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Outcome of patients who refuse transfusion after cardiac surgery

Jehovah's Witness patients may refuse blood transfusion, due to religious beliefs, following cardiac surgery. Strategies to conserve blood for such patients may include the preoperative use of erythropoietin, iron, and B-complex vitamins, as well as hemoconcentration; intraoperative use of antifibrinolytics and cell-saver and smaller cardiopulmonary bypass circuits; and tolerance of low hematocrit levels postoperatively. There is concern, however, that these practices may impact short- and long-term morbidity and survival. To address this issue, the authors used propensity methods and parametric multiphase hazard statistical analysis to study postoperative morbidity, in-hospital mortality, and long-term survival in Jehovah's Witness patients, hereafter referred to as Witnesses, versus a similarly matched group of patients who received transfusions. A total of 322 Witnesses and 87,453 non-Witnesses who underwent cardiac surgery at the Cleveland Clinic from Jan. 1, 1983 to Jan. 1, 2011 were included in the study. The study results showed that after propensity matching, Witnesses and non-Witnesses who received transfusions had similar risks of in-hospital mortality, stroke, atrial fibrillation, and renal failure. However, statistical differences were found, with Witnesses having lower occurrences of postoperative myocardial infarction, prolonged ventilation, and additional operations for bleeding, as well as shorter intensive care and postoperative lengths of stay. The study concluded that Witnesses had similar late survival outcomes but better early survival outcomes compared to the matched controls who received transfusions. Although there are many limitations to this study, including variability in treatment of Witnesses over the study period, the study suggests that unique blood conservation strategies do not appear to place patients at heightened risk for reduced long-term survival.

Pattakos G, Koch CG, Brizzio ME, et al. Outcome of patients who refuse transfusion after cardiac surgery. *Arch Intern Med*. 2012;172(15):1154–1160.

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A framework for prioritizing cancer genomics research

Genomics research is progressing at an explosive rate, and translating the research findings into new tests is a goal of many genetics laboratories. Many factors influence how laboratories prioritize the development and implementation of new tests. Furthermore, there is a lack of prospective trial evidence that compares the outcomes of genomic testing strategies with standardized approaches to clinical care. Using comparative effectiveness research (CER), researchers and clinicians can systematically evaluate and compare different interventions and strategies to determine the most effective approach for patients. Further, CER trial designs may help compare genomic versus standard clinical care strategies. In this setting, involving other stakeholders in the decisionmaking group may result in a better decision. The authors evaluated six candidate cancer genomics technologies and priority ranked them in a prospective CER trial. The goal of the study was to identify criteria that a diverse group of stakeholders may use to evaluate and prioritize cancer genomics projects. An external advisory group consisting of patients/consumers, payers, clinicians, and test developers was convened. The group used a modified Delphi approach to prioritize projects during a one-day meeting. At first, nine qualitative priority-setting criteria were used. But the stakeholders primarily discussed six of the nine criteria: clinical benefits, population health impacts, economic impacts, analytical and clinical validity, clinical trial implementation and feasibility, and market factors. Additional criteria, including patient-reported outcomes, clinical trial ethics, and trial recruitment,

were also identified during the process and incorporated into the criteria. The authors concluded that this modified Delphi approach may be used to effectively prioritize genomics projects for evaluation in a CER trial. Although the study was limited by the number of stakeholders included in the process, the diverse group was able to provide perspectives to assure that the research that was prioritized was relevant to its end users. The authors noted that their findings may be used as a guide for others electing to use priority-setting frameworks to shape investments in genomics technology.

Esmail LC, Roth J, Rangarao S, et al. Getting our priorities straight: a novel framework for stakeholder-informed prioritization of cancer genomics research [published ahead of print October 4, 2012]. *Genet Med*. doi:10.1038/gim.2012.103.

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RBC transfusion and clinical outcomes in premature low-birth–weight infants

Transfusion of red blood cells that were in prolonged storage has been associated with increased rates of infection, organ failure, death, and lengths of hospital stay. The mechanisms attributed to these adverse effects is cytokine build up in the storage medium, RBC membrane changes, the inability of RBCs to scavenge nitric oxide, and the general impairment of older RBCs, which prevents them from efficiently delivering oxygen to tissue. Many studies have hypothesized that transfusing older RBCs to more at-risk populations, such as critically ill premature infants, will exacerbate the negative effects of the RBC storage lesion and result in higher rates of organ dysfunction and morbidity. The authors investigated whether the use of RBCs stored for no more than seven days led to decreased rates of major nosocomial infection and organ dysfunction in premature neonates receiving at least one transfusion compared to blood transfused at standard lengths of storage. This was a double-blind, randomized, control trial that enrolled 377 premature infants who weighed less than 1250 g and were admitted to six Canadian tertiary neonatal intensive care units between May 2006 and June 2011. The primary outcome of the study was a composite measure of major neonatal morbidities, and the secondary outcome was the rate of nosocomial infection. The results showed that the mean age of the fresh blood transfused was 5.1 days, compared with 14.6 days in the standard group. Among the neonates in the fresh RBC group, 52.7 percent met the primary outcome, compared with 52.9 percent in the standard group. There was no difference in secondary outcome for the rate of infection in the fresh RBC group (77.7 percent) compared with the standard group (77.2 percent). The authors concluded from this trial that premature very low-birth–weight infants do not benefit from receiving transfusions of fresh RBCs in lieu of following standard blood bank practices.

Fergusson DA, Hebert P, Hogan DL, et al. Effect of fresh red blood cell transfusion on clinical outcomes in premature, very low-birth-weight infants. The ARIPI randomized trial. *JAMA*. 2012;308:1443–1451.

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