

## Pathology and Laboratory Medicine Memorandum

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**To:** Physicians and Health Service Directors  
**From:** Dr. Amy Lou Clinical Biochemist, Division Clinical Chemistry  
Ms. Cindy Andrews, Manager Core Lab  
Mrs. Catherine Lambert, Manager Community Based Labs  
**Date:** April 20, 2018  
**Subject:** **Revised Memo:** Recommendations and Changes for Ionized Calcium (iCa) in the Central Zone

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**Please note change to specimen collection requirements. Specimens must not be placed in ice, see revised memo below.**

1. **Clinical considerations for calcium testing:**

Total calcium (tCa) is sufficient for clinical monitoring of calcium homeostasis in most patients. The clinical usefulness of iCa is restricted to the following patients:

- a) Acid-base disorders
- b) Receiving blood transfusions containing citrate anticoagulant,
- c) Late stage renal disease
- d) Hospitalized or critical ill patients.

2. **iCa limitations:**

- a) iCa measurement requires substantial manual labor as it is not automated.
- b) The cost for the iCa test is ten times the cost of tCa
- c) iCa is unstable; iCa result changes by 0.05 mmol/L for every 0.1 unit change in pH. Therefore a stringent specimen collection/handling is required.
  - iCa specimens must be collected and handled anaerobically to minimize pH changes.
  - Time delay between collection and measurement can falsely raise the iCa.
  - Blood specimens must to be kept cold before analysis to avoid pH changes.
  - Proper collection technique is critical to ensure accurate results.

3. **iCa specimen requirements and reference ranges:**

- a) Specimens collected in a full SST gold top tube. ***Do not*** place on ice. Due to time sensitivity deliver immediately to the laboratory identified as an ionized calcium.
  - Reference ranges: 1.16-1.32 mmol/L
  - The report will include: iCa, pH and iCa (7.4) which is the iCa result corrected to pH=7.4
- b) iCa is still available as part of the blood gas panel (when collected in a blood gas syringe)
  - Reference ranges: 1.15-1.27 mmol/L
- c) Specimens collected in lithium heparin tubes will no longer be accepted.

If you have any questions, please contact Dr. Amy Lou at (902)473-1528