COLLEGE OF INTENSIVE CARE MEDICINE OF AUSTRALIA AND NEW ZEALAND: TESTS, TREATMENTS AND PROCEDURES CLINICIANS AND CONSUMERS SHOULD QUESTION

The College of Intensive Care Medicine is the body responsible for intensive care medicine specialist training and education in Australia and New Zealand.

1. For patients with limited life expectancy (such as advanced cardiac, renal or respiratory failure, metastatic malignancy, third line chemotherapy) ensure patients have a 'goals of care' discussion at or prior to admission to ICU and for patients in ICU who are at high risk for death or severely impaired functional recovery, ensure that alternative care focused predominantly on comfort and dignity is offered to patients and their families

The ANZICS Statement on Care and Decision Making at the End of Life for the Critically Ill states that the goal of intensive care is to return patients to a quality of life that is acceptable to them. In order to achieve this goal, it is essential that clinicians explore the values and preferences of each patient. Engaging with patients and their families in the discussions around treatment limitations or withdrawal can improve the quality of dying and reduce family and staff stress and bereavement.

Supporting Evidence

- Detering KM, Hancock AD, Reade MC, Silvester W. The impact of advance care planning on end of life care in elderly patients: randomised controlled trial. BMJ 2010;340:c1345.
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- Fields MJ, Cassel CK. Approaching death, improving care at the end of life. Washington, D.C.: National Academy Press; 1997;437.
- 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.
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- Prigerson HG, Bao Y, Shah MA, et al. Chemotherapy use, performance status, and quality of life at the end of life. JAMA Oncol 2015;1(6):778-84.

Resources

- Read about Guideline on Pathology Testing in the Emergency Department on the Australasian College for Emergency Medicine website.

2. Remove all invasive devices, such as intravascular lines and urinary catheters, as soon as possible

Patients in the intensive care unit often require invasive devices as part of their treatment as well as monitoring of therapy. These lines however are a potential source of healthcare related infections. Preventative 'bundles' of care including simple measures such as hand hygiene and aseptic methods of insertion and care of devices have reduced the risk of health care related infections. Infections related to invasive devices are a significant cause of morbidity and mortality. Hence, all invasive devices such as arterial lines, central lines, urinary catheters should be removed as soon as possible.

Supporting Evidence

- Ziegler MJ, Pellegrini DC, Safdar N. Attributable mortality of central line associated bloodstream infection: systematic review and meta-analysis. Infection 2015;43(1):29-36.
- O'Horo J, et. al. Arterial catheters as a source of bloodstream infection: a systematic review and meta-analysis. Crit Care Med 2014;42:1334-1339.
- Pronovost P, et. al. An intervention to decrease catheter-related bloodstream infections in the ICU. NEJM 2006;355:2725-32.
- Trautner BW, Hull RA, Darouiche RO. Prevention of catheter-associated urinary tract infection. Curr Opin Infect Dis 2005;18:37-41.
- The Australian Guidelines for the Prevention and Control of Infection in Healthcare (2010); http://www.nhmrc.gov.au/book/australian-guidelines-prevention-and-control-infection-healthcare-2010/b4-2-2-intravascular-acc
- CDC Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011 http://www.cdc.gov/hicpac/pdf/guidelines/bsi-guidelines-2011.pdf

3. Transfuse red cells for anaemia only if the haemoglobin concentration is less than 70gm/L or if the patient is haemodynamically unstable or has significant cardiovascular or respiratory comorbidity

Numerous studies have highlighted the adverse outcomes that may be associated with blood transfusion. Randomised and other trials have indicated that transfusion of red blood cells for the treatment of anaemia in otherwise haemodynamically stable patients is either of no benefit or even harmful. There appears to be little or no proven benefit of transfusing beyond a threshold haemoglobin level of 70gm/L though the precise threshold for any given patient is unknown. Patients with active cardio-respiratory disease or neurological injury may warrant a higher threshold although harm associated with liberal transfusion in this group has also been reported.

Supporting Evidence

- Carson JL, Terrin ML, Noveck H, Sanders DW, Chaitman BR, Rhoads GG, et al. Liberal or restrictive transfusion in high-risk patients after hip surgery. New England Journal of Medicine 2011;365(26):2453-62.
- Hebert PC, Wells G, Blajchman MA, et al. A multicenter, randomized, controlled clinical trial of transfusion requirements in critical care. N Engl J Med 1999;340:409-417 [Erratum, N Engl J Med 1999;340:1056].
- Hajjar LA, Vincent JL, Galas FR, Nakamura RE, Silva CM, Santos MH, et al. Transfusion requirements after cardiac surgery: the TRACS randomized controlled trial. JAMA 2010;304 1559-67.
- Chatterjee S, Wetterslev J, Sharma A, Lichstein E, Mukherjee D. Association of blood transfusion with increased mortality in myocardial infarction: a meta-analysis and diversity-adjusted study sequential analysis. JAMA Intern Med 2013;173:132-9.
- 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. Transfusion strategies for acute upper gastrointestinal bleeding. New England Journal of Medicine 2013;368(1):11-21.
- Holst LB, Haase N, Wetterslev J, Wernerman J, Guttormsen AB, Karlsson S, Johansson PI, Åneman A, Vang ML, Winding R, Nebrich L. Lower versus higher hemoglobin threshold for transfusion in septic shock. New England Journal of Medicine 2014;371(15):1381-91.
- Boutin A, Chassé M, Shemilt M, Lauzier F, Moore L, Zarychanski R, Griesdale D, Desjardins P, Lacroix J, Fergusson D, Turgeon AF. Red blood cell transfusion in patients with traumatic brain injury: a

systematic review and meta-analysis. Transfusion Medicine Reviews 2016;30(1):15-24.
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- National Blood Authority Australia: Patient Blood Management Guidelines 2012 Module 4- Critical Care http://www.blood.gov.au/system/files/documents/pbm-module-4.pdf
- National Blood Authority Australia The Patient Blood Management Guidelines Companion Restrictive Transfusion Strategy http://www.blood.gov.au/system/files/documents/companion-24-pbm-guidelines.pdf

4. Undertake daily attempts to lighten sedation in ventilated patients unless specifically contraindicated and deeply sedate mechanically ventilated patients only if there is a specific indication

Numerous studies have highlighted the adverse outcomes that may be associated with blood transfusion. Randomised and other trials have indicated that transfusion of red blood cells for the treatment of anaemia in otherwise haemodynamically stable patients is either of no benefit or even harmful. There appears to be little or no proven benefit of transfusing beyond a threshold haemoglobin level of 70gm/L though the precise threshold for any given patient is unknown. Patients with active cardio-respiratory disease or neurological injury may warrant a higher threshold although harm associated with liberal transfusion in this group has also been reported.

Supporting evidence

- Brook AD, Ahrens TS, Schai R, Prentice D, Sherman G, Shannon W, Kollef MH. Effect of a nursing-implemented sedation protocol on the duration of mechanical ventilation. Crit Care Med 1999;27:2609-15.
- Kress JP, Pohlman AS, Hall JB. Sedation and analgesia in the intensive care unit. American Journal of Respiratory and Critical Care Medicine 2002:166(8)1024-8.
- Marshall J, Finn C, Theodore A. Impact of a clinical pharmacist-enforced intensive care unit sedation protocol on duration of mechanical ventilation and hospital stay. Critical Care Medicine 2008;36(2):427-33.
- 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.
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- Miller MA, Bosk EA, Iwashyna TJ, Krein SL. Implementation challenges in the intensive care unit: the why, who, and how of daily interruption of sedation. Journal of Critical Care 2012;27(2), 218-e1.

5 Consider antibiotic de-escalation daily

Infection can precipitate a need for intensive care admission and can occur as a complication of an ICU admission. The earliest administration of the most appropriate antibiotic and source control confer mortality benefit. However, antibiotics are also frequently used for the presumptive management of patients with 'sepsis' that may later prove to not have an infectious aetiology. In most circumstances, data regarding the appropriate duration of antibiotic administration are very difficult to interpret. In some conditions such as endocarditis or osteomyelitis longer courses of antibiotics have been recommended. However, there is increasing evidence that shorter courses of antibiotics for common infections such as hospital acquired pneumonia do not confer worse outcomes or increased mortality than longer courses. Moreover, shorter courses probably help to prevent the development of antibiotic resistance. In the absence of microbiological evidence of ongoing infection and with an improvement in clinical status, consideration should be given to discontinuing antibiotics at the earliest opportunity possible.

Supporting evidence

- Garnacho-Montero J, Gutiérrez-Pizarraya A, Escoresca-Ortega A, Fernández-Delgado E, López-Sánchez JM. Adequate antibiotic therapy prior to ICU admission in patients with severe sepsis and septic shock reduces hospital mortality. Critical Care 2015;19:302
- Kumar, A et al. Duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock. Crit Care Med 2006;34:1589-1596.
- Pugh R, Grant C, Cooke RPD, Dempsey G. Short-course versus prolonged-course antibiotic therapy for hospital-acquired pneumonia in critically ill adults. Cochrane Database of Systemic Reviews 2015;8.
- Australian Therapeutic Guidelines - Antibiotic, version 15, 2014.
- Sawyer RG, Claridge JA, Nathens AB, Rotstein OD, Duane TM, Evans HL, Cook CH, O'Neill PJ, Mazuski JE, Askari R, Wilson MA. Trial of short-course antimicrobial therapy for intraabdominal infection. New England Journal of Medicine 2015;372(21):1996-2005.

How was this list created?

A working group of interested parties from both CICM and ANZICS was formed to develop a list of 12 items that they believe should be focused on to reduce the number of unnecessary tests and interventions performed in intensive care. All CICM Fellows and ANZICS members were surveyed to develop a consensus view of a final list of five items. There were 6 items clearly favoured and two of these were combined by the working group to develop the final 5 recommendations.