# Perubahan hemodinamik setelah transfusi packed red cell pada anak sakit kritis = Hemodynamic changes after packed red cell transfusion in critically ill children

Reni Wigati, author



---

Abstrak

Latar Belakang. Transfusi packed red cell (PRC) sering ditemui pada anak sakit kritis, dengan kemungkinan efek samping yang tidak sedikit. Beberapa laporan terakhir merekomendasikan ambang batas transfusi yang lebih rendah yaitu hemoglobin (Hb) 7 g/dL, namun data karakteristik serta pedoman transfusi PRC anak sakit kritis di Indonesia belum diketahui.
Metode. Studi dilakukan terhadap pasien yang dirawat di unit perawatan intensif anak (PICU) Rumah Sakit Cipto Mangunkusumo (RSCM) dan diputuskan untuk mendapat transfusi PRC. Kadar Hb, saturasi vena sentral (ScvO2), rasio ekstraksi oksigen (O2ER), oxygen delivery (DO2), indeks kardiak (CI), dan indeks inotropik (INO) diukur/dihitung sebelum dan sesudah transfusi.
Hasil. Dari 92 pasien yang masuk perawatan PICU, 25 anak (27,5%) menjalani transfusi PRC dengan total 38 episode transfusi selama bulan Oktober hingga Desember 2015. Tiga episode dieksklusi dari penelitian sehingga 35 episode transfusi PRC diikutsertakan dalam analisis. Sebagian besar pasien adalah anak lelaki (77,1%) berusia 1 bulan hingga 1 tahun (45,7%), dengan median usia 2,1 (rentang 0,2 ? 16,2) tahun. Rerata Hb pre- dan pascatransfusi adalah 7,7 + 1,46 dan 10,2 + 1,97 g/dL. Rerata ScvO2 dan O2ER pretransfusi normal, yaitu 73,8 + 6,46 % dan 0,25 + 0,070, dengan rerata pascatransfusi tidak berbeda bermakna untuk keduanya, yaitu 79,0 + 5,92 % dan 0,19 + 0,056. Perbedaan rerata DO2, CI, dan INO pre- dan pascatransfusi juga tidak bermakna secara klinis maupun statistik. Analisis subgrup yang menunjukkan perbedaan bermakna secara klinis adalah pada anak dengan ScvO2 pretransfusi < 70%. Subgrup ini menunjukkan rerata Hb pretransfusi 7,2 + 1,69 g/dL, dengan nilai ScvO2 pre- dan pascatransfusi sebesar 64,1 + 4,71 % (nilai p 0,181) serta O2ER pre- dan pascatransfusi 0,34 + 0,055 dan 0,21 + 0,080 (nilai p 0,152).
Simpulan. Studi terhadap praktek transfusi PRC di PICU RSCM tidak menunjukkan perubahan hemodinamik yang bermakna. Analisis lebih lanjut pada anak sakit kritis dengan nilai ScvO2 < 70% sebelum mendapatkan transfusi PRC cenderung menunjukkan perbaikan hemodinamik. Penelitian lebih lanjut mengenai ambang batas Hb atau ScvO2 untuk memutuskan pemberian transfusi PRC perlu dilakukan.
.....Background. Transfusion of packed red cells (PRC) often found in critically ill children, with the possibility of side effects is not uncommon. Later reports recommended a lower hemoglobin (Hb) for transfusion threshold, nevertheless the characteristics and transfusion guidelines PRC critically ill children in Indonesia is yet unknown.
Methods. This study was conducted on patients admitted to the pediatric intensive care unit (PICU) Cipto Mangunkusumo Hospital (RSCM) and underwent PRC transfusion. Hemoglobin level, central venous saturation (ScvO2), oxygen extraction ratio (O2ER), oxygen delivery (DO2), cardiac index (CI), and inotropic index (INO) were measured/calculated before and after transfusion.
Results Of the 92 patients admitted to the PICU, 25 children (27.5%) were given PRC transfusion with a total of 38 episodes of transfusion during October to December 2015. Three episodes were excluded from the study that 35 episodes of PRC transfusion were included in the analysis. Most patients were boys

(77.1%) aged 1 month to 1 year (45.7%), with a median of age 2.1 (range 0.2 to 16.2) yearold. Mean Hb pre- and post transfusion were 7.7 + 1.46 and 10.2 + 1.97 g/dL. The average ScvO2 and O2ER before transfusion were still in normal range, i.e. 73.8 + 6.46 % and 0.25 + 0.070, without significantly different levels after transfusion, i.e. 79.0 + 5.92% and 0.19 + 0.056. The mean differences of DO2, CI, and INO pre- and post transfusion were neither clinically nor statistically significant. Subgroup analysis that revealed clinically significant difference was children with pretransfusion ScvO2 <70%. This subgroup mean pretransfusion Hb was 7.2 + 1.69 g/dL, with pre/post transfusion ScvO2 values of 64.1 + 4.71% (p-value 0.181) and pre/post post transfusion O2ER 0.34 + 0.055 and 0.21 + 0.080 (p-value 0.152).
Conclusions. Study on PRC transfusion practice in PICU RSCM showed no significant hemodynamic changes. Subgroup analysis of critically ill children with ScvO2 <70% before PRC transfusion indicated hemodynamic improvement. Further research on optimal transfusion thresholds, e.g. hemoglobin level or ScvO2, for PRC transfusion decision-making need to be done.