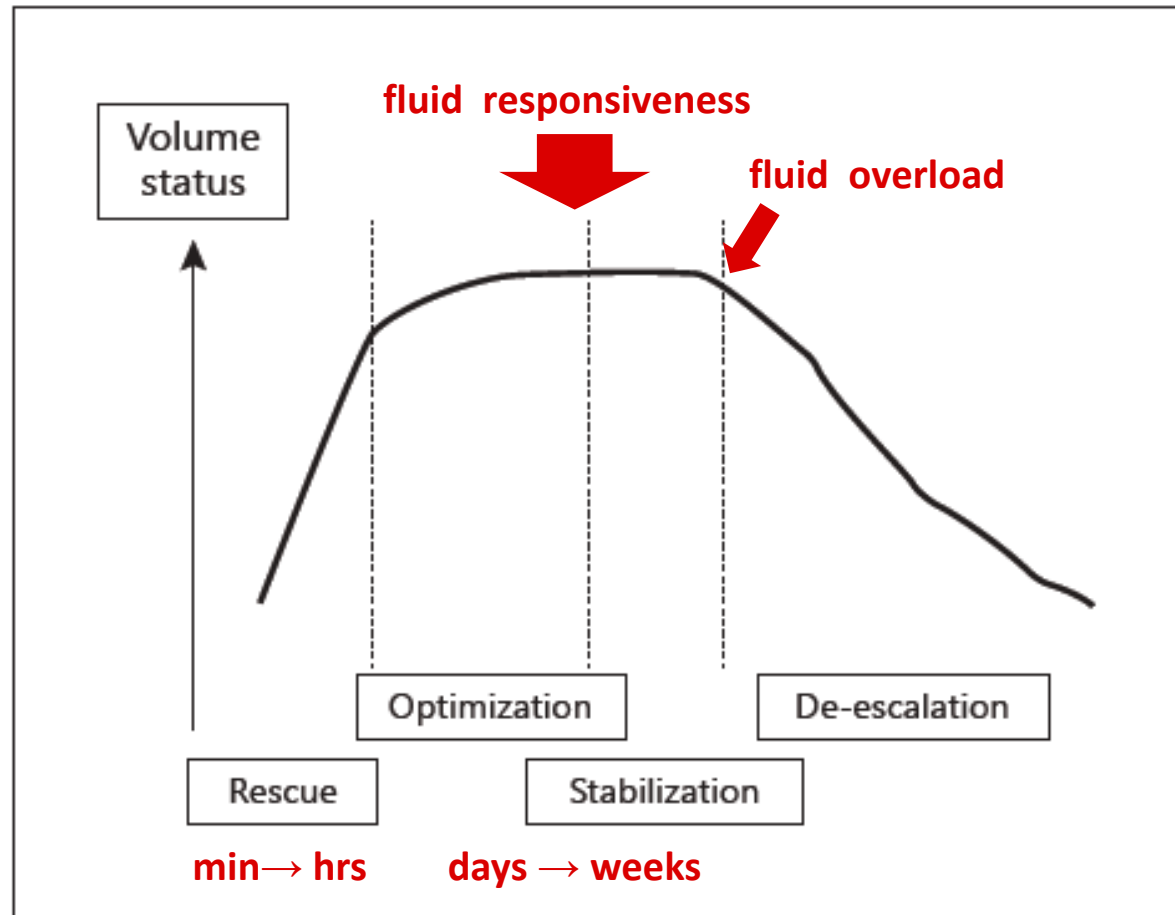
What Happens to the Body's Organs?

A Vicious Cycle



Fluid Management for Critically Ill Patients: A Review of the Current State of Fluid Therapy in the Intensive Care Unit

Erin Frazee^a Kianoush Kashani^{b,c}



Jones et al. *Critical Care* 2010, 14:102
<http://ccforum.com/14/1/102>



COMMENTARY

Arterial pressure optimization in the treatment of septic shock: a complex puzzle

Alan E Jones¹, Stephen Trzeciak² and R Phillip Dellinger^{*3}

VASOACTIVE DRUGS

Hamzaoui et al. *Critical Care* 2010, **14**:R142
<http://ccforum.com/content/14/4/R142>



RESEARCH

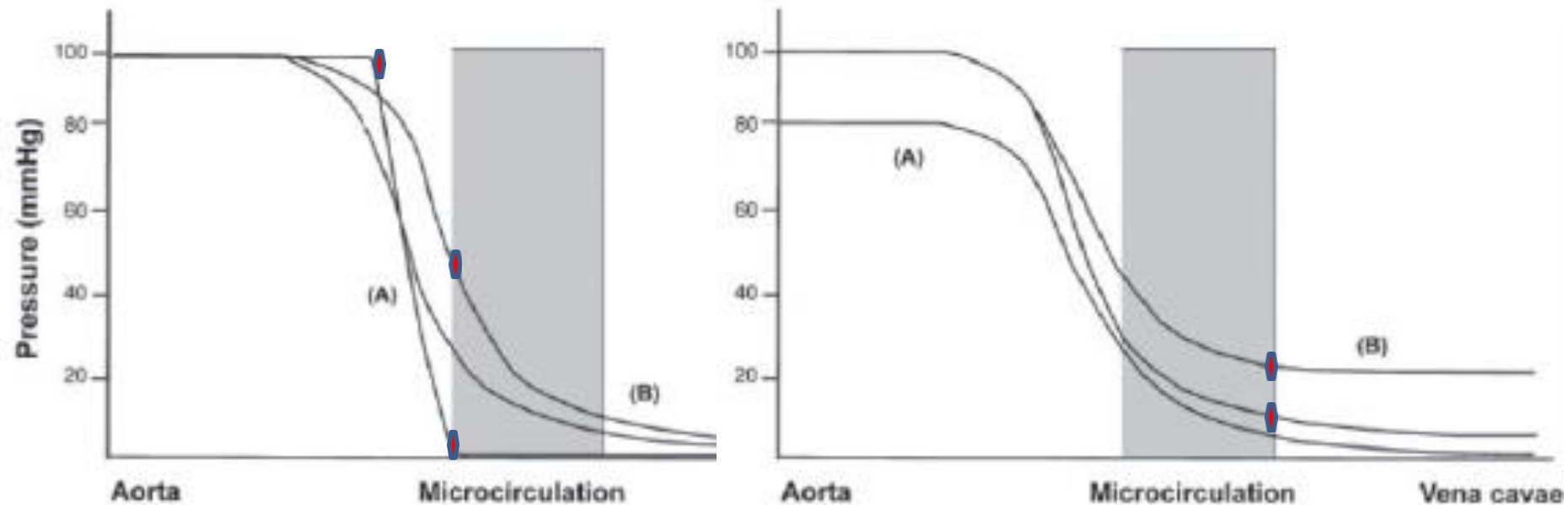
Open Access

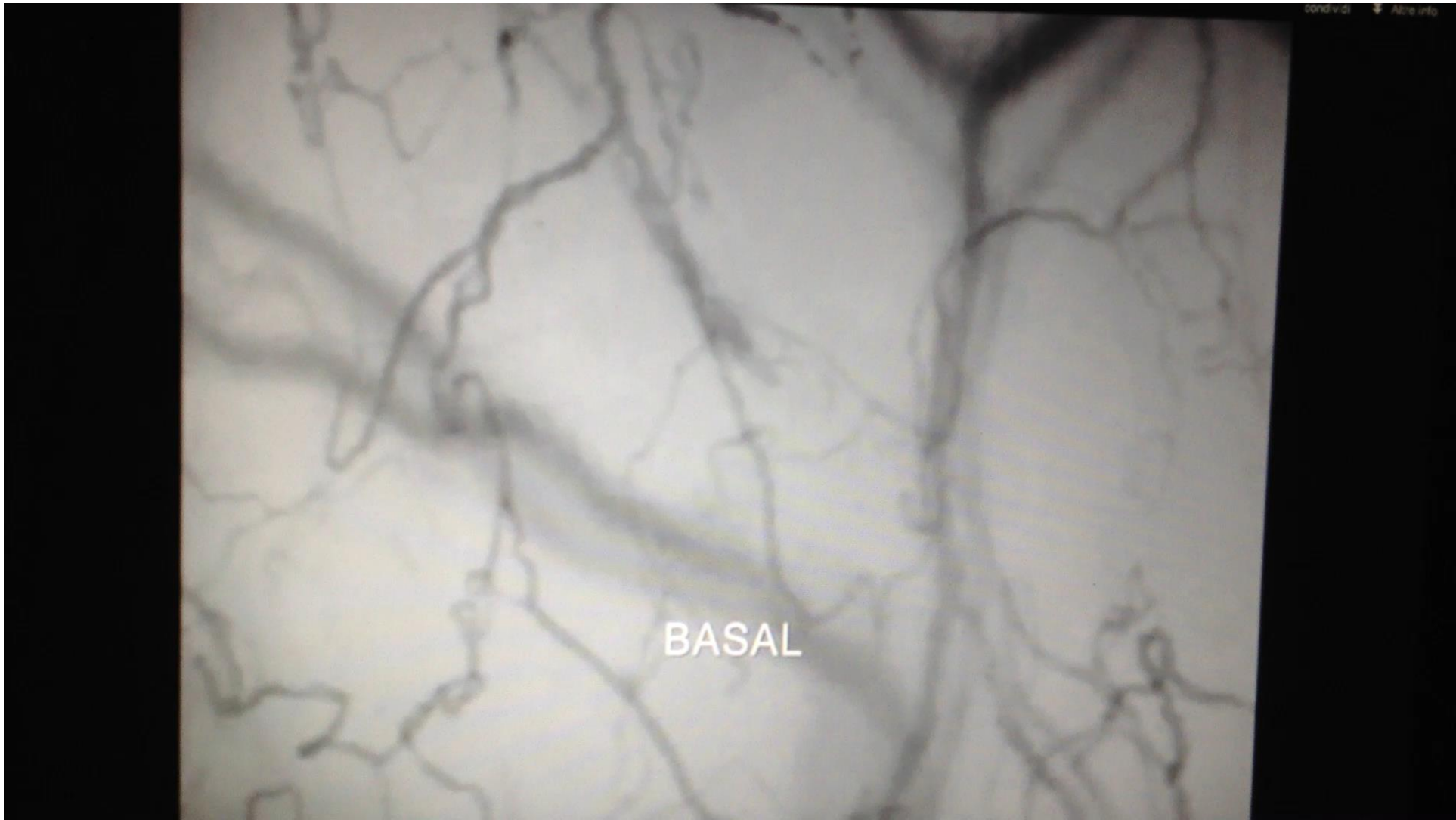
Early administration of norepinephrine increases cardiac preload and cardiac output in septic patients with life-threatening hypotension

Olfa Hamzaoui, Jean-François Georger, Xavier Monnet, Hatem Ksouri, Julien Maizel, Christian Richard, Jean-Louis Teboul*

Think about
***afterload**
*** MICRO**

Re-thinking resuscitation: leaving blood pressure cosmetics behind and moving forward to permissive hypotension and a tissue perfusion-based approach





Futier and Vallet *Critical Care* 2010, **14**:1001
<http://ccforum.com/content/14/5/1001>



COMMENTARY

Inotropes in goal-directed therapy: Do we need 'goals'?

Emmanuel Futier¹ and Benoit Vallet^{*2}

INOTROPES

- Watch-Respond
- Intrinsic VO₂
- Arrhythmias
- Weaning
-

BUT...what about ADEQUACY ???

....a look from inside....



ScvO₂

LACTATE

DELTA PCO₂

...helps to evaluate therapy effects...

LACT ↑ & normal pH → HYPERLACTATEMIA (PFK, shuttle, messenger, fuel)

LACT ↑ & low pH → LACTIC ACIDOSIS



- * Low Mitho Activity
- * Low ATP/ADP
- * High NADH/NAD
- * Low pHi and pHo

What everybody can do ASAP

- Clinics & US
- LAB plus BGA & Lact, Cultures
- Empirical ATB
- Perfusion
- 'ADEQUACY' Monitoring
- Permissivity, Weaning, Rethinking....

* *GL/Protocols are always to be observed ???*

* *Should we learn from the 'checklist strategy'*

for flight disaster prevention ?????

**“patients are not airplanes and
doctors are not pilots”**

Rissmiller R. Crit Care Med 2006;34:2869