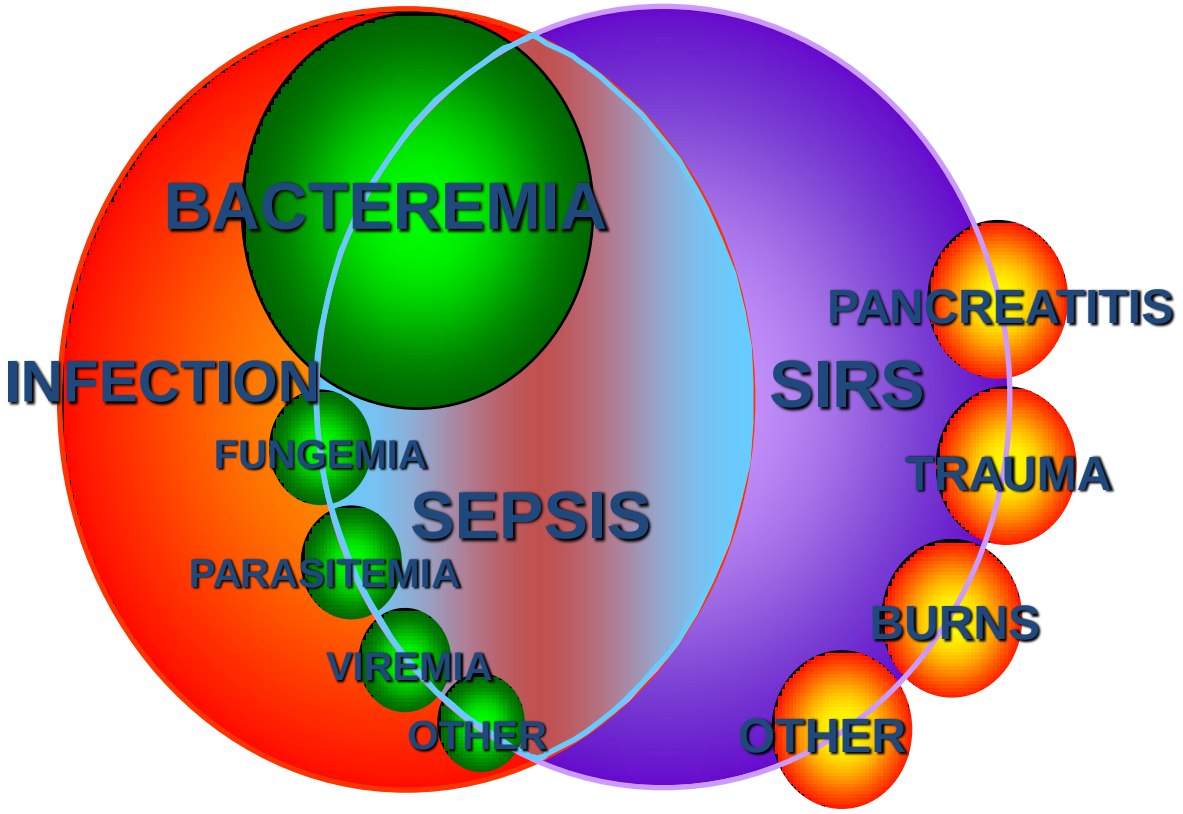
Güncel Sepsis Tedavisi

Dr. Mert AKAN

Anesteziyoloji ve Reanimasyon AD
Yoğun Bakım Bilim Dalı
DEÜTF - İZMİR

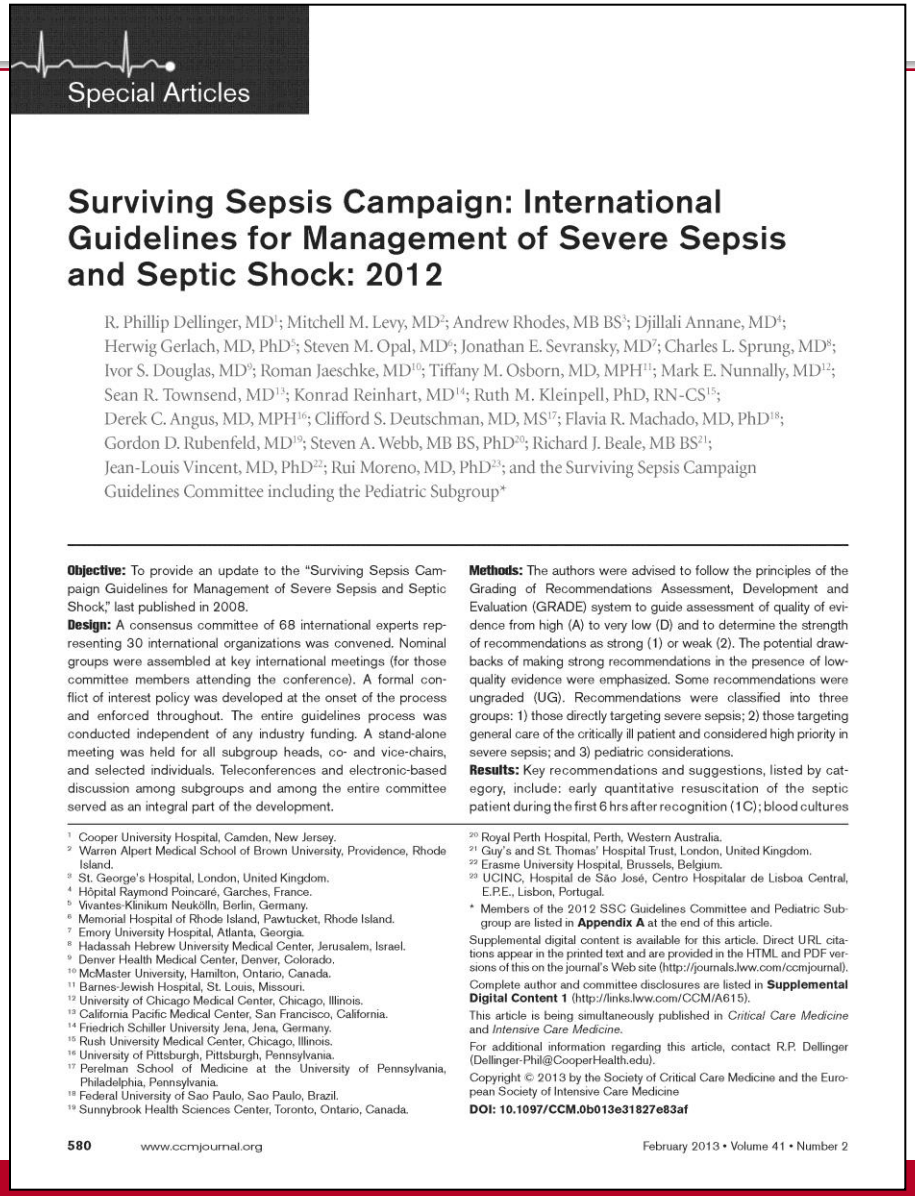
Sepsiste Sağkalım

- Sepsiste Mortalite
  - ➢ 30-50% (ağır sepsis)
  - ➢ 50-60% (septik şok)
- Ağır sepsis koroner dışı yoğun bakım ünitelerinde en önemli ölüm sebebidir
- Sepsis nedeniyle dünyada günde yaklaşık 1,400 kişi ölmektedir



Ağır Sepsis ve Septik Şok Tedavi Kılavuzu 2012

1. Erken Tanı
2. Erken tedavi
   - Sepsis Resüsitasyon Uygulamaları
3. Sonuçların izlemi



Special Articles

Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012

R. Phillip Dellinger, MD[1]; Mitchell M. Levy, MD[2]; Andrew Rhodes, MB BS[3]; Djillali Annane, MD[4]; Herwig Gerlach, MD, PhD[5]; Steven M. Opal, MD[6]; Jonathan E. Sevransky, MD[7]; Charles L. Sprung, MD[8]; Ivor S. Douglas, MD[9]; Roman Jaeschke, MD[10]; Tiffany M. Osborn, MD, MPH[11]; Mark E. Nunnally, MD[12]; Sean R. Townsend, MD[13]; Konrad Reinhart, MD[14]; Ruth M. Kleinpell, PhD, RN-CS[15]; Derek C. Angus, MD, MPH[16]; Clifford S. Deutschman, MD, MS[17]; Flavia R. Machado, MD, PhD[18]; Gordon D. Rubenfeld, MD[19]; Steven A. Webb, MB BS, PhD[20]; Richard J. Beale, MB BS[21]; Jean-Louis Vincent, MD, PhD[22]; Rui Moreno, MD, PhD[23]; and the Surviving Sepsis Campaign Guidelines Committee including the Pediatric Subgroup*

Objective: To provide an update to the "Surviving Sepsis Campaign Guidelines for Management of Severe Sepsis and Septic Shock," last published in 2008.

Design: A consensus committee of 68 international experts representing 30 international organizations was convened. Nominal groups were assembled at key international meetings (for those committee members attending the conference). A formal conflict of interest policy was developed at the onset of the process and enforced throughout. The entire guidelines process was conducted independent of any industry funding. A stand-alone meeting was held for all subgroup heads, co- and vice-chairs, and selected individuals. Teleconferences and electronic-based discussion among subgroups and among the entire committee served as an integral part of the development.

Methods: The authors were advised to follow the principles of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system to guide assessment of quality of evidence from high (A) to very low (D) and to determine the strength of recommendations as strong (1) or weak (2). The potential drawbacks of making strong recommendations in the presence of low-quality evidence were emphasized. Some recommendations were ungraded (UG). Recommendations were classified into three groups: 1) those directly targeting severe sepsis; 2) those targeting general care of the critically ill patient and considered high priority in severe sepsis; and 3) pediatric considerations.

Results: Key recommendations and suggestions, listed by category, include: early quantitative resuscitation of the septic patient during the first 6 hrs after recognition (1C); blood cultures

[1] Cooper University Hospital, Camden, New Jersey.
[2] Warren Alpert Medical School of Brown University, Providence, Rhode Island.
[3] St. George's Hospital, London, United Kingdom.
[4] Hôpital Raymond Poincaré, Garches, France.
[5] Vivantes-Klinikum Neukölln, Berlin, Germany.
[6] Memorial Hospital of Rhode Island, Pawtucket, Rhode Island.
[7] Emory University Hospital, Atlanta, Georgia.
[8] Hadassah Hebrew University Medical Center, Jerusalem, Israel.
[9] Denver Health Medical Center, Denver, Colorado.
[10] McMaster University, Hamilton, Ontario, Canada.
[11] Barnes-Jewish Hospital, St. Louis, Missouri.
[12] University of Chicago Medical Center, Chicago, Illinois.
[13] California Pacific Medical Center, San Francisco, California.
[14] Friedrich Schiller University Jena, Jena, Germany.
[15] Rush University Medical Center, Chicago, Illinois.
[16] University of Pittsburgh, Pittsburgh, Pennsylvania.
[17] Perelman School of Medicine at the University of Pennsylvania, Philadelphia, Pennsylvania.
[18] Federal University of Sao Paulo, Sao Paulo, Brazil.
[19] Sunnybrook Health Sciences Center, Toronto, Ontario, Canada.
[20] Royal Perth Hospital, Perth, Western Australia.
[21] Guy's and St. Thomas' Hospital Trust, London, United Kingdom.
[22] Erasme University Hospital, Brussels, Belgium.
[23] UCINC, Hospital de São José, Centro Hospitalar de Lisboa Central, E.P.E., Lisbon, Portugal.
* Members of the 2012 SSC Guidelines Committee and Pediatric Subgroup are listed in **Appendix A** at the end of this article.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this on the journal's Web site (http://journals.lww.com/ccmjournal).

Complete author and committee disclosures are listed in **Supplemental Digital Content 1** (http://links.lww.com/CCM/A615).

This article is being simultaneously published in *Critical Care Medicine* and *Intensive Care Medicine*.

For additional information regarding this article, contact R.P. Dellinger (Dellinger-Phil@CooperHealth.edu).

DOI: 10.1097/CCM.0b013e31827e83af

A.İlk Resüsitasyon

1. Sepsise bağlı doku hipoperfüzyonu olan (başlangıç sıvı tedavisine rağmen devam eden hipotansiyon veya kan laktat düzeyi ≥ 4 mmol/L) hastalarda resüsitasyonun ilk 6 saatindeki hedefler:

a) CVP 8–12 mm Hg (12-15 mmHg MV)

b) MAP ≥ 65 mm Hg

c) İdrar çıkışı ≥ 0.5 mL/kg/sa

d) Santral venöz oksijen saturasyonu (Scvo2) 70% veya miks venöz oksijen (Svo2) 65% (grade 1C)

2. Doku hipoperfüzyonunun göstergesi olan laktat düzeyi yükselmiş hastalarda resüsitasyon hedefi laktatı normalize etmek olmalı (grade 2C).

Resüsitasyon Uygulamaları

İlk 3-saatlik Uygulamalar

- Kan laktat düzeyini ölçün
- Antibiyotik uygulamasından önce kan kültürlerini alın ; potansiyel enfeksiyon odağına göre ilave kültürler alın
- Erken ve uygun geniş spekturumlu antibiyotik uygulayın
  - 1 saat içinde (ağır sepsis/septik şok)
- Hipotansiyon veya laktat düzeyi >4 mmol/L varlığında 30 ml/kg kristalloid sıvı uygula

Resüsitasyon Uygulamaları

İlk 6-saatlik uygulamalar

- Başlangıç sıvı tedavine rağmen hipotansiyon (MAP <65mmHg) varsa Vazopressör tedavi başlayın
- Volüm replasmanına rağmen ısrarlı hipotansiyon varsa (septik şok) veya başlangıç laktat düzeyi >4 mmol/L :
  - ✓ CVP ölçün*
  - ✓ Scvo2 ölçün*
- Başlangıç laktat düzeyi yükselmişse laktatı tekrar ölç

*Resüsitasyon hedefleri CVP of 8 mm Hg, ScvO2 of 70%, ve laktatın normalizasyonudur

Erken Hedefe Yönelik Tedavi

- **İlk 6 saat içinde tedavinin amacı: EHYT**
  - SVB 8-12 mm Hg (12-15 –MV yapılan hastalarda)
  - OAB ≥ 65 mm Hg (sıvı + vazokonstriktör)
  - İdrar miktarı ≥ 0.5 mL/kg/saat
  - $ScvO_2$ veya SvO_2 ≥ 70%;

İlk 6 saatte sıvı resüsitasyonu ile bu hedefe erişilemezse:

-Hematokrit ≥ 30% olana kadar eritrosit transfüzyonu ve/veya

- Dobutamin (maksimum 20 mcg/kg/dak)

Rivers E. N Engl J Med 2001;345:1368-77

Fluid Therapy in Resuscitated Sepsis*

Less Is More

Lakshmi Durairaj, MD; and Gregory A. Schmidt, MD, FCCP

Fluid infusion may be lifesaving in patients with severe sepsis, especially in the earliest phases of treatment. Following initial resuscitation, however, fluid boluses often fail to augment perfusion and may be harmful. In this review, we seek to compare and contrast the impact of fluids in early and later sepsis; show that much fluid therapy is clinically ineffective in patients with severe sepsis; explore the detrimental aspects of excessive volume infusion; examine how clinicians assess the intravascular volume state; appraise the potential for dynamic indexes to predict fluid responsiveness; and recommend a clinical approach. *(CHEST 2008; 133:252–263)*

Table 2—*Recommendations for Fluid Management in Severe Sepsis*

For the first 6 h of severe sepsis, infuse fluids liberally, targeting Svo_2 or $Scvo_2$ > 70%
Subsequently, do not use "maintenance" fluids
Judge the intravascular volume daily (at least)
For new hypotension, tachycardia, or unexplained oliguria, ascertain the cause and consider a fluid challenge:
When fluid challenge is of low risk, administer 500 to 1,000 mL of crystalloid;
When the risk of fluid challenge is not trivial (ALI/ARDS; oliguria; right ventricular dysfunction), use a dynamic predictor to guide fluid boluses
PLR for those with some measure of cardiac output;
PPV for those with regular rhythm and lack of spontaneous breathing;
Change in Pra for those with substantial inspiratory effort
Reassess the patient frequently because the hemodynamic state changes often

- **Başlangıç sıvı replasmanından sonraki (6 saatten sonraki) ilave bolus uygulamalar ağır sepsiste faydasızdır , hatta zararlı olabilir**
- **Riskli olgularda (ARDS; RV disfonksiyonu vb.) PLR- PPV gibi dinamik prediktörler sıvı bolusları öncesi kullanılabilir**

Fluid resuscitation in septic shock: A positive fluid balance and elevated central venous pressure are associated with increased mortality*

Crit Care Med 2011 Vol. 39, No. 2

John H. Boyd, MD, FRCP(C); Jason Forbes, MD; Taka-aki Nakada, MD, PhD; Keith R. Walley, MD, FRCP(C); James A. Russell, MD, FRCP(C)

Objective: **To determine whether central venous pressure and fluid balance after resuscitation for septic shock are associated with mortality.**

Design: **We conducted a retrospective review of the use of intravenous fluids during the first 4 days of care.**

Setting: **Multicenter randomized controlled trial.**

Patients: **The Vasopressin in Septic Shock Trial (VASST) study enrolled 778 patients who had septic shock and who were receiving a minimum of 5 μg of norepinephrine per minute.**

Conclusions: A more positive fluid balance both early in resuscitation and cumulatively over 4 days is associated with an increased risk of mortality in septic shock. Central venous pressure may be used to gauge fluid balance ≤12 hrs into septic shock but becomes an unreliable marker of fluid balance thereafter. Optimal survival in the VASST study occurred with a positive fluid balance of approximately 3 L at 12 hrs. (Crit Care Med 2011; 39:259–265)

- **Erken resüsitasyon döneminde ve bunu izleyen 4 gün boyunca artan pozitif sıvı dengesi septik şokta artmış mortaliteyle ilişkilidir**
- **CVP septik şoktaki ilk 12 saatten sonra sıvı dengesini belirlemede güvenilmezdir**

Review Articles

Does the Central Venous Pressure Predict Fluid Responsiveness? An Updated Meta-Analysis and a Plea for Some Common Sense*

Paul E. Marik, MD, FCCM[1]; Rodrigo Cavallazzi, MD[2]

Aim: To perform an updated meta-analysis incorporating recent studies that investigated indices predictive of fluid responsiveness. A priori subgroup analysis was planned according to the location where the study was performed (ICU or operating room).

Data Sources: MEDLINE, EMBASE, Cochrane Register of Controlled Trials, and citation review of relevant primary and review articles.

Study Selection: Clinical trials that reported the correlation coefficient or area under the receiver operating characteristic curve (AUC) between the central venous pressure and change in cardiac performance following an intervention that altered cardiac preload. From 191 articles screened, 43 studies met our inclusion criteria and were included for data extraction. The studies included human adult subjects, and included healthy controls ($n = 1$) and ICU ($n = 22$) and operating room ($n = 20$) patients.

Conclusions: There are no data to support the widespread practice of using central venous pressure to guide fluid therapy. This approach to fluid resuscitation should be abandoned. (*Crit Care Med* 2013; 41:1774–1781)

- **CVP'nin sıvı tedavisini yönlendirmede kullanılmasını destekleyen herhangi bir veri yoktur**
- **Sıvı resüsitasyonunun CVP kılavuzluğunda yapılması terk edilmelidir**

Medscape Emergency Medicine

Sepsis: Is CVP Useless as a Resuscitation Marker?

Robert Glatter, MD, David A. Farcy, MD

Disclosures April 18, 2014

A.İlk Resüsitasyon

1. Sepsise bağlı doku hipoperfüzyonu olan (başlangıç sıvı tedavisine rağmen devam eden hipotansiyon veya kan laktat düzeyi ≥ 4 mmol/L) hastalarda resüsitasyonun ilk 6 saatindeki hedefler:

a) CVP 8–12 mm Hg (12-15 mmHg MV)

b) MAP ≥ 65 mm Hg

c) İdrar çıkışı ≥ 0.5 mL/kg/sa

d) Santral venöz oksijen saturasyonu (Scvo2) 70% veya miks venöz oksijen (Svo2) 65% (grade 1C)

2. Doku hipoperfüzyonunun göstergesi olan laktat düzeyi yükselmiş hastalarda resüsitasyon hedefi laktatı normalize etmek olmalı (grade 2C).

Research

Open Access

Increasing arterial blood pressure with norepinephrine does not improve microcirculatory blood flow: a prospective study

Arnaldo Dubin[1,2], Mario O Pozo[3], Christian A Casabella[1], Fernando Pálizas Jr[3], Gastón Murias[3], Miriam C Moseinco[1], Vanina S Kanoore Edul[1,2], Fernando Pálizas[3], Elisa Estenssoro[4] and Can Ince[5]

Critical Care 2009, 13:R92 (doi:10.1186/cc7922)

Methods Twenty septic shock patients were prospectively studied in two teaching intensive care units. The patients were mechanically ventilated and required norepinephrine to maintain a mean arterial pressure (MAP) of 65 mmHg. We measured systemic hemodynamics, oxygen transport and consumption (DO_2 and VO_2), lactate, albumin-corrected anion gap, and gastric intramucosal-arterial PCO_2 difference (ΔPCO_2). Sublingual microcirculation was evaluated by sidestream darkfield (SDF) imaging. After basal measurements at a MAP of 65 mmHg, norepinephrine was titrated to reach a MAP of 75 mmHg, and then to 85 mmHg. Data were analyzed using repeated measurements ANOVA and Dunnett test. Linear trends between the different variables and increasing levels of MAP were calculated.

Conclusions Patients with septic shock showed severe sublingual microcirculatory alterations that failed to improve with the increases in MAP with norepinephrine. Nevertheless, there was a considerable interindividual variation. Our results suggest that the increase in MAP above 65 mmHg is not an adequate approach to improve microcirculatory perfusion and might be harmful in some patients.

- **Ortalama arter basıncının norepinefrinle 65 mmHg'dan 85 mmHg'a çıkartılması mikrosirkülatuvar kan akımını iyileştirmemiştir**
- **Bazı hastalarda zararlı etkiler olabilir**

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

High versus Low Blood-Pressure Target in Patients with Septic Shock

Pierre Asfar, M.D., Ph.D., Ferhat Meziani, M.D., Ph.D., Jean-François Hamel, M.D.,

This article was published on March 18, 2014, at NEJM.org.

DOI: 10.1056/NEJMoa1312173

BACKGROUND

The Surviving Sepsis Campaign recommends targeting a mean arterial pressure c at least 65 mm Hg during initial resuscitation of patients with septic shock However, whether this blood-pressure target is more or less effective than a highe target is unknown.

METHODS

In a multicenter, open-label trial, we randomly assigned 776 patients with septi shock to undergo resuscitation with a mean arterial pressure target of either 80 t 85 mm Hg (high-target group) or 65 to 70 mm Hg (low-target group). The primar end point was mortality at day 28.

CONCLUSIONS

Targeting a mean arterial pressure of 80 to 85 mm Hg, as compared with 65 to 70 mm Hg, in patients with septic shock undergoing resuscitation did not result in significant differences in mortality at either 28 or 90 days. (Funded by the French Ministry of Health; SEPSISPAM ClinicalTrials.gov number, NCT01149278.)

- **Septik şoklu hastalarda MAP'ın 65-70 mmHg yerine 80-85 mmHg hedeflenmesi 28 ve 90 günlük mortalitede anlamlı fark yaratmamıştır**

A.İlk Resüsitasyon

1. Sepsise bağlı doku hipoperfüzyonu olan (başlangıç sıvı tedavisine rağmen devam eden hipotansiyon veya kan laktat düzeyi ≥ 4 mmol/L) hastalarda resüsitasyonun ilk 6 saatindeki hedefler:

a) CVP 8–12 mm Hg (12-15 mmHg MV)

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c) İdrar çıkışı ≥ 0.5 mL/kg/sa

d) Santral venöz oksijen saturasyonu (Scvo2) 70% veya miks venöz oksijen (Svo2) 65% (grade 1C)

2. Doku hipoperfüzyonunun göstergesi olan laktat düzeyi yükselmiş hastalarda resüsitasyon hedefi laktatı normalize etmek olmalı (grade 2C).

Lactate Clearance vs Central Venous Oxygen Saturation as Goals of Early Sepsis Therapy

A Randomized Clinical Trial

JAMA. 2010;303(8):739-746

Alan E. Jones, MD
Nathan I. Shapiro, MD, MPH
Stephen Trzeciak, MD, MPH
Ryan C. Arnold, MD
Heather A. Claremont, BFA
Jeffrey A. Kline, MD
for the Emergency Medicine Shock

Context Goal-directed resuscitation for severe sepsis and septic shock has been reported to reduce mortality when applied in the emergency department.

Objective To test the hypothesis of noninferiority between lactate clearance and central venous oxygen saturation ($ScvO_2$) as goals of early sepsis resuscitation.

Design, Setting, and Patients Multicenter randomized, noninferiority trial involving patients with severe sepsis and evidence of hypoperfusion or septic shock who were admitted to the emergency department from January 2007 to January 2009 at 1 of 3 participating US urban hospitals.

Interventions We randomly assigned patients to 1 of 2 resuscitation protocols. The $ScvO_2$ group was resuscitated to normalize central venous pressure, mean arterial pressure, and $ScvO_2$ of at least 70%; and the lactate clearance group was resuscitated to normalize central venous pressure, mean arterial pressure, and lactate clearance of at least 10%. The study protocol was continued until all goals were achieved or for up to 6 hours. Clinicians who subsequently assumed the care of the patients were blinded to the treatment assignment.

Conclusion Among patients with septic shock who were treated to normalize central venous and mean arterial pressure, additional management to normalize lactate clearance compared with management to normalize $ScvO_2$ did not result in significantly different in-hospital mortality.

Trial Registration clinicaltrials.gov Identifier: NCT00372502

- **Septik şoklu hastalarda CVP ve MAP'ı normalize etmek için yapılan resüsitasyona ilaveten laktat klirensinin veya $ScvO_2$'nin normalize edilmesi arasında hastane içi mortalitede anlamlı bir fark bulunmamıştır**

HEMODİNAMİK DESTEK
Ağır Sepsiste Sıvı Tedavisi

- **Kristalloidler ağır sepsis ve septik şok resüsitasyonunda ilk tercih olmalıdır- 1B**
- **HES solüsyonları kullanılmamalıdır- 1B**
- **Albumin solüsyonları aşırı kristalloid gereksinimi olan hastalarda kullanılabilir- 2C**
- **Hipovolemi şüphesi olan hastalarda başlangıç sıvı tedavisi minimum 30 mL/kg kristalloid olmalıdır. Bazı hastalarda gereksinim daha fazla olabilir- 1C**
- ***Fluid challenge* tekniğiyle sıvı tedavisi statik (TA, KAH) veya dinamik (PPV, SVV) parametrelere göre hemodinamik iyileşme devam ettikçe uygulanabilir - UG**

HEMODİNAMİK DESTEK
Ağır Sepsiste Sıvı Tedavisi

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Hydroxyethyl Starch 130/0.42 versus Ringer's Acetate in Severe Sepsis

Anders Perner, M.D., Ph.D., Nicolai Haase, M.D.,

N Engl J Med 2012;367:124-34.
DOI: 10.1056/NEJMoa1204242

METHODS

In this multicenter, parallel-group, blinded trial, we randomly assigned patients with severe sepsis to fluid resuscitation in the ICU with either 6% HES 130/0.42 (Tetraspan) or Ringer's acetate at a dose of up to 33 ml per kilogram of ideal body weight per day. The primary outcome measure was either death or end-stage kidney failure (dependence on dialysis) at 90 days after randomization.

CONCLUSIONS

Patients with severe sepsis assigned to fluid resuscitation with HES 130/0.42 had an increased risk of death at day 90 and were more likely to require renal-replacement therapy, as compared with those receiving Ringer's acetate. (Funded by the Danish Research Council and others; 6S ClinicalTrials.gov number, NCT00962156.)

- **Sıvı resüsitasyonunda kristalloid (Ringer asetat) yerine HES 130 kullanılan ağır sepsisli hastalarda 90 günlük mortalitede ve Renal Replasman Tedavisi gereksiniminde artış saptanmıştır**

HEMODİNAMİK DESTEK
Ağır Sepsiste Sıvı Tedavisi

Intravenous fluids in sepsis: what to use and what to avoid

Nithin Karakala[a], *Karthik Raghunathan*[b], *and Andrew D. Shaw*[b]

Curr Opin Crit Care 2013, 19:537–543
DOI:10.1097/MCC.0000000000000028

Summary
Crystalloids should still be considered as the first-choice drug for volume resuscitation in patients with septic shock. Colloids such as albumin can be considered in some clinical settings. HES should be avoided. Balanced crystalloids might have an important role to play in the management of septic shock.

- **Kristalloidler septik şoklu hastaların sıvı resüsitasyonunda ilk seçenek olmalıdır (Isotonik veya Dengeli Elektrolit)**
- **Kolloid olarak albumin bazı durumlarda (hipoalbuminemi kullanılabilir**
- **HES solüsyonları kullanılmamalıdır**

HEMODİNAMİK DESTEK
Ağır Sepsiste Sıvı Tedavisi

Perioperative treatment of patients with sepsis

Michael Ibsen and Anders Perner

Curr Opin Anesthesiol 2013, 26:348–353
DOI:10.1097/ACO.0b013e32835fb6ee

KEY POINTS

- Hydroxyethyl starch (HES) or gelatin solutions should not be used in patients with sepsis.
- Norepinephrine should be the first-line vasopressor agent as dopamine may be associated with increased adverse events and mortality.
- Adequate antibiotic therapy should be initiated as early as possible as this may improve outcome.

- **HES ve Jelatin bazlı solüsyonlar sepsiste kullanılmamalıdır**
- **Vazopressor tedavide norepinefrin ilk seçenek olmalıdır**

HEMODİNAMİK DESTEK
Ağır Sepsiste Sıvı Tedavisi

Impact of albumin compared to saline on organ function and mortality of patients with severe sepsis

The SAFE Study Investigators

Intensive Care Med (2011) 37:86–96
DOI 10.1007/s00134-010-2039-6

Conclusions: Administration of albumin compared to saline did not impair renal or other organ function and may have decreased the risk of death.

- Albumin uygulaması normal saline göre renal ve diğer organ fonksiyonlarında bozulmaya yol açmamıştır
- Albumin uygulaması mortalitede azalmaya yol açabilir

HEMODİNAMİK DESTEK
Ağır Sepsiste Sıvı Tedavisi

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Albumin Replacement in Patients with Severe Sepsis or Septic Shock

Pietro Caironi, M.D., Gianni Tognoni, M.D., Serge Masson, Ph.D.,

This article was published on March 18, 2014, at NEJM.org.

DOI: 10.1056/NEJMoa1305727

METHODS

In this multicenter, open-label trial, we randomly assigned 1818 patients with se- vere sepsis, in 100 intensive care units (ICUs), to receive either 20% albumin and crystalloid solution or crystalloid solution alone. In the albumin group, the target serum albumin concentration was 30 g per liter or more until discharge from the ICU or 28 days after randomization. The primary outcome was death from any cause at 28 days. Secondary outcomes were death from any cause at 90 days, the number of patients with organ dysfunction and the degree of dysfunction, and length of stay in the ICU and the hospital.

CONCLUSIONS

In patients with severe sepsis, albumin replacement in addition to crystalloids, as compared with crystalloids alone, did not improve the rate of survival at 28 and 90 days. (Funded by the Italian Medicines Agency; ALBIOS ClinicalTrials.gov number, NCT00707122.)

- **Ağır sepsisli hastalarda kristalloidlere ilave olarak verilen albumin sadece kristalloid uygulamasına göre 28 ve 90. günlerde sağkalımı artırmamıştır**
- **Ancak septik şoktaki albumin uygulanan hastalarda hemodinamik düzelme daha belirgin**

HEMODİNAMİK DESTEK
Vazopressor Tedavi

- Vazopressor tedavide hedef MAP ≥ 65 mmHg -1C
- Norepinefrin ilk seçilecek ajan olmalıdır – 1B
- Epinefrin hedef kan basıncına ulaşabilmek için ilave ajan gerektiğinde kullanılabilir- 2B
- Vazopressin 0.03 U/dk norepinefrin dozunu azaltmak veya MAP'ı yükseltmek amacıyla norepinefrin tedavisine eklenebilir- UG
- Düşük doz vazopressin başlangıç tedavisinde tek başına önerilmemektedir ve 0.03-0.04 U/dk üzerindeki dozlar ancak son çare olarak kullanılmalıdır- UG
- Dopamin norepinefrine alternatif olarak sadece iyi seçilmiş hastalarda (taşidisritmi riski olmayan, bradikardisi olan) kullanılabilir- 2C
- Fenilefrin septik şok tedavisinde önerilmemektedir (sadece norepinefrin ciddi aritmilere yol açmışsa, CO yüksek olmasına rağmen TA düşükse ve diğer vazopressor tedavilerine yanıt alınamıyorsa)- 1C
- Düşük doz dopamin renal koruma amaçlı kullanılmamalıdır- 1A
- Vazopressor uygulanan hastalara mümkünse arteriyal katater yerleştirilmelidir-UG

HEMODİNAMİK DESTEK
Vazopressor Tedavi

Norepinephrine or Dopamine for Septic Shock: A Systematic Review of Randomized Clinical Trials

Tajender S. Vasu, MD[1], Rodrigo Cavallazzi, MD[1], Amyn Hirani, MD[1], Gary Kaplan, MSLIS[2], Benjamin Leiby, PhD[3], and Paul E. Marik, MD, FCCM[4],

J Intensive Care Med 2012 27: 172

no longer statistically significant. **Conclusions:** The analysis of the pooled studies that included a critically ill population with shock predominantly secondary to sepsis showed superiority of norepinephrine over dopamine for in-hospital or 28-day mortality.

- **Norepinefrin dopamine göre hastane içi veya 28 günlük sağkalımda daha üstün bulunmuştur**

HEMODİNAMİK DESTEK
Vazopressor Tedavi

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MARCH 4, 2010 VOL. 362 NO. 9

Comparison of Dopamine and Norepinephrine in the Treatment of Shock

Daniel De Backer, M.D., Ph.D., Patrick Biston, M.D., Jacques Devriendt, M.D., Christian Madl, M.D., Didier Chochrad, M.D., Cesar Aldecoa, M.D., Alexandre Brasseur, M.D., Pierre Defrance, M.D., Philippe Gottignies, M.D., and Jean-Louis Vincent, M.D., Ph.D., for the SOAP II Investigators*

CONCLUSIONS

Although there was no significant difference in the rate of death between patients with shock who were treated with dopamine as the first-line vasopressor agent and those who were treated with norepinephrine, the use of dopamine was associated with a greater number of adverse events. (ClinicalTrials.gov number, NCT00314704.)

- **Norepinefrin veya dopamin uygulanan hastalar arasındaki ölüm oranlarında anlamlı farklılık olmasa da dopamin kullanımı daha fazla yan etkiyle (aritmi, kardiyojenik şokta artan ölüm oranı) ilişkili bulunmuştur**

HEMODİNAMİK DESTEK
Vazopressor Tedavi

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 FEBRUARY 28, 2008 VOL. 358 NO. 9

Vasopressin versus Norepinephrine Infusion in Patients with Septic Shock

James A. Russell, M.D., Keith R. Walley, M.D., Joel Singer, Ph.D., Anthony C. Gordon, M.B., B.S., M.D., Paul C. Hébert, M.D., D. James Cooper, B.M., B.S., M.D., Cheryl L. Holmes, M.D., Sangeeta Mehta, M.D., John T. Granton, M.D., Michelle M. Storms, B.Sc.N., Deborah J. Cook, M.D., Jeffrey J. Presneill, M.B., B.S., Ph.D., and Dieter Ayers, M.Sc., for the VASST Investigators*

METHODS

In this multicenter, randomized, double-blind trial, we assigned patients who had septic shock and were receiving a minimum of 5 μg of norepinephrine per minute to receive either low-dose vasopressin (0.01 to 0.03 U per minute) or norepinephrine (5 to 15 μg per minute) in addition to open-label vasopressors. All vasopressor infusions were titrated and tapered according to protocols to maintain a target blood pressure. The primary end point was the mortality rate 28 days after the start of infusions.

CONCLUSIONS

Low-dose vasopressin did not reduce mortality rates as compared with norepinephrine among patients with septic shock who were treated with catecholamine vasopressors. (Current Controlled Trials number, ISRCTN94845869.)

- **Düşük doz vazopressin norepinefrin uygulamasına göre septik şoktaki hastalarda mortaliteyi azaltmamıştır**

HEMODİNAMİK DESTEK
Vazopressor Tedavi

LETTER

Early norepinephrine resuscitation of life-threatening hypotensive septic shock: it can do the job, but at what cost?

Eric Kipnis* and Benoit Vallet*

See related research by Hamzaoui *et al.*, http://ccforum.com/content/14/4/R142

Kipnis and Vallet *Critical Care* 2010, **14**:450

and ensuing preload reserve. In order to determine the optimal use of norepinephrine, future studies of microcirculation and perfusion should either optimize on an indicator of fluid responsiveness during the fluid therapy preceding norepinephrine treatment or rapidly wean the inevitable early norepinephrine infusion rate once the targeted MAP is obtained by screening for and addressing preload dependency during infusion rate decrements [4].

- **Mikrosirkülasyon ve organ perfüzyon bozukluğuna dikkati çekiyor**
- **Hedef MAP' a ulaşıldığında doz azaltması yapılmalı**

HEMODİNAMİK DESTEK
İnotropik Tedavi

- **Dobutamin infüzyonu (20 microgram/kg/dk ‘a kadar) tek başına ya da vazopressor tedaviye ek olarak :**

A) Miyokardiyal disfonksiyon varlığında (azalmış CO, artmış PCWP)
B) Yeterli intravasküler volüm ve MAP’a ulaşılmasına rağmen hipoperfüzyon bulguları varsa – 1C

- **Kardiyak indeksi supranormal değerlere artırmak için kullanılmamalıdır- 1B**

HEMODİNAMİK DESTEK
İnotropik Tedavi

RESEARCH Open Access

Levosimendan for resuscitating the microcirculation in patients with septic shock: a randomized controlled study

Andrea Morelli[1*], Abele Donati[2], Christian Ertmer[3], Sebastian Rehberg[3], Matthias Lange[3], Alessandra Orecchioni, Valeria Cecchini[1], Giovanni Landoni[4], Paolo Pelaia[2], Paolo Pietropaoli[1], Hugo Van Aken[3], Jean-Louis Teboul[5], Can Ince[6,7], Martin Westphal[3]

Morelli et al. Critical Care 2010, 14:R232
http://ccforum.com/content/14/6/R232

Methods: The study was designed as a prospective, randomized, double-blind clinical trial and performed in a multidisciplinary intensive care unit. After achieving normovolemia and a mean arterial pressure of at least 65 mmHg, 40 septic shock patients were randomized to receive either levosimendan 0.2 $\mu g \cdot kg^{-1} \cdot min^{-1}$ ($n = 20$) or an active comparator (dobutamine 5 $\mu g \cdot kg^{-1} \cdot min^{-1}$; control; $n = 20$) for 24 hours. Sublingual microcirculatory blood flow of small and medium vessels was assessed by sidestream dark-field imaging. Microcirculatory variables and data from right heart catheterization were obtained at baseline and 24 hours after randomization. Baseline and demographic data were compared by means of Mann-Whitney rank sum test or chi-square test, as appropriate. Microvascular and hemodynamic variables were analyzed using the Mann-Whitney rank sum test.

Conclusions: Compared to a standard dose of 5 $\mu g \cdot kg^{-1} \cdot min^{-1}$ of dobutamine, levosimendan at 0.2 $\mu g \cdot kg^{-1} \cdot min^{-1}$ improved sublingual microcirculatory blood flow in patients with septic shock, as reflected by changes in microcirculatory flow indices of small and medium vessels.

- **Levosimendan infüzyonu dobutamin infüzyonuna göre septik şoktaki hastalarda sublingual mikrosirkülasyonu artırmıştır**

HEMODİNAMİK DESTEK
İnotropik Tedavi

Review

J Clin Med Res. 2014;6(2):75-85

Levosimendan in Critical Illness: A Literature Review

Charalampos Pierrakos[a], Dimitrios Velissaris[b], Federico Franchi[c], Luigi Muzzi[c], Menelaos Karanikolas[d, e], Sabino Scolletta[c]

Conclusion

Levosimendan is a positive inotropic agent with many potential applications in critically ill patients. However, indications, contraindications and optimal use of levosimendan in the ICU have not been adequately evaluated. Although one meta-analysis and several clinical studies report positive results with use of levosimendan in critically ill patients, we believe that currently available evidence cannot support safe conclusions regarding the role of levosimendan in the ICU, and data from large, well-designed RCTs are needed to validate these preliminary results.

- **Sepsiste dobutaminin etkisiz olduğu durumlarda kullanılabilir**
- **Rutin tedavi kılavuzlarına girebilmesi için geniş, iyi dizayn edilmiş RKÇ ihtiyaç vardır**

Kortikosteroid Kullanımı

- **İntravenöz hidrokortizon septik şoktaki hastalarda yeterli sıvı resüsitasyonu ve vazopressor tedaviyle hemodinamik stabilite sağlanmışsa kullanılmamalıdır. Stabilitenin sağlanamadığı olgularda 200 mg/G dozunda kullanılabilir – 2C**
- **ACTH stimülasyon testinin önemi yoktur- 2B**
- **Vazopressor tedaviye ihtiyaç kalmadığında hidrokortizon tedavisi azaltılarak kesilmelidir- 2D**
- **Kortikosteroidler sepsis tedavisinde şok yoksa kullanılmamalıdır- 1D**
- **Hidrokortizon sürekli infüzyon şeklinde uygulanmalıdır- 2D**

Kortikosteroid Kullanımı

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JANUARY 10, 2008 VOL. 358 NO. 2

Hydrocortisone Therapy for Patients with Septic Shock

Charles L. Sprung, M.D., Djillali Annane, M.D., Ph.D., Didier Keh, M.D., Rui Moreno, M.D., Ph.D., Mervyn Singer, M.D., F.R.C.P., Klaus Freivogel, Ph.D., Yoram G. Weiss, M.D., Julie Benbenishty, R.N., Armin Kalenka, M.D., Helmuth Forst, M.D., Ph.D., Pierre-Francois Laterre, M.D., Konrad Reinhart, M.D., Brian H. Cuthbertson, M.D., Didier Payen, M.D., Ph.D., and Josef Briegel, M.D., Ph.D., for the CORTICUS Study Group*

METHODS

In this multicenter, randomized, double-blind, placebo-controlled trial, we assigned 251 patients to receive 50 mg of intravenous hydrocortisone and 248 patients to receive placebo every 6 hours for 5 days; the dose was then tapered during a 6-day period. At 28 days, the primary outcome was death among patients who did not have a response to a corticotropin test.

CONCLUSIONS

Hydrocortisone did not improve survival or reversal of shock in patients with septic shock, either overall or in patients who did not have a response to corticotropin, although hydrocortisone hastened reversal of shock in patients in whom shock was reversed. (ClinicalTrials.gov number, NCT00147004.)

- **Hidrokortizon sağkalım veya septik şoktan çıkma oranını artırmamıştır**
- **Hidrokortizon sadece septik şoktan çıkabilen hastalarda düzelme sürecini hızlandırmıştır**

Kortikosteroid Kullanımı

Corticosteroid Treatment and Intensive Insulin Therapy for Septic Shock in Adults

A Randomized Controlled Trial

The COIITSS Study Investigators*

Conclusions Compared with conventional insulin therapy, intensive insulin therapy did not improve in-hospital mortality among patients who were treated with hydrocortisone for septic shock. The addition of oral fludrocortisone did not result in a statistically significant improvement in in-hospital mortality.

Trial Registration clinicaltrials.gov Identifier: NCT00320099

JAMA. 2010;303(4):341-348 www.jama.com

- **Sıkı glukoz kontrolü amacıyla uygulanan intensiv insülin tedavisi hastane içi mortaliteyi azaltmamıştır**
- **Tedaviye oral kortikosteroid eklenmesi hastane içi mortaliteyi azaltmamıştır**

Kortikosteroid Kullanımı

Intensive Care Med (2011) 37:420–429
DOI 10.1007/s00134-010-2121-0

SYSTEMATIC REVIEW

Andre C. Kalil
Junfeng Sun

Low-dose steroids for septic shock and severe sepsis: the use of Bayesian statistics to resolve clinical trial controversies

Intensive Care Med (2011) 37:420–429
DOI 10.1007/s00134-010-2121-0

0.94 (RRI > 5%). *Conclusions:* Based on clinically meaningful thresholds (RRR > 15–25%) for mortality reduction in severe sepsis or septic shock, the Bayesian approach to all three meta-analyses consistently showed that low-dose steroids were not associated with survival benefits. The probabilities of developing steroid-induced side effects (superinfections, bleeding, and hyperglycemia) were high for all analyses.

- Metaanalizlerin incelenmesine göre düşük doz steroid kullanımı sağkalım oranını artırmamaktadır
- Hatta steroide bağlı yan etkiler (süperinfeksiyon,hiperglisemi) daha fazla görülmektedir

Kortikosteroid Kullanımı

Devam eden çalışmalar ???

58. ADjunctive coRticosteroid trEatment iN criticAlly ilL Patients With Septic Shock (ADRENAL). ClinicalTrials.gov, 2013 (http://clinicaltrials.gov/ct2/show/NCT01448109).

59. Hydrocortisone for Prevention of Septic Shock (HYPRESS). ClinicalTrials.gov, 2013 (http://www.clinicaltrials.gov/ct2/show/NCT00670254).

DESTEKLEYİCİ TEDAVİLER
Glukoz Kontrolü

- **Kan glukoz düzeyini 110-180 mg/dL arasında tutacak şekilde insülin infüzyonu uygulanmalıdır- 1A**
- **Kan glukoz değerleri ve insülin infüzyon hızları stabil olana kadar glukoz ölçümleri her 1-2 saatte bir yapılmalıdır. Stabilizasyondan sonra her 4 saatte bir ölçülmelidir – 1C**
- **Yatak başı ölçülen kapiller glukoz testleri hassas olmadığından dikkatli değerlendirilmelidir - UG**

DESTEKLEYİCİ TEDAVİLER
Glukoz Kontrolü

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MARCH 26, 2009 VOL. 360 NO. 13

Intensive versus Conventional Glucose Control in Critically Ill Patients

CONCLUSIONS

In this large, international, randomized trial, we found that intensive glucose control increased mortality among adults in the ICU: a blood glucose target of 180 mg or less per deciliter resulted in lower mortality than did a target of 81 to 108 mg per deciliter. (ClinicalTrials.gov number, NCT00220987.)

- **Sıkı glukoz kontrolü (80-110mg/dL) erişkin yoğun bakım hastalarında mortaliteyi artırmaktadır**
- **Hedef üst sınır 180 mg/dL olan grupta mortalite azalmıştır**

DESTEKLEYİCİ TEDAVİLER
Glukoz Kontrolü

Intensive Care Med
DOI 10.1007/s00134-013-2874-3

WHAT'S NEW IN INTENSIVE CARE

Greet Van den Berghe

What's new in glucose control in the ICU?

Important novel insights from the last year support the need for more research on the topic of blood glucose control during critical illness. Given the complexity of the intervention, previously not fully appreciated by clinicians and researchers [4, 16], new studies will need better tools to better standardize the treatment. So, after 12 years, the jury is still out.

- Nörolojik outcome iyileştirdiğini gösteren çalışmalar var
- Yeni çalışmalar gerekli

DESTEKLEYİCİ TEDAVİLER
Kan Ürünleri Uygulaması

- **Doku hipoperfüzyonu düzelmişse ve miyokardiyal iskemi, ciddi hipoksemi, akut hemoraji durumları yoksa Hb< 7g/dL indiğinde ES transfüze edilmelidir. Hedef Hb düzeyi 7-9 g/dL arasında tutulmalıdır-1B**

- **TDP klinik kanama yokluğunda veya invaziv bir girişim planlanmıyorsa sadece Lab değerlerini (INR) düzeltmek amacıyla verilmemeli – 2D**

- **Antitrombin ağır sepsis ve septik şok tedavisinde kullanılmamalı -1B**

- **Trombosit transfüzyonu kanama yoksa <10000/mm^3 , kanama riski olan hastalarda <20000/mm^3 , aktif kanama varsa veya invaziv girişim planlanıyorsa >50000/mm^3 uygulanmalıdır -2D**

DESTEKLEYİCİ TEDAVİLER
Kan Ürünleri Uygulaması
TRISS

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 OCTOBER 9, 2014 VOL. 371 NO. 15

Lower versus Higher Hemoglobin Threshold for Transfusion in Septic Shock

CONCLUSIONS

Among patients with septic shock, mortality at 90 days and rates of ischemic events and use of life support were similar among those assigned to blood transfusion at a higher hemoglobin threshold and those assigned to blood transfusion at a lower threshold; the latter group received fewer transfusions. (Funded by the Danish Strategic Research Council and others; TRISS ClinicalTrials.gov number, NCT01485315.)

- **Kan tx için Hb eşik değerleri 7g/dl ile 9 g/dl arasında mortalite ve iskemik olayda farklılık yok, tx sayısı 7g/dl de daha az**

DESTEKLEYİCİ TEDAVİLER
Immunglobulin- Selenyum- Stres Ülseri Profilaksisi

- **Intravenöz Immunglobulin tedavisi yetişkin ağır sepsis ve septik şokta önerilmemektedir – 2B**

- **Intravenöz Selenyum ağır sepsis tedavisinde önerilmemektedir– 2C**

- **Kanama risk faktörleri olan (koagülopati, uzamış mekanik ventilasyon) ağır sepsis/septik şoktaki hastalarda H2 bloker veya PPI kullanarak stres ülser profilaksisi (SÜP) uygulanmalıdır- 1B**
- **SÜP uygulanacaksa H2 blokerden ziyade PPI kullanılması önerilmektedir – 2C**
- **Risk faktörleri olmayan hastalarda SÜP uygulanmamalıdır- 2B**

DESTEKLEYİCİ TEDAVİLER
Immunglobulin- Selenyum- Stres Ülseri Profilaksisi

Intensive Care Med (2014) 40:11–22
DOI 10.1007/s00134-013-3125-3

SYSTEMATIC REVIEW

Mette Krag
Anders Perner
Jørn Wetterslev
Matt P. Wise
Morten Hylander Møller

Stress ulcer prophylaxis versus placebo or no prophylaxis in critically ill patients

A systematic review of randomised clinical trials with meta-analysis and trial sequential analysis

could not confirm this finding. *Conclusions:* This systematic review using meta-analysis and TSA demonstrated that both the quality and the quantity of evidence supporting the use of SUP in adult ICU patients is low. Consequently, large randomised clinical trials are warranted.

- **Yetişkin yoğun bakım hastalarında SÜP kullanımını destekleyen yeterli kanıt yoktur, geniş RKÇ gereksinim vardır**

DESTEKLEYİCİ TEDAVİLER
Renal Replasman Tedavisi- Bikarbonat

- **Sürekli RRT ve aralıklı hemodiyalizin etkinliği ağır sepsis ve akut böbrek yetersizliğindeki hastalarda eşittir- 2B**

- **Hemodinamik olarak anstabil septik hastalarda sıvı dengesinin yönetiminde sürekli tedavileri uygulayın– 2D**

- **Hipoperfüzyona bağlı laktik asidozu olan hastalarda pH>7.15 ise hemodinamiyi düzeltmek veya vazopressör gereksinimini azaltmak için bikarbonat kullanmayın- 2B**

DESTEKLEYİCİ TEDAVİLER
Hemofiltrasyon

[Intervention Review]

High-volume haemofiltration for sepsis

Emma MJ Borthwick[1a], Christopher J Hill[1b], Kannaiyan S Rabindranath[2], Alexander P Maxwell[1], Danny F McAuley[3], Bronagh Blackwood[4]

[1]Regional Nephrology Unit, Belfast City Hospital, Belfast, UK. [2]Renal Unit, Waikato District Hospital, Hamilton, New Zealand. [3]Centre for Infection and Immunity, Queen's University of Belfast, Belfast, UK. [4]School of Medicine, Dentistry & Biomedical Sciences, Queen's University Belfast, Belfast, UK

[a]Joint first author. [b]Joint first author

Contact address: Christopher J Hill, Regional Nephrology Unit, Belfast City Hospital, Belfast, Northern Ireland, BT9 7AB, UK. chill05@qub.ac.uk.

Editorial group: Cochrane Anaesthesia Group.
Publication status and date: Edited (no change to conclusions), published in Issue 2, 2013.
Review content assessed as up-to-date: 31 August 2011.

Citation: Borthwick EMJ, Hill CJ, Rabindranath KS, Maxwell AP, McAuley DF, Blackwood B. High-volume haemofiltration for sepsis. *Cochrane Database of Systematic Reviews* 2013, Issue 1. Art. No.: CD008075. DOI: 10.1002/14651858.CD008075.pub2.

- **Rutin olarak kullanımını önermek için yeterli kanıt yok, geniş RKÇ gereksinim var**

DESTEKLEYİCİ TEDAVİLER
Nütrisyon

- İlk 48 saat içinde Oral/Enteral Nütrisyona başlanmalı- 2C
- İlk bir hafta içinde tam kalorik beslenmeden kaçınılmalı, günlük 500 kcal/G hedeflenip tolere ettikçe yavaş artış – 2B
- Ağır sepsis ve septik şokta ilk bir haftada TPN uygulamasından kaçınılmalı- 2B
- Spesifik immunnütrisyon ürünleri kullanmayın- 2C

DESTEKLEYİCİ TEDAVİLER
ECMO

Improved survival in venovenous vs venoarterial extracorporeal membrane oxygenation for pediatric noncardiac sepsis patients: a study of the Extracorpore Life Support Organization registry

Sean C. Skinner[a,*], Joseph A. Iocono[a], Hubert O. Ballard[b], Marion D. Turner[c], Austin N. Ward[d], Daniel L. Davenport[e], Matthew L. Paden[f], Joseph B. Zwischenberger[e]

[a]*Division of Pediatric Surgery, University of Kentucky, Lexington, Kentucky 40536-0298, USA*
[b]*Department of Neonatology, Lexington, Kentucky, USA*
[c]*Department of Pediatrics, Lexington, Kentucky, USA*
[d]*University of Kentucky College of Medicine, Lexington, Kentucky, USA*
[e]*Department of Surgery, Lexington, Kentucky, USA*
[f]*Emory University, Department of Pediatric Critical Care, Atlanta, Georgia, USA*

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DESTEKLEYİCİ TEDAVİLER

ECMO

Türk Yoğun Bakım Derneği Dergisi (2013)11: 86-92
DOI: *10.4274/Tybdd.24085*

DERLEME / *REVİEW*

Mustafa Kemal Arslantaş,
İsmail Cinel,
Ali Günerli,

Sepsis ve Ekstrakorporeal Membran Oksijenizasyonu

Sepsis and Extracorporeal Membrane Oxygenation (ECMO)

ÖZET Sepsis ve sepsisin yol açtığı organ yetersizlikleri yoğun bakımlardaki mortalite ve morbiditenin en önemli nedenlerindendir. Şiddetli sepsiste, çoğunlukla miyokardiyal disfonksiyon ve vasoplejinin gözlemlendiği kardiyovasküler sistem tutulumu ve PaO_2/FiO_2 oranının azalma trendinde olduğu solunum sistemi tutulumu birliktedir. Ekstrakorpereal membran oksijenasyonu ("Extracorporeal Membrane Oxygenation" ECMO) geleneksel tedavi ile sonuç alınamayan akut ve geri dönüşümlü akciğer veya kalp-akciğer hasarında yeterli oksijenasyonu sağlamakta işlev gören, yeni bir yaklaşım olarak günümüzde yoğun bakımlarda giderek daha sık kullanılmaya başlanmıştır. Uygulamanın, organizmanın homeostazisi ile doğrudan ilişkili ve mekanik ventilasyonun travmatik zararlarından kaçınmayı sağlayabilecek bir yöntem olması ECMO kullanımını sepsiste güncel hale getirmektedir.

DESTEKLEYİCİ TEDAVİLER

- **Klaritromisin- Esmolol**

J Antimicrob Chemother 2014; **69**: 1111–1118
doi:10.1093/jac/dkt475 Advance Access publication 28 November 2013

Antimicrobial Chemotherap

Effect of clarithromycin in patients with suspected Gram-negative sepsis: results of a randomized controlled trial

Evangelos J. Giamarellos-Bourboulis[1]*, Vassiliki Mylona[2], Anastasia Antonopoulou[1,3], Iraklis Tsangaris[3], Ioannis Koutelidakis[4], Androniki Marioli[2], Maria Raftogiannis[1], Petros Kopterides[3], Korina Lymberopoulou[2], Maria Mouktaroudi[1], Christos Papageorgiou[3], Basileios Papaziogas[4], Antonia-Panagiota Georgopoulou[2], Thomas Tsaganos[1], Evangelos Papadomichelakis[3], Charalambos Gogos[5], Malvina Ladas[2], Athina Savva[1], Aimilia Pelekanou[1], Fotini Baziaka[1], Pantelis Koutoukas[1], Theodora Kanni[1], Aikaterini Spyridaki[1], Nikolaos Maniati Nikolaos Pelekanos[1], Antigone Kotsaki[1], Ilia Vaki[1], Emmanuel E. Douzinas[6], Georgios Koratzanis[2] and Apostolos Armaganidis[3]

Preliminary Communication | CARING FOR THE CRITICALLY ILL PATIENT

Effect of Heart Rate Control With Esmolol on Hemodynamic and Clinical Outcomes in Patients With Septic Shock
A Randomized Clinical Trial

Andrea Morelli, MD; Christian Ertmer, MD; Martin Westphal, MD; Sebastian Rehberg, MD; Tim Kampmeier, MD; Sandra Ligges, PhD; Alessandra Orecchioni, MD; Annalia D'Egidio, MD; Fiorella D'Ippoliti, MD; Cristina Raffone, MD; Mario Venditti, MD; Fabio Guarracino, MD; Massimo Girardis, MD; Luigi Tritapepe, MD; Paolo Pietropaoli, MD; Alexander Mebazaa, MD; Mervyn Singer, MD, FRCP

JAMA. 2013;310(16):1683-1691. doi:10.1001/jama.2013.278477

EGDT Önemli mi?
ProCESS

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

A Randomized Trial of Protocol-Based Care for Early Septic Shock

The ProCESS Investigators*

ABSTRACT

This article was published on March 18, 2014, at NEJM.org.

DOI: 10.1056/NEJMoa1401602

CONCLUSIONS

In a multicenter trial conducted in the tertiary care setting, protocol-based resuscitation of patients in whom septic shock was diagnosed in the emergency department did not improve outcomes. (Funded by the National Institute of General Medical Sciences; ProCESS ClinicalTrials.gov number, NCT00510835.)

- **Protokol bazlı sepsis resüsitasyonu (EGDT) sağkalımı artırmamıştır**
- **SVK ile CVP/ScvO2 takibinin anlamlı yararı saptanmamıştır**

EGDT Önemli mi?
ProCESS

The NEW ENGLAND JOURNAL of MEDICINE

EDITORIAL

The ProCESS Trial — A New Era of Sepsis Management

The ProCESS trial identifies early recognition of sepsis, early administration of antibiotics, early adequate volume resuscitation, and clinical assessment of the adequacy of circulation as the elements we should focus on to save lives. The publication of the ProCESS trial launches the era of early recognition and treatment in the management of sepsis.

Disclosure forms provided by the author are available with the

.D.

Two ongoing multicenter trials of EGDT, the Australasian Resuscitation in Sepsis Evaluation (ARISE) trial in Australia (ClinicalTrials.gov number, NCT00975793) and the Protocolised Management in Sepsis (ProMISe) trial in the United Kingdom (Current Controlled Trials number, ISRCTN36307479) may offer additional insight.[19,20]

EGDT Önemli mi?
ARISE

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Goal-Directed Resuscitation for Patients with Early Septic Shock

The ARISE Investigators and the ANZICS Clinical Trials Group*

METHODS

In this trial conducted at 51 centers (mostly in Australia or New Zealand), we randomly assigned patients presenting to the emergency department with early septic shock to receive either EGDT or usual care. The primary outcome was all-cause mortality within 90 days after randomization.

CONCLUSIONS

In critically ill patients presenting to the emergency department with early septic shock, EGDT did not reduce all-cause mortality at 90 days. (Funded by the National Health and Medical Research Council of Australia and the Alfred Foundation; ARISE ClinicalTrials.gov number, NCT00975793.)

- **EGDT 90 günlük mortaliteyi azaltmamıştır**
- **EGDT yararı sorgulanmalı**

EGDT Önemli mi?
ProMISe

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Trial of Early, Goal-Directed Resuscitation for Septic Shock

Paul R. Mouncey, M.Sc., Tiffany M. Osborn, M.D., G. Sarah Power, M.Sc., David A. Harrison, Ph.D., M. Zia Sadique, Ph.D., Richard D. Grieve, Ph.D., Rahi Jahan, B.A., Sheila E. Harvey, Ph.D., Derek Bell, M.D., Julian F. Bion, M.D., Timothy J. Coats, M.D., Mervyn Singer, M.D., J. Duncan Young, D.M., and Kathryn M. Rowan, Ph.D., for the ProMISe Trial Investigators*

METHODS

We conducted a pragmatic randomized trial with an integrated cost-effectiveness analysis in 56 hospitals in England. Patients were randomly assigned to receive either EGDT (a 6-hour resuscitation protocol) or usual care. The primary clinical outcome was all-cause mortality at 90 days.

CONCLUSIONS

In patients with septic shock who were identified early and received intravenous antibiotics and adequate fluid resuscitation, hemodynamic management according to a strict EGDT protocol did not lead to an improvement in outcome. (Funded by the United Kingdom National Institute for Health Research Health Technology Assessment Programme; ProMISe Current Controlled Trials number, ISRCTN36307479.)

- **EGDT protokolüne göre hemodinamik yönetim sağkalımı artırmamıştır**

Surviving Sepsis Campaign

- **In response to ProCESS and ARISE, the influential Surviving Sepsis Campaign now advises that measurement of central venous pressure (CVP) and central venous oxygenation (ScVO2) -- two core components of the so-called EGDT sepsis bundle -- are not necessary for all patients with septic shock**

- **As long as patients have received timely antibiotics and fluid resuscitation, the Campaign says, "requiring measurement of CVP and ScvO2 in all patients ... is not supported by the available evidence.“**

- **They further reported that the Surviving Sepsis committee would "immediately review the evidence" to determine whether and when an update is needed to its practice-defining Surviving Sepsis Guidelines**

Önemli Olan ?

Kanımca Sepsite Sağkalımda Hastanın tecrübeli bir ekip tarafından (yoğun bakımcı, yoğun bakım hemşiresi, fizyoterapist, diyetisyen) yakın takibi en önemli belirleyicidir

HAYATTA EN HAKİKİ MÜRŞİT İLİMDİR

MUSTAFA KEMAL ATATÜRK