NON-ESSENTIAL BLOOD TESTING IN THE ICU: AN OBSERVATIONAL STUDY

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Introduction: Healthcare expenditures are rising at a staggering rate. This is partly due to technological advancements, but likely also due to wasteful practices. Non-essential blood testing in acute care settings has been identified as a prominent source of wasteful spending. In addition to increased workload to providers and cost to hospitals, unnecessary phlebotomy can lead to patient discomfort, as well as morbidity and mortality through hospital-acquired anemia and the risks inherent to subsequent blood transfusion. Although interventions to address this issue have been reported, the extent of non-essential blood testing in different acute care settings has not been well described.

Objectives: We aimed to describe the extent of unnecessary blood testing at the 33-bed, Level-3 intensive care unit (ICU) of Kingston General Hospital, a tertiary care teaching hospital in Ontario, Canada.

Methods: Over a period of 4 weeks, all ICU attending physicians were interviewed once, each during a single weekday. They were asked to select from a comprehensive list, which blood tests they deemed essential to maintain appropriate care for each of their patients on the following day. Tests that were actually processed on the following day were recorded. Relevant demographic and clinical variables, as well as the cost of processing the various tests were also recorded. Descriptive statistics were used to describe the proportion of essential blood tests out of all tests processed. Chi-squared and T-tests were used to examine for associations between selected demographic and clinical variables and proportions of essential blood tests.

Results: Nine attending physicians provided input for a total of 81 patient days. Of all processed blood tests, only 55% were deemed essential by the attending physicians. Arterial blood gases, complete blood count, and serum electrolytes were deemed essential most commonly (81%, 81%, and 75%, respectively); PTT, PT, and albumin were deemed essential the least (22%, 21%, and 16%, respectively). Patients that received mechanical ventilation or infusions of vasoactive drugs were less likely to have non-essential blood tests performed (OR=0.39; 95%CI, 0.28-0.54 and OR=0.30; 95%CI, 0.20-0.46, respectively). On average, non-essential blood tests incurred an excess cost of $27.5 per patient day. Extrapolating this over a one-month period in the ICU, which on average has 30 beds occupied, comes to $25,584 in unnecessary cost.

Conclusion: In summary, a large proportion of blood tests processed in the studied ICU were not deemed necessary by attending physicians. Certain test types, as well as tests for patients receiving a higher level of life-sustaining measures were deemed essential more commonly than others. Non-essential blood testing incurred a substantial cost. Further work is required to better understand the underlying factors contributing to these wasteful practices. We suspect that the lack of a routine daily process for identifying essential blood tests is a major contributor. The results of this project will be used to guide future quality improvement measures.