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Economical Analysis of The Routine Use of Thromboelastography (TEG) To Analyze Blood Component Needed in Bleeding Cases of Post-operative Renal Transplant

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Objectives: Post-operative bleeding occurred in 5% of kidney transplant patients statistically and has a considerable hazard ratio (1.62) to the incidence of death. Adequate management includes surgical and blood transfusion. But, incorrect use of appropriate blood components contributed to 38% of hospitalization lengthening, increasing treatment costs. Thromboelastography (TEG) examination, which is routinely used in liver transplant patients, can help clinicians know the right blood components needed. This study aims to determine the hospital benefit-to-cost ratio if routine TEG examinations are carried out in cases of bleeding in renal transplant patients.

Methods: This study uses a model to perform a benefit-to-cost ratio analysis. The model was obtained from data on the cost of treating renal transplant patients at Dr. Sardjito Hospital in 2022. All costs were counted from admission to the patient's outcome. A benefit-to-cost ratio was calculated by the sum of the value of the benefits associated with hospital saving by using routine TEG examination divided by the sum of the value of the costs related to TEG examination in all renal transplant patients.

Results: There are 22 renal transplants conducted in 2022. A total of 18 of them have post-operative bleeding. The total cost incurred by the hospital is 443520 USD. The TEG cost per patient was 79.38 USD. The estimated hospital saving is 191986 USD. The benefit-to-cost ratio calculation shows 0.76. This indicates that routine TEG examination can reduce hospital expenditure significantly but is not preferred yet for business.

Conclusions: The routine TEG examination reduces hospital costs by helping to analyze the needs of the appropriate blood components, thus reducing the risk of extended hospitalization. Although the benefits-to-cost ratio is less than 1, which means the project's costs outweigh the benefits, the savings generated in 1 year are promising enough to be recommended. Increasing renal transplantation frequency will increase the benefits-to-cost ratio.

Table 1. Benefit to cost ratio of TEG use