Abstract from Current Literatures

Higher or Lower Hemoglobin Transfusion Thresholds for Preterm Infants

H. Kirpalani, E.F. Bell, S.R. Hintz, S. Tan, B. Schmidt, A.S. Chaudhary et al.

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Background: Limited data suggest that higher hemoglobin thresholds for red-cell transfusions may reduce the risk of cognitive delay among extremely-low-birth-weight infants with anemia.

Methods: We performed an open, multicenter trial in which infants with a birth weight of 1000 g or less and a gestational age between 22 weeks 0 days and 28 weeks 6 days were randomly assigned within 48 hours after delivery to receive red-cell transfusions at higher or lower hemoglobin thresholds until 36 weeks of postmenstrual age or discharge, whichever occurred first. The primary outcome was a composite of death or neuro-developmental impairment (cognitive delay, cerebral palsy, or hearing or vision loss) at 22 to 26 months of age, corrected for prematurity.

Results: A total of 1824 infants (mean birth weight, 756 g; mean gestational age, 25.9 weeks) underwent randomization. There was a between-group difference of 1.9 g per deciliter (19 g per liter) in the pre-transfusion mean hemoglobin levels throughout the treatment period. Primary outcome data were available for 1692 infants (92.8%). Of 845 infants in the higher-threshold group, 423 (50.1%) died or survived with neuro-developmental impairment, as compared with 422 of 847 infants (49.8%) in the lower-threshold group (relative risk adjusted for birth-weight stratum and center, 1.00; 95% confidence interval [CI], 0.92 to 1.10; P = 0.93). At 2 years, the higher- and lower-threshold groups had similar incidences of death (16.2% and 15.0%, respectively) and neuro-developmental impairment (39.6% and 40.3%, respectively). At discharge from the hospital, the incidences of survival without severe complications were 28.5% and 30.9%, respectively. Serious adverse events occurred in 22.7% and 21.7%, respectively.

Conclusions: In extremely-low-birth-weight infants, a higher hemoglobin threshold for red-cell transfusion did not improve survival without neuro-developmental impairment at 22 to 26 months of age, corrected for prematurity.

Intensive care admissions of children with paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS) in the UK: a multicentre observational study

Patrick Davies, Claire Evans, Hari Krishnan Kanthimathinathan, Jon Lillie, Joseph Brierley, Gareth Waters et al.

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Background: In April, 2020, clinicians in the UK observed a cluster of children with unexplained inflammation requiring admission to paediatric intensive care units (PICUs). We aimed to describe the clinical characteristics, course, management, and outcomes of patients admitted to PICUs with this condition, which is now known as paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS).

Methods: We did a multicentre observational study of children (aged <18 years), admitted to PICUs in the UK between April 1 and May 10, 2020, fulfilling the case definition of PIMS-TS published by the Royal College of Paediatrics and Child Health. We analyzed routinely collected, de-identified data, including demographic details, presenting clinical features, underlying comorbidities, laboratory markers, echocardiographic findings, interventions, treatments, and outcomes; serology information was collected if available. PICU admission rates of PIMS-TS were compared with historical trends of PICU admissions for four similar inflammatory conditions (Kawasaki disease, toxic shock syndrome, haemophagocytic lymphohistiocytosis, and macrophage activation syndrome).

Findings: 78 cases of PIMS-TS were reported by 21 of 23 PICUs in the UK. Historical data for similar inflammatory conditions showed a mean of one (95% CI 0·85-1·22) admission per week, compared to an average of 14 admissions per week for PIMS-TS and a peak of 32 admissions per week during the study period. The median age of patients was 11 years (IQR 8-14). Male patients (52 [67%] of 78) and those from ethnic minority backgrounds (61 [78%] of 78) were

over-represented. Fever (78 [100%] patients), shock (68 [87%]), abdominal pain (48 [62%]), vomiting (49 [63%]), and diarrhoea (50 [64%]) were common presenting features. Longitudinal data over the first 4 days of admission showed a serial reduction in C-reactive protein (from a median of 264 mg/L on day 1 to 96 mg/L on day 4), D-dimer (4030 μg/L to 1659 μg/L), and ferritin (1042 μg/L to 757 μg/L), whereas the lymphocyte count increased to more than 1·0 × 10^9 cells per L by day 3 and troponin increased over the 4 days (from a median of 157 ng/mL to 358 ng/mL). 36 (46%) of 78 patients were invasively ventilated and 65 (83%) needed vasoactive infusions; 57 (73%) received steroids, 59 (76%) received intravenous immunoglobulin, and 17 (22%) received biologic therapies. 28 (36%) had evidence of coronary artery abnormalities (18 aneurysms and ten echogenicity). Three children needed extracorporeal membrane oxygenation, and two children died.

Interpretation: During the study period, the rate of PICU admissions for PIMS-TS was at least 11-fold higher than historical trends for similar inflammatory conditions. Clinical presentations and treatments varied. Coronary artery aneurysms appear to be an important complication. Although immediate survival is high, the long-term outcomes of children with PIMS-TS are unknown.

Renal Manifestations in Children with Dengue Fever Hospitalized in Pediatric Intensive Care Unit.

Rajan M, Geminiganesan S, Sankaranarayanan S. et al.

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Objective: To study the pattern of acute kidney injury in children with dengue infection hospitalized in an intensive care unit.

Methods: This is a retrospective study from January 2019 through December 2019. Various renal manifestations of dengue were studied and compared between the severity of dengue fever.

Results: Three hundred nineteen children with dengue fever were hospitalized and 127 needed intensive care admission. Among the 127 patients, 26 (20.5%) children developed acute kidney injury (AKI). Children with severe dengue developed a higher number of AKI (n = 20; 28.6%), as compared to dengue with warning sign group (n = 6; 11.8%). Colloid infusion, inotropic support, ventilatory requirement and presence of secondary hemophagocytic lymphohistiocytosis were the risk factors for AKI. Nine children underwent dialysis. Among the AKI group, 23 recovered and 3 died and all three had multi organ dysfunction syndrome.

Conclusions: It is essential to recognize the various renal manifestations of dengue AKI which is associated with increased mortality and morbidity.