Reduce the use of Red Blood Cell Transfusions

**Scope of the Problem:** Red blood cell (RBC) transfusion has been associated with higher in-hospital mortality following cardiac surgery. In a recent study by the NNECDSG we observed a 16% decrease in long-term survival for patients exposed to even a small amount of allogeneic RBCs (1 to 2 units). This adverse impact on in-hospital mortality and survival was not explained by differences in patient and disease characteristics. With this growing evidence and wide variation of use of RBCs by NNECDSG centers (26.2% to 77.5%), the NNECDSG has undertaken efforts to optimize RBC conservation and to reduce unwarranted RBC transfusions.

**Goal:** Our goal is to develop efforts to optimize pre-surgical hemoglobin levels, minimize blood loss, and avoid allogeneic transfusions. Centers will implement strategies to reduce their red blood cell use to <20% of elective and urgent cases.

**Strategies:**
1. Develop a systematic and multidisciplinary approach to blood conservation and management.
   - Educate staff about the negative consequences of red blood cell transfusion
   - Reduce number of blood draws. For blood draws use pediatric tubes or point of care testing modalities.
   - Avoid hemodilution: size perfusion pumps to the size of the patient
   - Use normovolemic hemodilution whenever possible
   - RAP (retrograde autologous prime)
   - Consider anti-fibrinolytics in selected patients (e.g. tranexamic acid)
   - Meticulous surgical hemostasis
   - Tolerate lower hematocrits during pre-, intra- and post-operative care
   - Use intraoperative cell salvage for all patients and optimize salvage efficiency
   - Institute specific blood-transfusion algorithms
   - Selective use of intravenous iron and limited use of ESA for perioperative management of anemia

**Activities:**
1. In 2007 five centers implemented blood conservation programs. Specifically, Eastern Maine Medical Center, Maine Medical Center, Central Maine Medical Center, Portsmouth Regional Hospital, Catholic Medical Center.
2. In 2007, 6 of 8 medical centers have reduced the use of RBC transfusion in their elective and urgent patients. (Data from Cardiac Surgery June 2008 Report)

**Progress:**
1. To continue implementing strategies to reduce overall transfusion rates to <20% among elective and urgent patients.