

## Five Things Physicians and Patients Should Question

1

### Don't order diagnostic tests at regular intervals (such as every day), but rather in response to specific clinical questions.

Many diagnostic studies (including chest radiographs, arterial blood gases, blood chemistries and counts and electrocardiograms) are ordered at regular intervals (e.g., daily). Compared with a practice of ordering tests only to help answer clinical questions, or when doing so will affect management, the routine ordering of tests increases health care costs, does not benefit patients and may in fact harm them. Potential harms include anemia due to unnecessary phlebotomy, which may necessitate risky and costly transfusion, and the aggressive work-up of incidental and non-pathological results found on routine studies.

2

### Don't transfuse red blood cells in hemodynamically stable, non-bleeding ICU patients with a hemoglobin concentration greater than 7 g/dL.

Most red blood cell transfusions in the ICU are for benign anemia rather than acute bleeding that causes hemodynamic compromise. For all patient populations in which it has been studied, transfusing red blood cells at a threshold of 7 g/dL is associated with similar or improved survival, fewer complications and reduced costs compared to higher transfusion triggers. More aggressive transfusion may also limit the availability of a scarce resource. It is possible that different thresholds may be appropriate in patients with acute coronary syndromes, although most observational studies suggest harms of aggressive transfusion even among such patients.

3

### Don't use parenteral nutrition in adequately nourished critically ill patients within the first seven days of an ICU stay.

For patients who are adequately nourished prior to ICU admission, parenteral nutrition initiated within the first seven days of an ICU stay has been associated with harm, or at best no benefit, in terms of survival and length of stay in the ICU. Early parenteral nutrition is also associated with unnecessary costs. These findings are true even among patients who cannot tolerate enteral nutrition. Evidence is mixed regarding the effects of early parenteral nutrition on nosocomial infections. For patients who are severely malnourished directly prior to their ICU admission, there may be benefits to earlier parenteral nutrition.

4

### Don't deeply sedate mechanically ventilated patients without a specific indication and without daily attempts to lighten sedation.

Many mechanically ventilated ICU patients are deeply sedated as a routine practice despite evidence that using less sedation reduces the duration of mechanical ventilation and ICU and hospital length of stay. Several protocol-based approaches can safely limit deep sedation, including the explicit titration of sedation to the lightest effective level, the preferential administration of analgesic medications prior to initiating anxiolytics and the performance of daily interruptions of sedation in appropriately selected patients receiving continuous sedative infusions. Although combining these approaches may not improve outcomes compared to one approach alone, each has been shown to improve patient outcomes compared with approaches that provide deeper sedation for ventilated patients.

5

### Don't continue life support for patients at high risk for death or severely impaired functional recovery without offering patients and their families the alternative of care focused entirely on comfort.

Patients and their families often value the avoidance of prolonged dependence on life support. However, many of these patients receive aggressive life-sustaining therapies, in part due to clinicians' failures to elicit patients' values and goals, and to provide patient-centered recommendations. Routinely engaging high-risk patients and their surrogate decision makers in discussions about the option of foregoing life-sustaining therapies may promote patients' and families' values, improve the quality of dying and reduce family distress and bereavement. Even among patients pursuing life-sustaining therapy, initiating palliative care simultaneously with ongoing disease-focused therapy may be beneficial.

# How This List Was Created

This document was prepared as an initiative of the Critical Care Societies Collaborative, which includes the American Association of Critical-Care Nurses, the American College of Chest Physicians, the American Thoracic Society and the Society of Critical Care Medicine. Each of these four societies was invited to nominate up to three members to join the taskforce. The final taskforce included 10 members representing all four societies and the disciplines of internal medicine, surgery, anesthesiology, emergency medicine and critical care nursing. Taskforce members initially proposed 58 items for consideration. The taskforce evaluated each item on five criteria (evidence, prevalence, cost, relevance, innovation), and agreed to narrow the list to 16 items. The taskforce debated the conceptual merits of these 16, and selected nine in which to pursue in-depth evidence reviews and consultations with external content experts. Taskforce members then independently scored each item on a scale from 1-9, rating each item on its overall impact as well as on each of the five criteria. The five items with the best mean overall scores were retained in the "penultimate" list. The taskforce then reviewed and edited the wording of items on the penultimate list, and submitted it to the four societies' executive committees. The executive committees sought feedback from additional experts in the field, debated the items and provided written comments to the taskforce. The taskforce deliberated and incorporated these suggestions where appropriate to create the final list, resolving any conflicts through discussion. All four societies endorsed the final list.

Members of the taskforce were: Scott D. Halpern, MD, PhD (Chair), Deborah Becker, PhD, RN, J. Randall Curtis, MD, MPH, Robert Fowler, MD, Robert Hyzy, MD, Jeremy M. Kahn, MD, MSc, Lewis Kaplan, MD, Nishi Rawat, MD, Curtis Sessler, MD and Hannah Wunsch, MD, MSc.

The disclosure and conflict of interest policies for the American Association of Critical Care Nurses, the American College of Chest Physicians, the American Thoracic Society and the Society of Critical Care Medicine can be found at [www.accn.org](http://www.accn.org), [www.chestnet.org](http://www.chestnet.org), [www.thoracic.org](http://www.thoracic.org) and [www.sccm.org](http://www.sccm.org) respectively.

## Sources

- Flabouris A, Bishop G, Williams L, Cunningham M. Routine blood test ordering for patients in intensive care. *Anaesth Intensive Care*. 2000;28(5):562-5.  
Ganapathy A, Adhikari NKJ, Spiegelman J, Scales DC. Routine chest x-rays in intensive care units: A systematic review and meta-analysis. *Crit Care*. 2012;16(2):R68.  
May TA, Clancy C, Critchfield J, Ebeling F, Enriquez A, Gallagher C, Genevro J, Kloo J, Lewis P, Smith R, Ng VL. Reducing unnecessary inpatient laboratory testing in a teaching hospital. *Am J Clin Pathol*. 2006;126(2):200-6.
- Corwin HL, Gettinger A, Pearl RG, Fink MP, Levy MM, Abraham E, MacIntyre NR, Shabot MM, Duh MS, Shapiro MJ. The CRIT Study: anemia and blood transfusion in the critically ill – current clinical practice in the United States. *Crit Care Med*. 2004;32(1):39-52.  
Carson JL, Terrin ML, Noveck H, Sanders DW, Chaitman BR, Rhoads GG, Nemo G, Draget K, Beaupre L, Hildebrand K, Macaulay W, Lewis C, Cook DR, Dobbin G, Zakriya KJ, Apple FS, Horney RA, Magaziner J, FOCUS Investigators. Liberal or restrictive transfusion in high-risk patients after hip surgery. *N Eng J Med*. 2011;365(26):2453-62.  
Hajjar LA, Vincent JL, Galas F, Nakamura RE, Silva CM, Santos MH, Fukushima J, Kalil Filho R, Sierra DB, Lopes NH, Mauad T, Roquim AC, Sundin MR, Leão WC, Almeida JP, Pomerantzeff PM, Dallan LO, Jatene FB, Stoff NA, Auler JO Jr. Transfusion requirements after cardiac surgery: the TRACS randomized controlled trial. *JAMA-JAMA*. 2010;304(14):1559-67.  
Hebert PC, Wells G, Blajchman MA, Marshall J, Martin C, Pagliarello G, Tweeddale M, Schweitzer I, Yetsis E. A multicenter, randomized, controlled clinical trial of transfusion requirements in critical care. *N Eng J Med*. 1999;340(6):409-17.  
Villanueva C, Colomo A, Bosch A, Concepción M, Hernandez-Gea V, Aracil C, Graupera I, Poca M, Alvarez-Urturi C, Gordillo J, Guarner-Argente C, Santaló C, Muñoz E, Guarner C. Transfusion strategies for acute upper gastrointestinal bleeding. *N Eng J Med*. 2013;368:11-21.  
Chatterjee S, Wetterslev J, Sharma A, Lichstein E, Mukherjee D. Association of blood transfusion with increased mortality in myocardial infarction. *JAMA*. 2013;309:132-39.
- Casaer MP, Mesotten D, Hermans G, Wouters PJ, Schetz M, Meyfroidt G, Van Cromphaut S, Ingels C, Meersseman P, Muller J, Vlasselaers D, Debaveye Y, Desmet L, Dubois J, Van Assche A, Vanderheyden S, Wilmer A, Van den Berghe G. Early versus late parenteral nutrition in critically ill adults. *N Eng J Med*. 2011;365:506-17.  
Heidegger CP, Berger MM, Graf S, Zingg W, Darmon P, Costanza MC, Thibault R, Pichard C. Optimisation of energy provision with supplemental parenteral nutrition in critically ill patients: a randomised controlled clinical trial. *Lancet*. 2013;381(9864):385-93.  
Martindale RG, McClave SA, Vanek VW, McCarthy M, Roberts P, Taylor B, Ochoa JB, Napolitano L, Cresci G; American College of Critical Care Medicine; A.S.P.E.N. Board of Directors. Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient: Society of Critical Care Medicine and American Society for Parenteral and Enteral Nutrition: Executive Summary. *Crit Care Med*. 2009;37(5):1757-61.  
Singer P, Berger MM, Van den Berghe G, Biolo G, Calder P, Forbes A, Griffiths R, Kreyman G, Leverve X, Pichard C, ESPEN. ESPEN guidelines on parenteral nutrition: intensive care. *Clin Nutr*. 2009;28(4):387-400.  
Buzby GP. Overview of randomized clinical trials of total parenteral nutrition for malnourished surgical patients. *World JSurg* 1993;17:173-7.
- Brook AD, Ahrens TS, Schaffir R, Prentice D, Sherman G, Shannon W, Kolfel MH. Effect of a nursing-implemented sedation protocol on the duration of mechanical ventilation. *Crit Care Med*. 1999;27:2609-15.  
Girard TD, Kress JP, Fuchs BD, Thomason JW, Schweickert WD, Pun BT, Taichman DB, Dunn JG, Pohlman AS, Kinniry PA, Jackson JC, Canonico AE, Light RW, Shintani AK, Thompson JL, Gordon SM, Hall JB, Dittus RS, Bernard GR, Ely EW. Efficacy and safety of a paired sedation and ventilator weaning protocol for mechanically ventilated patients in intensive care (Awakening and Breathing Controlled trial): a randomized controlled trial. *Lancet*. 2008;371(9607):126-34.  
Jacobi J, Fraser GL, Coursin DB, Riker RR, Fontaine D, Wittbrodt ET, Chalfin DB, Masica MF, Bjerke HS, Coplin WM, Crippen DW, Fuchs BD, Kelleher RM, Marik PE, Nasraway SA Jr, Murray MJ, Peruzzi WT, Lumb PD; Task Force of the American College of Critical Care Medicine (ACCM) of the Society of Critical Care Medicine (SCCM), American Society of Health-System Pharmacists (ASHP), American College of Chest Physicians. Clinical practice guidelines for the sustained use of sedatives and analgesics in the critically ill adult. *Crit Care Med*. 2002;30(1):119-41.  
Kress JP, Pohlman AS, O'Connor MF, Hall JB. Daily interruption of sedative infusions in critically ill patients undergoing mechanical ventilation. *N Eng J Med*. 2000;342:1471-7.  
Mehta S, Barry L, Cook D, Fergusson D, Steinberg M, Granton J, Herridge M, Fergusson N, Devlin J, Tanios M, Dodek P, Fowler R, Burns K, Jacka M, Olafson K, Skrobik Y, Hébert P, Sabri E, Meade M; SLEAP Investigators; Canadian Critical Care Trials Group. Daily sedation interruption in mechanically ventilated critically ill patients cared for with a sedation protocol: a randomized controlled trial. *JAMA*. 2012;308(19):1985-92.
- Fields MJ, Cassel CK. Approaching death, improving care at the end of life. Washington, D.C.: National Academy Press; 1997. 437 p.  
Angus DC, Barnato AE, Linde-Zwirble WT, Weissfeld LA, Watson RS, Rickert T, Rubenfeld GD; Robert Wood Johnson Foundation ICU End-Of-Life Peer Group. Use of intensive care at the end of life in the United States: an epidemiologic study. *Crit Care Med*. 2004;32(3):638-43.  
Curtis JR, Engelberg RA, Wenrich MD, Shannon SE, Treece PD, Rubenfeld GD. Missed opportunities during family conferences about end-of-life care in the intensive care unit. *Amer J Respir Crit Care Med*. 2005;171:844-9.  
Gries CJ, Engelberg RA, Kross EK, Zatzick D, Nielsen EL, Downey L, Curtis JR. Predictors of symptoms of posttraumatic stress and depression in family members after patient death in the ICU. *Chest*. 2010;137(2):280-7.

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### About the Collaborative Societies

The Critical Care Societies Collaborative (CCSC) was established in 2000 as a partnership among the four major professional and scientific societies whose members care for America's critically ill and injured. These societies are: the American Association of Critical-Care Nurses (AACN), the American College of Chest Physicians (ACCP), the American Thoracic Society (ATS) and the Society of Critical Care Medicine (SCCM). The CCSC leverages its collective and multi-professional expertise through communication, education, research and advocacy efforts. The CCSC speaks with a unified voice representing more than 150,000 critical care professionals to bring important issues to the forefront in public policy and in the health care arena.

To learn more about the American Association of Critical-Care Nurses, the American College of Chest Physicians, the American Thoracic Society and the Society of Critical Care Medicine, please visit [www.accn.org](http://www.accn.org), [www.chestnet.org](http://www.chestnet.org), [www.thoracic.org](http://www.thoracic.org) and [www.sccm.org](http://www.sccm.org) respectively.



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