

## **Expected variability and errors exist with potassium blood tests, even when conditions are optimized” Friedman et al (2018).**

### Abstract:

**OBJECTIVE:** To understand the performance of a currently used clinical blood test with regard to the frequency and size of variation of the results.

**PATIENTS AND METHODS:** From November 29, 2012, through November 29, 2013, patients were recruited at 65 sites as part of a previously reported clinical trial (ClinicalTrials.gov Identifier: NCT01737697). Eligible outpatients who had been fasting for at least 8 hours underwent venous phlebotomy at baseline, 30 minutes, and 60 minutes to measure plasma potassium levels in whole blood using a point-of-care device (i-STAT, Abbott Laboratories). We analyzed the results to assess their variability and frequency of pseudohyperkalemia and pseudonormokalemia.

**RESULTS:** A total of 1170 patients were included in this study. Absolute differences between pairs of measurements from different time points ranged from 0 to 2.5 mmol/L, with a mean difference of 0.26 mmol/L. The mean percentage differences were approximately 5% with an SD of 5%. Approximately 12% of differences between repeated fasting potassium blood test results were above 0.5 mmol/L (33% of the normal range), and 20% of patients (234) had at least one difference greater than 0.5 mmol/L. In 44.0% of the patients with a hyperkalemic average value (true hyperkalemia) (302 of 686), at least one blood test result was in the normal range (pseudonormokalemia), and in 30.2% of the patients with a normal average value (146 of 484), at least one blood test result was elevated (pseudohyperkalemia).

**CONCLUSION:** Expected variability and errors exist with potassium blood tests, even when conditions are optimized. Pseudohyperkalemia and pseudonormokalemia are common, indicating a need for thoughtful clinical interpretation of unexpected test results.

### Reference:

Friedman, P.A., Scott, C.G., Bailey, K., Baumann, N.A., Albert, D., Attia, Z.I., Ladewig, D.J.,

Yasin, O., Dillon, J.J. and Singh, B. (2018) Errors of Classification With Potassium Blood Testing: The Variability and Repeatability of Critical Clinical Tests. Mayo Clinic Proceedings. 93(5), p.566-572.

doi: [10.1016/j.mayocp.2018.03.013](https://doi.org/10.1016/j.mayocp.2018.03.013).