

**Managing Diabetes and Hyperglycemia in the Hospital:  
Critically Ill and Surgical Patients  
(2018-2021)**

**REFERENCES**

1. Clement S, Baithwaite SS, Magee MF, et al. Management of diabetes and hyperglycemia in hospitals. *Diabetes Care*. 2004;27:553-591.
2. Van den Berghe G, Wouters P, Weekers F, et al. Intensive insulin therapy in critically ill patients. *N Engl J Med*. 2001;345:1359-1367.
3. Van den Berghe G, Wilmer A, Hermans G, et al. Intensive insulin therapy in the medical ICU. *N Engl J Med*. 2006;354:449-461.
4. Brunkhorst FM, Engel C, Bloos F, et al. Intensive insulin therapy and pentastarch resuscitation in severe sepsis. *N Engl J Med*. 2008;358:125-139.
5. Wiener RS, Weiner DC, Larson RJ. Benefits and risks of tight glucose control in critically ill adults: a meta-analysis. *JAMA*. 2008;300:933-944.
6. The NICE-SUGAR Study Investigators, Finfer S, Chittock DR, et al. Intensive versus conventional glucose control in critically ill patients. *N Engl J Med*. 2009;360:1283-1297.
7. Inzucchi SE, Siegel MD. Glucose control in the ICU-how tight is too tight? *N Engl J Med*. 2009;360:1346-1349.
8. Griesdale DEG, de Souza RJ, van Dam RM, et al. Intensive insulin therapy and mortality among critically ill patients: a meta-analysis including NICE-SUGAR study data. *CMAJ*. 2009;180:821-827.
9. Qaseem A, Humphrey LL, Chou R, et al. Use of intensive insulin therapy for the management of glycemic control in hospitalized patients: a clinical practice guideline from the American College of Physicians. *Ann Intern Med*. 2011;154:260-267.
10. Lipshutz AK, Gropper MA. Perioperative glycemic control: an evidence-based review. *Anesthesiology*. 2009;110:408-421.
11. Dronge AS, Perkal MF, Kancir S, et al. Long-term glycemic control and postoperative infectious complications. *Arch Surg*. 2006;141:375-380; discussion 380.
12. Vann MA. Perioperative management of ambulatory surgical patients with diabetes mellitus. *Curr Opin Anaesthesiol*. 2009;22:718-724.
13. Lazar HL, McDonnell M, Chipkin SR, et al. The Society of Thoracic Surgeons practice guideline series: blood glucose management during adult cardiac surgery. *Ann Thorac Surg*. 2009;87:663-669.
14. Furnary A, Gao G, Grunkemeier G, et al. Continuous insulin infusion reduces mortality in patients with diabetes undergoing coronary artery bypass grafting. *J Thorac Cardiovasc Surg*. 2003;125:1007-1021.
15. Furnary A, Wu Y, Bookin S. Effect of hyperglycemia and continuous intravenous insulin infusions on outcomes of cardiac surgical procedures: the Portland Diabetic Project. *Endocr Pract*. 2004;10 (suppl 2):21-33.
16. Lazar HL, Chipkin SR, Fitzgerald CA, et al. Tight glycemic control in diabetic coronary artery bypass graft patients improves perioperative outcomes and decreases recurrent ischemic events. *Circulation*. 2004;109:1497-1502.

17. Doenst T, Wijeyesundera D, Karkouti K, et al. Hyperglycemia during cardiopulmonary bypass is an independent risk factor for mortality in patients undergoing cardiac surgery. *J Thorac Cardiovasc Surg.* 2005;130:1144.
18. Ouattara A, Lecomte P, Le Manach Y, et al. Poor intraoperative blood glucose control is associated with a worsened hospital outcome after cardiac surgery in diabetic patients. *Anesthesiology.* 2005;103:687-694.
19. Gandhi GY, Nuttall GA, Abel MD, et al. Intraoperative hyperglycemia and perioperative outcomes in cardiac surgery patients. *Mayo Clin Proc.* 2005;80:862-866.
20. Subramaniam B, Panzica PJ, Novack V, et al. Continuous perioperative insulin infusion decreases major cardiovascular events in patients undergoing vascular surgery: a prospective, randomized trial. *Anesthesiology.* 2009;110:970-977.
21. Gandhi GY, Nuttall GA, Abel MD, et al. Intensive intraoperative insulin therapy versus conventional glucose management during cardiac surgery: a randomized trial. *Ann Intern Med.* 2007;146:233-243.
22. Moghissi E, Korytkowski M, DiNardo M, et al. American Association of Clinical Endocrinologists and American Diabetes Association consensus statement on inpatient glycemic control. *Endocr Pract.* 2009;15:353-369.
23. Sourij H, Schmölzer I, Kettler-Schmut E, et al. Efficacy of a continuous GLP-1 infusion compared with a structured insulin infusion protocol to reach normoglycemia in nonfasted type 2 diabetic patients: a clinical pilot trial. *Diabetes Care.* 2009;32:1669-1671.
24. Deane AM, Chapman MJ, Fraser RJ, et al. The effect of exogenous glucagon-like peptide-1 on the glycaemic response to small intestinal nutrient in the critically ill: a randomised double-blind placebo-controlled cross over study. *Crit Care.* 2009;13:R67.
25. Meier JJ, Weyhe D, Michaely M, et al. Intravenous glucagon-like peptide 1 normalizes blood glucose after major surgery in patients with type 2 diabetes. *Crit Care Med.* 2004;32:848-851.
26. Sokos GG, Bolukoglu H, German J, et al. Effect of glucagon-like peptide-1 (GLP-1) on glycemic control and left ventricular function in patients undergoing coronary artery bypass grafting. *Am J Cardiol.* 2007;100:824-829.
27. Schwartz S, DeFronzo RA. Is incretin-based therapy ready for the care of hospitalized patients with type 2 diabetes?: The time has come for GLP-1 receptor agonists! *Diabetes Care.* 2013;36:2107-2111.
28. Czosnowski QA, Swanson JM, Lobo BL, et al. Evaluation of glycemic control following discontinuation of an intensive insulin protocol. *J Hosp Med.* 2009;4:28-34.
29. Ramos P, Childers D, Maynard G, et al. Maintaining glycemic control when transitioning from infusion insulin: a protocol-driven, multidisciplinary approach. *J Hosp Med.* 2010;5:446-451.
30. Lepore M, Pampanelli S, Fanelli C, et al. Pharmacokinetics and pharmacodynamics of subcutaneous injection of long-acting human insulin analog glargine, NPH insulin, and ultralente human insulin and continuous subcutaneous infusion of insulin lispro. *Diabetes.* 2000;49:2142-2148.
31. Schmeltz LR, DeSantis AJ, Schmidt K, et al. Conversion of intravenous insulin infusions to subcutaneously administered insulin glargine in patients with hyperglycemia. *Endocr Pract.* 2006;12:641-650.

32. Bode BW, Braithwaite SS, Steed RD, Davidson PC. Intravenous insulin infusion therapy: indications, methods, and transition to subcutaneous insulin therapy. *Endocr Pract.* 2004;10(suppl 2):71-80.
  33. DeSantis AJ, Schmeltz LR, Schmidt K, et al. Inpatient management of hyperglycemia: the Northwestern experience. *Endocr Pract.* 2006;12:491-505.
  34. Furnary AP, Braithwaite SS. Effects of outcome on in-hospital transition from intravenous insulin infusion to subcutaneous therapy. *Am J Cardiol.* 2006;98:557-564.
  35. LaPar et al. *J Thorac Cardiovasc Surg* 2014 Mar;147(3):1041-8.
- Joint Commission Online  
[http://www.jointcommission.org/assets/1/23/jconline\\_January\\_28\\_15.pdf](http://www.jointcommission.org/assets/1/23/jconline_January_28_15.pdf)