

REFERENCES

Abraham E, Laterre PF, Garg R, Levy H, Talwar D, Trzaskoma BL, Francois B, Guy JS, Bruckmann M, Rea-Neto A, Rossaint R, Perrotin D, Sablotzki A, Arkins N, Utterback BG, Macias WL. Drotrecogin alfa (activated) for adults with severe sepsis and a low risk of death. *N Engl J Med.* 2005;353:1332–1341.

Ali H Al-Khafaji, MD, MPH; Chief Editor: Michael R Pinsky. Multisystem Organ Failure of Sepsis <http://emedicine.medscape.com/article/169640-overview,2011>

American College of Chest Physicians/Society of Critical Care Medicine Consensus Conference: definitions for sepsis and organ failure and guidelines for the use of innovative therapies in sepsis. *Crit Care Med.* Jun 1992;20(6):864-74. [Best Evidence]

Amir Qaseem, 1Linda L. Humphrey, 1Roger Chou, 1. Use of Intensive Insulin Therapy for the Management of Glycemic Control in Hospitalized Patients: A Clinical Practice Guideline From the American College of Physicians. Clinical Guidelines Committee of the American College of Physicians//**February 15, 2011 vol. 154 no. 4 260-267*

Andrew Lenneman, Henry H Ooi, Cardiogenic Shock <http://emedicine.medscape.com/article/152191-overview:2011>

Angus DC, Linde-Zwirble WT, Lidicker J, Clermont G, Carcillo J, Pinsky MR. Epidemiology of severe sepsis in the United States: analysis of incidence, outcome, and associated costs of care. *Crit Care Med*. Jul 2001;29(7):1303-10.

Annane D, Bellissant E, Bollaert PE, Briegel J, Confalonieri M, De Gaudio R, et al. Corticosteroids in the treatment of severe sepsis and septic shock in adults: a systematic review. *JAMA*. Jun 10 2009;301(22):2362-75. [Best Evidence]

Annane D, Sébille V, Charpentier C, Bollaert PE, François B, Korach JM, et al. Effect of treatment with low doses of hydrocortisone and fludrocortisone on mortality in patients with septic shock. *JAMA*. Aug 21 2002;288(7):862-71.

Baughman RP, Gunther KL, Rashkin MC, Keeton DA, Pattishall EN. Changes in the inflammatory response of the lung during acute respiratory distress syndrome: prognostic indicators. *Am J Respir Crit Care Med*. Jul 1996;154(1):76-81.

Beale RJ, Hollenberg SM, Vincent JL, Parrillo JE. Vasopressor and inotropic support in septic shock: an evidence-based review. *Crit Care Med.* Nov 2004;32(11 Suppl):S455-65.

Bernard GR, Artigas A, Brigham KL, Carlet J, Falke K, Hudson L, et al. The American-European Consensus Conference on ARDS. Definitions, mechanisms, relevant outcomes, and clinical trial coordination. *Am J Respir Crit Care Med.* Mar 1994;149(3 Pt 1):818-24.

Bernard GR, Vincent JL, Laterre PF, LaRosa SP, Dhainaut JF, Lopez-Rodriguez A, et al. Efficacy and safety of recombinant human activated protein C for severe sepsis. *N Engl J Med.* Mar 8 2001;344(10):699-709 .

Bochud PY, Bonten M, Marchetti O, Calandra T. Antimicrobial therapy for patients with severe sepsis and septic shock: an evidence-based review. *Crit Care Med.* Nov 2004;32(11 Suppl):S495-512.

Bone RC, Balk RA, Cerra FB, et al. Definitions for sepsis and organ failure and guidelines for the use of innovative therapies in sepsis. The ACCP/SCCM Consensus Conference Committee. American College of Chest Physicians/Society of Critical Care Medicine. *Chest.* Jun 1992;101(6):1644-55.

Bouadma L; Luyt CE; Tubach F; Cracco C; Alvarez A; Schwebel C;et al. Use of procalcitonin to reduce patients' exposure to antibiotics in intensive care units (PRORATA trial): a multicentre randomised controlled trial. *Lancet*. 2010; 375(9713):463-74 (ISSN: 1474-547X)

Briegel J, Forst H, Haller M. Stress doses of hydrocortisone reverse hyperdynamic septic shock: a prospective, randomized, double-blind, single-center study. *Crit Care Med*. Apr 1999;27(4):723-32.

Brun-Buisson C, Doyon F, Carlet J, et al. Incidence, risk factors, and outcome of severe sepsis and septic shock in adults. A multicenter prospective study in intensive care units. French ICU Group for Severe Sepsis. *JAMA*. Sep 27 1995;274(12):968-74.

Brun-Buisson C. The epidemiology of the systemic inflammatory response. *Intensive Care Med*. 2000;26 Suppl 1:S64-74.

Cetinbas F, Yelken B, Gulbas Z. Role of glutamine administration on cellular immunity after total parenteral nutrition enriched with glutamine in patients with systemic inflammatory response syndrome. *J Crit Care*. Dec 2010;25(4):661.e1-6.

Cetinbas F; Yelken B; Gulbas Z. Role of glutamine administration on cellular immunity after total parenteral nutrition enriched with glutamine in patients with systemic inflammatory response syndrome. *J Crit Care.* 2010; 25(4):661.e1-6

Christian E. Sandrock; Timothy E. Albertson. Controversies in the Treatment of Sepsis *Semin Respir Crit Care Med.* 2010;31(1):66-78.

Cooper MS, Stewart PM. Corticosteroid insufficiency in acutely ill patients. *N Engl J Med.* Feb 20 2003;348(8):727-34.

Cronin L, Cook DJ, Carlet J, Heyland DK, King D, Lansang MA, et al. Corticosteroid treatment for sepsis: a critical appraisal and meta-analysis of the literature. *Crit Care Med.* Aug 1995;23(8):1430-9.

Crowe CA, Mistry CD, Rzechula K, Kulstad CE. Evaluation of a modified early goal-directed therapy protocol. *Am J Emerg Med.* Jul 2010;28(6):689-93.

Cruz DN, Antonelli M, Fumagalli R, Foltran F, Brienza N, Donati A, et al. Early use of polymyxin B hemoperfusion in abdominal septic shock: the EUPHAS randomized controlled trial. *JAMA.* Jun 17 2009;301(23):2445-52.

De Backer D, Biston P, Devriendt J, et al. Comparison of dopamine and norepinephrine Sakr Y, Reinhart K, Vincent JL, et al. Does dopamine administration in shock influence outcome? Results of the Sepsis Occurrence in Acutely Ill patients (SOAP) study. *Crit Care Med*. 2006;34:589-597. Abstract

Dellinger RP, Carlet JM, Masur H. Surviving Sepsis Campaign guidelines for management of severe sepsis and septic shock. *Crit Care Med*. Mar 2004;32(3):858-73.

Dellinger RP, Carlet JM, Masur H. Surviving Sepsis Campaign guidelines for management of severe sepsis and septic shock. *Intensive Care Med*. Apr 2004;30(4):536-55.

Dellinger RP, Levy MM, Carlet JM, Bion J, Parker MM, Jaeschke R, et al. Surviving Sepsis Campaign: international guidelines for management of severe sepsis and septic shock: 2008. *Crit Care Med*. Jan 2008;36(1):296-327. [Guideline]

Dellinger RP, Levy MM, Carlet JM, et al. Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock. *Crit Care Med* 2008; [published correction appears in *Crit Care Med* 2008; 36:1394-1396] 36:296-327

Eichacker PQ, Natanson C, Danner RL. Surviving sepsis—practice guidelines, marketing campaigns, and Eli Lilly. *N Engl J Med.* 2006;355:1640–1642.

Ferrer R, Artigas A, Levy MM, Blanco J, González-Díaz G, Garnacho-Montero J, et al. Improvement in process of care and outcome after a multicenter severe sepsis educational program in Spain. *JAMA.* May 21 2008;299(19):2294-303.

Finfer S, Bellomo R, Boyce N, French J, Myburgh J, Norton R. A comparison of albumin and saline for fluid resuscitation in the intensive care unit. *N Engl J Med.* May 27 2004;350(22):2247-56.

Gattinoni L, Brazzi L, Pelosi P, Latini R, Tognoni G, Pesenti A, et al. A trial of goal-oriented hemodynamic therapy in critically ill patients. SvO₂ Collaborative Group. *N Engl J Med.* Oct 19 1995;333(16):1025-32.

Gregory A Schmidt, Jess Mandel, Polly E Parsons, Daniel J Sexton. Management of severe sepsis and septic shock in adults .Last literature review version 18.1: January 2010

Griffie MJ, Merkel MJ, Wei KS. The role of echocardiography in hemodynamic assessment of septic shock. *Crit Care Clin.* Apr 2010;26(2):365-82, table of contents.

Hayes MA, Timmins AC, Yau EH, et al. Elevation of systemic oxygen delivery in the treatment of critically ill patients. *N Engl J Med*. Jun 16 1994;330(24):1717-22.

Hotchkiss RS, Karl IE. The pathophysiology and treatment of sepsis. *N Engl J Med*. Jan 9 2003;348(2):138-50.

Janda S, Young A, Fitzgerald JM, Etminan M, Swiston J. The effect of statins on mortality from severe infections and sepsis: a systematic review and meta-analysis. *J Crit Care*. Dec 2010;25(4):656.e7-22.

John H. Boyd,; Jason Forbes,; Taka-aki Nakada; Keith R. Walley,; James A. Russell. A Positive Fluid Balance and Elevated Central Venous Pressure Are Associated With Increased Mortality *Crit Care Med*. 2011;39(2):259-65.

Jones AE, Focht A, Horton JM, Kline JA. Prospective external validation of the clinical effectiveness of an emergency department-based early goal-directed therapy protocol for severe sepsis and septic shock. *Chest*. Aug 2007;132(2):425-32.

Jones AE, Shapiro NI, Trzeciak S, Arnold RC, Claremont HA, Kline JA. Lactate clearance vs central venous oxygen saturation as goals of early sepsis therapy: a randomized clinical trial. *JAMA*. Feb 24 2010;303(8):739-46.

Kalil AC, Sun J. Low-dose steroids for septic shock and severe sepsis: the use of Bayesian statistics to resolve clinical trial controversies. *Intensive Care Med.* Mar 2011;37(3):420-9.

Kieft H, Hoepelman AI, Zhou W, Rozenberg-Arska M, Struyvenberg A, Verhoef J. The sepsis syndrome in a Dutch university hospital. Clinical observations. *Arch Intern Med.* Oct 11 1993;153(19):2241-7.

Kortgen A, Niederprüm P, Bauer M. Implementation of an evidence-based "standard operating procedure" and outcome in septic shock. *Crit Care Med.* Apr 2006;34(4):943-9.

Kolecki Paul ,David FM Brown. Hypovolemic shock <http://emedicine.medscape.com/article/760145-overview>: Mar 11, 2010

Kumar A, Roberts D, Wood KE, Light B, Parrillo JE, Sharma S, et al. Duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock. *Crit Care Med.* Jun 2006;34(6):1589-96.

Landry DW, Oliver JA. The pathogenesis of vasodilatory shock. *N Engl J Med.* Aug 23 2001;345(8):588-95.

Levi M, ten Cate H, van der Poll T, van Deventer SJ. Pathogenesis of disseminated intravascular coagulation in sepsis. *JAMA*. Aug 25 1993;270(8):975-9.

Levy B, Gibot S, Franck P, Cravoisy A, Bollaert PE. Relation between muscle Na⁺K⁺ ATPase activity and raised lactate concentrations in septic shock: a prospective study. *Lancet*. Mar 5-11 2005;365(9462):871-5.

Levy JH. Treating shock -- old drugs, new ideas. *N Engl J Med*. 2010;362:841-843.

Levy MM, Dellinger RP, Townsend SR, Linde-Zwirble WT, Marshall JC, Bion J, et al. The Surviving Sepsis Campaign: results of an international guideline-based performance improvement program targeting severe sepsis. *Crit Care Med*. Feb 2010;38(2):367-74 . [Guideline]

Levy MM, Fink MP, Marshall JC, Abraham E, Angus D, Cook D, et al. 2001 SCCM/ESICM/ACCP/ATS/SIS International Sepsis Definitions Conference. *Crit Care Med*. Apr 2003;31(4):1250-6.

Lorente JA, Landín L, De Pablo R, Renes E, Rodríguez-Díaz R, Liste D. Effects of blood transfusion on oxygen transport variables in severe sepsis. *Crit Care Med*. Sep 1993;21(9):1312-8.

Maclaren R, Rudis MI, Dasta JF. Use of vasopressors and inotropes in the pharmacotherapy of shock. In: DiPiro JT, et al., eds. *Pharmacotherapy: A Pathophysiologic Approach*. 7th ed. New York, NY: McGraw-Hill; 2008.

Mammen EF. Antithrombin III and sepsis. *Intensive Care Med*. Jul 1998;24(7):649-50.

Marik PE, Baram M, Vahid B. Does central venous pressure predict fluid responsiveness? A systematic review of the literature and the tale of seven mares. *Chest*. Jul 2008;134(1):172-8.

Marti-Carvajal AJ, Sola I, Lathyris D, Cardona AF. Human recombinant activated protein C for severe sepsis. *Cochrane Database Syst Rev*. Apr 13 2011;4:CD004388.

Martin GS, Mannino DM, Eaton S, Moss M. The epidemiology of sepsis in the United States from 1979 through 2000. *N Engl J Med*. Apr 17 2003;348(16):1546-54.

Max Harry Weil "Shock: Shock and Fluid Resuscitation: Merck Manual Professional "Last full review/revision May 2007

Mayr FB, Yende S, Linde-Zwirble WT, Peck-Palmer OM, Barnato AE, Weissfeld LA, et al. Infection Rate and Acute Organ Dysfunction Risk as Explanations for Racial Differences in Severe Sepsis. *JAMA*. Jun 2010;303(24):2495-2503.

McCoy C, Matthews SJ. Drotrecogin alfa (recombinant human activated protein C) for the treatment of severe sepsis. *Clin Ther.* Feb 2003;25(2):396-421.

Meduri GU, Headley AS, Golden E, et al. Effect of prolonged methylprednisolone therapy in unresolving acute respiratory distress syndrome: a randomized controlled trial. *JAMA.* Jul 8 1998;280(2):159-65.

Megan Brooks ,Procalcitonin Testing Can Cut Antibiotic Use for Ventilator-Associated Pneumonia ,*Eur Respir J.* 2009;34:1364-1375

Micek ST, Roubinian N, Heuring T, Bode M, Williams J, Harrison C, et al. Before-after study of a standardized hospital order set for the management of septic shock. *Crit Care Med.* Nov 2006;34(11):2707-13.

Mitaka C, Tomita M. Polymyxin B-Immobilized Fiber Column Hemoperfusion Therapy for Septic Shock. *Shock.* 2011 May 27;

Nagdev AD, Merchant RC, Tirado-Gonzalez A, Sisson CA, Murphy MC. Emergency department bedside ultrasonographic measurement of the caval index for noninvasive determination of low central venous pressure. *Ann Emerg Med.* Mar 2010; 55(3):290-5.

Nathan I Shapiro, Pilot Study of Bevacizumab (Avastin) in Patients With Septic Shock. Verified by Beth Israel Deaconess Medical Center, February 2010

Nathens AB, Rotstein OD. Selective decontamination of the digestive tract in acute severe pancreatitis--an indication whose time has come. *Clin Infect Dis*. Oct 1997;25(4):817-8.

Nguyen HB, Corbett SW, Steele R, Banta J, Clark RT, Hayes SR, et al. Implementation of a bundle of quality indicators for the early management of severe sepsis and septic shock is associated with decreased mortality. *Crit Care Med*. Apr 2007;35(4):1105-12.

Nguyen HB, Rivers EP, Abrahamian FM, Moran GJ, Abraham E, Trzeciak S, et al. Severe sepsis and septic shock: review of the literature and emergency department management guidelines. *Ann Emerg Med*. Jul 2006;48(1):28-54.

Nguyen HB, Rivers EP, Knoblich BP, Jacobsen G, Muzzin A, Ressler JA, et al. Early lactate clearance is associated with improved outcome in severe sepsis and septic shock. *Crit Care Med*. Aug 2004;32(8):1637-42.

Padmam Puneet, Mairi A McGrath, Hwee Kee Tay, Lamyaa Al-Riyami, Alirio J Melendez et al. The helminth product ES-62 protects against septic shock via Toll-like receptor 4-dependent autophagosomal degradation of the adaptor MyD88. *Nature Immunology*, 2011.

Patel GP, Grahe JS, Sperry M, et al. Efficacy and safety of dopamine versus norepinephrine in the management of septic shock. *Shock*. 2010;33:375-380.

Pitout JD, Laupland KB. Extended-spectrum beta-lactamase-producing Enterobacteriaceae: an emerging public-health concern. *Lancet Infect Dis*. Mar 2008;8(3):159-66.

Rady MY, Rivers EP, Nowak RM. Resuscitation of the critically ill in the ED: responses of blood pressure, heart rate, shock index, central venous oxygen saturation, and lactate. *Am J Emerg Med*. Mar 1996;14(2):218-25.

Rangel-Frausto MS, Pittet D, Costigan M, Hwang T, Davis CS, Wenzel RP. The natural history of the systemic inflammatory response syndrome (SIRS). A prospective study. *JAMA*. Jan 11 1995;273(2):117-23.

Rivers E, Nguyen B, Havstad S. Early goal-directed therapy in the treatment of severe sepsis and septic shock. *N Engl J Med*. Nov 8 2001;345(19):1368-77.

Robert Glatter What Is the Best Treatment for Septic Shock? in the treatment of shock. *N Engl J Med*. 2010;362:779-789.

Russell JA, Walley KR, Singer J, Gordon AC, Hébert PC, Cooper DJ, et al. Vasopressin versus norepinephrine infusion in patients with septic shock. *N Engl J Med*. Feb 28 2008;358(9):877-87.

Russell JA. Vasopressin in septic shock. *Crit Care Med.* Sep 2007;35(9 Suppl):S609-15.

Sands KE, Bates DW, Lanken PN, Graman PS, Hibberd PL, Kahn KL, et al. Epidemiology of sepsis syndrome in 8 academic medical centers. *JAMA.* Jul 16 1997;278(3):234-40.

Sevransky JE, Levy MM, Marini JJ. Mechanical ventilation in sepsis-induced acute lung injury/acute respiratory distress syndrome: an evidence-based review. *Crit Care Med.* Nov 2004;32(11 Suppl):S548-53.

Shapiro N, Howell MD, Bates DW, Angus DC, Ngo L, Talmor D. The association of sepsis syndrome and organ dysfunction with mortality in emergency department patients with suspected infection. *Ann Emerg Med.* Nov 2006;48(5):583-90, 590

Shapiro NI, Howell MD, Talmor D, Lahey D, Ngo L, Buras J, et al. Implementation and outcomes of the Multiple Urgent Sepsis Therapies (MUST) protocol. *Crit Care Med.* Apr 2006;34(4):1025-32.

Shapiro NI, Howell MD, Talmor D, Nathanson LA, Lisbon A, Wolfe RE, et al. Serum lactate as a predictor of mortality in emergency department patients with infection. *Ann Emerg Med.* May 2005;45(5):524-8.

Sprung CL, Annane D, Keh D, Moreno R, Singer M, Freivogel K, et al. Hydrocortisone therapy for patients with septic shock. *N Engl J Med.* Jan 10 2008;358(2):111-24.

Srinivasan V, SR Pandi-Perumal, DW Spence, H Kato, DP Cardinali
Melatonin in septic shock: Some recent concepts. *J Crit Care* (2010)

T. Gutschmann, I. Razquin-Olazarán, I. Kowalski, Y. Kaonis, J. Howe, et al. New Antiseptic Peptides To Protect against Endotoxin-Mediated Shock. *Antimicrobial Agents and Chemotherapy*, 2010; 54 (9): 3817

Trzeciak S, Dellinger RP, Abate NL, Cowan RM, Stauss M, Kilgannon JH, et al. Translating research to clinical practice: a 1-year experience with implementing early goal-directed therapy for septic shock in the emergency department. *Chest*. Feb 2006;129(2):225-32.

Trzeciak S, Rivers EP. Clinical manifestations of disordered microcirculatory perfusion in severe sepsis. *Crit Care*. 2005;9 Supply 4:S20-6.

Udeani John, Lewis J Kaplan, Francisco Talavera, Hemorrhagic Shock 2010 <http://emedicine.medscape.com/article/432650>

Van den Berghe G, Wilmer A, Hermans G, et al. Intensive insulin therapy in the medical ICU. *N Engl J Med*. Feb 2 2006;354(5):449-61.

Van den Berghe G, Wouters PJ, Bouillon R. Outcome benefit of intensive insulin therapy in the critically ill: Insulin dose versus glycemic control. *Crit Care Med*. Feb 2003;31(2):359-66.

Vasu TS, Cavallazzi R, Hirani A, et al. Norephinephrine or Dopamine for Septic Shock: A Systematic Review of Randomized Clinical Trials. *J Intensive Care Med.* Mar 24 2011;

Vincent JL, Gerlach H. Fluid resuscitation in severe sepsis and septic shock: an evidence-based review. *Crit Care Med.* Nov 2004;32(11 Suppl):S451-4.

Wang HE, Shapiro NI, Angus DC, Yealy DM. National estimates of severe sepsis in United States emergency departments. *Crit Care Med.* Aug 2007;35(8):1928-36.

washyna TJ, Ely EW, Smith DM, Langa KM. Long-term cognitive impairment and functional disability among survivors of severe sepsis. *JAMA.* Oct 27 2010;304(16):1787-94.

Wheeler AP, Bernard GR. Treating patients with severe sepsis. *N Engl J Med.* Jan 21 1999;340(3):207-14.

Zeni F, Freeman B, Natanson C. Anti-inflammatory therapies to treat sepsis and septic shock: a reassessment. *Crit Care Med.* Jul 1997;25(7):1095-100.
