

# Perbandingan Estimated Blood Loss, Hematology Analyzer, dan Point-of-Care Testing dalam keakuratan pengukuran hemoglobin intraoperatif = Comparison of the accuracy of intraoperative hemoglobin measuring by Estimated Blood Loss, and Point-of-Care Testing with Hematology Analyzer

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## Abstrak

[<b>ABSTRAK</b><br>

Latar Belakang: Penghitungan Estimated Blood Loss (EBL) berdasarkan rumus Allowable Blood Loss (ABL) dengan target hemoglobin tertentu, kerap dijadikan panduan untuk memutuskan secara cepat transfusi intraoperatif. Penghitungan EBL mengandalkan penilaian visual sulit untuk distandardisasi. Seiring perkembangan teknologi, Point of Care Testing (POCT) makin memudahkan pemeriksaan hemoglobin. Penelitian ini bertujuan membandingkan akurasi penghitungan hemoglobin intraoperatif antara EBL dan POCT, dibandingkan dengan Hematology Analyzer yang merupakan pengukuran baku di laboratorium. Metode: Penelitian ini menggunakan Uji Bland-Altman pada pengukuran hemoglobin intraoperatif terhadap pasien yang menjalani operasi elektif yang diperkirakan mengalami banyak perdarahan dan memerlukan transfusi, di Instalasi Bedah Pusat (IBP) RSUPN Cipto Mangunkusumo, antara Desember 2014 hingga Maret 2015. Subjek penelitian dipilih dengan metode consecutive sampling. Saat penghitungan EBL mencapai ABL dengan target Hb 7 g/dL sebelum transfusi diberikan, sampel darah diambil untuk pengukuran hemoglobin dengan Sysmex XE-2100® sebagai Hematology Analyzer dan HemoCue® Hb 201+ sebagai POCT. Hasil: Sebanyak 43 subjek diikutsertakan dalam penelitian. Uji Bland-Altman Hb ABL (7 g/dL) terhadap Hb Sysmex. Interval yang dianggap akurat terhadap kadar Hb 7 g/dL adalah -1 hingga 1, diperoleh limits of agreement yang besar yaitu -2,267 hingga 2,467. Uji Bland-Altman Hb HemoCue terhadap Hb Sysmex, diperoleh limits of agreement yang kecil yaitu -0.418 hingga 0.372. Simpulan: Terdapat perbedaan bermakna dalam akurasi penghitungan hemoglobin intraoperatif antara EBL dengan Hematology Analyzer, sedangkan pengukuran dengan HemoCue® Hb 201+ sebagai perangkat POCT, mempunyai keakuratan yang baik. EBL berdasarkan rumus ABL dengan target Hb 7 g/dL tidak bisa digunakan untuk pengambilan keputusan transfusi intraoperatif karena tidak mempunyai keakuratan yang baik.

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<b>ABSTRACT</b><br>

Background: Measurement of Estimated Blood Loss (EBL) based on the Allowable Blood Loss (ABL) formula with certain hemoglobin target is often used as a guidance to make a fast decision for intraoperative transfusion. Measurement of EBL relies on visual assessment is difficult to standardized and a new technique called Point of Care Testing (POCT) offered easier way to measure haemoglobin. This study aimed to compare the accuracy of the intraoperative hemoglobin measurement by EBL and POCT with Hematology Analyzer in the laboratory as a golden standard. Methods: This study used a Bland-Altman test on intraoperative hemoglobin measurement in patients undergoing elective surgery which was expected to experience a lot of bleeding and require blood transfusions in Center Operating Theater of Cipto

Mangunkusumo Hospital from December 2014 until March 2015. Subjects were selected by consecutive sampling method. When EBL had reached ABL with a Hb level target 7 g / dL before transfusion was given, blood samples were taken for measurement of hemoglobin with Sysmex XE-2100® as Hematology Analyzer and HemoCue® Hb 201+ as POCT. Results: A total of 43 subjects were included in the study. Bland-Altman analysis of Hb EBL (7 g / dL) to Hb Hematology Analyzer with interval considered as accurate for Hb 7 g / dL was -1 to 1, revealed wide limits of agreement (-2.267 to 2.467). Bland-Altman analysis of Hb POCT to Hb Hematology Analyzer revealed narrow limits of agreement (-0.418 to 0.372). Conclusion: There was a significant difference in the accuracy of intraoperative hemoglobin measurement by EBL compared to Hematology Analyzer, while the measurement by POCT device had good accuracy. EBL based on the formula ABL with a Hb level target 7 g / dL could not be used for intraoperative transfusion decision making because it did not has good accuracy., Background: Measurement of Estimated Blood Loss (EBL) based on the formula

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