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platelet count interfering potassium and to estimate the percentage of cases of pseudohyperkalemia and pseudonormokalemia in our hospital.

Methods

This was a retrospective observational study. Subjects were divided into two groups: on a branch, individuals with essential thrombocytosis who were appointed for a control examination [complete blood count and basic metabolic panel (potassium concentration in serum)]; and in the other branch, individuals with thrombocytosis and high C-reactive protein (reactive thrombocytosis) for which essential thrombocytosis had been excluded (potassium concentration in lithium heparin plasma). The cut-off value for the interference of platelet count on potassium results was calculated using the reference change value. Sensitivity and specificity were calculated using a ROC-curve, and the size of the effect by the Cohen’s d. The clinical impact of both phenomena was assessed by reviewing the medical records of individuals reclassified as such, and also looking for potential cases in 2019 on the laboratory information system.

Results

Fifty-four individuals with essential thrombocytosis were included along with 156 individuals with reactive thrombocytosis. Potassium concentration correlated with platelet count (P-value < 0.001; Spearman’s ρ = 0.394) in serum but not in plasma. The cut-off value of platelet count interfering potassium was 578 ± 103/L [CI 95%: 513 – 642 ± 103/L], with an associated sensitivity and specificity of 0.67 [CI 95%; 0.52 – 0.80] and 0.58 [CI 95%; 0.42 – 0.72] respectively. The medical records of patients reclassified as pseudohyperkalemia or pseudonormokalemia did not include any medical action for the modification of potassium levels. In 2019, up to 0.14% of the total serum potassium determinations were susceptible to be pseudohyperkalemia or pseudonormokalemia.

Conclusions

This study provides an optimized cut-off value for platelet count, and brings to light not only pseudohyperkalemia-related issues, but also the pseudonormokalemia phenomenon, which usually go unnoticed.

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Background-aim

The COVID-19 pandemic has re-emphasized the need for the timely delivery of clinical laboratory results to support optimal patient care. The objective of this study was to determine if current instrumentation in Saskatoon hospital chemistry laboratories could accommodate the anticipated COVID workload in addition to non-COVID testing for the existing acute care hospitals and proposed field hospitals.

Methods

A simulation model was utilized to assess workload and turn-around-time (TAT) capacity for pre-analytic, total analytic, chemistry, ion-selective-electrode and immunoassay testing to accommodate an expanded COVID workload. Anticipated COVID patient numbers and a COVID specific test menu were incrementally introduced into a 24 hour pre-COVID testing workload. The impact of field hospital location, courier schedule and daily instrument maintenance schedule were also considered when calculating a TAT from specimen collection to result reporting.

Results

Instrumentation throughput, scheduled times for instrument daily maintenance and the time of day when the specimen surge is received in the laboratory were found to be significant predictors of laboratory’s ability to accommodate anticipated COVID workload. Courier schedule and proximity of the field hospital to the laboratory significantly influenced the TAT for field hospital testing.

Conclusions

A simulation model is a helpful tool to provide useful information for optimal delivery of multi-site clinical laboratory services during the COVID-19 pandemic.

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Effective utilization management strategies to limit inappropriate referred-out test requests

A. Lou a, A. Thoni b, B. Nassar a, J. Craig b, S. Hynes b, E. Santilli b, M. Elenaei a

a Dalhousie University, Canada
b Nova Scotia Health, Canada

Background-aim

Specialized testing performed in reference laboratories is relatively low in volume, but costly. Sizable efforts have been made in our institution since Oct. 2016 to ensure their appropriateness. This study investigates the impact of standardized approval criteria for each of these tests, and sending automated messages requesting clinical details from ordering physicians before sample processing.

Methods

Prior to October 2016, the approval process involved sending an automated message indicating the need for a written request with clinical information within 30 days; but was limited in both scope and number of tests. Commencing October 2016, 84 tests were targeted for the same process using more stringent approval criteria. Responses were then reviewed by assigned medical lab staff. Based on the clinical relevance, some tests were preapproved for certain specialists. Numbers of each test requested and completed during 2015 to 2018 were collected to calculate annual cost savings.