Dynacare®
Your Partners in **Care**

# Partner Update

August 2023

## Discontinuation of RBC cholinesterase testing and change in serum cholinesterase testing

### Audience
All Dynacare clients requesting RBC and/or serum cholinesterase testing, including hospital clients, outpatient clinics, and Workplace.

### Overview
As of September 1st, 2023, RBC cholinesterase testing will be discontinued, and serum cholinesterase testing methodology will be changing. Serum cholinesterase, also known as pseudocholinesterase or butyl cholinesterase, will continue to be available for testing. Serum cholinesterase results from the new method will be 60% higher, on average, versus prior results.

### Details
Red blood cell (RBC) cholinesterase and serum cholinesterase belong to the same family of enzymes, with different specificities.

Measurement of **RBC cholinesterase** activity is used for the assessment of acetylcholine inhibition due to organophosphate and carbamate poisoning. Organophosphorus compounds bind to RBC cholinesterase, also known as acetylcholinesterase, and render the enzyme non-functional. Measurement of RBC acetylcholinesterase activity provides a measure of toxicity and can be helpful in evaluating exposure.

**Serum cholinesterase** is also inhibited by organophosphorus agents, although the clinical significance is unclear. Serum cholinesterase activity does not relate to severity of poisoning; however, it can be a sensitive marker of exposure to most organophosphorus compounds or other cholinesterase-inhibiting compounds, and for measuring organophosphorus elimination from the body. Serum cholinesterase measurement is also used in preoperative screening to identify patients with pseudocholinesterase deficiency. Such patients have reduced ability to metabolize certain muscle relaxants and will present with prolonged muscular paralysis post-surgery.

As of September 1st, 2023, Dynacare will be moving to a new test methodology using butyrylthiocholine, rather than acetylthiocholine, substrate. As this substrate is recognized by serum cholinesterase but not RBC cholinesterase, the RBC testing will be discontinued and only serum testing will remain available. As compared to the current test, serum cholinesterase values will measure approximately 60% higher on the new methodology. Updated reference intervals are provided below. Re-establishment of baseline levels for serum cholinesterase is advised.

**Change in serum cholinesterase reference intervals**

| Current | | | New | | |
|---|---|---|---|---|---|
| | | | Male/Female | 0 – 17 years | 5320 – 12920 U/L |
| Male | ≥18 years | 3100 – 6500 U/L | Male | >17 years | 5320 – 12920 U/L |
| Female | 18 – 49 years | 1800 – 6600 U/L | Female | 18 – 39 years | 4260 – 11250 U/L |
| | | | Note: For females aged 18 – 39 years, reference range 3650 – 9120 U/L if pregnant or on hormonal contraceptives due to decrease in cholinesterase activity. | | |
| Female | ≥50 years | 2550 – 6800 U/L | Female | >39 years | 5320 – 12920 U/L |

## Action Required

To facilitate the transition to serum cholinesterase baseline samples should be taken for estimation of serum cholinesterase prior to any exposure to organophosphates or cholinesterase inhibitors. RBC cholinesterase should be removed from all ordering panels. Reference intervals for serum cholinesterase must be updated.

## Questions about the Change?

If you have any questions regarding this communication, please contact Customer Care at 800.565.5721 or your Dynacare Account Manager.

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Q: Why is this change being made?
A: The current method for RBC cholinesterase and serum cholinesterase testing is no longer available. A new method using butyrylthiocholine substrate is being introduced. This method detects serum cholinesterase but not RBC cholinesterase activity. Therefore, testing for RBC cholinesterase is no longer available.

Q: What is required of the Partner or client?
A: Test code 058 Cholinesterase RBC must be removed from private ordering requisitions. The reference interval for test code 057 Cholinesterase Serum must be updated.

Q: Have any sample preparation or sample handling requirements changed?
A: Specimens for serum cholinesterase can be sent in the primary tube if collected in a serum gel barrier tube; an aliquot is not required.

Q: When does this change take effect?
A: Discontinuation of RBC cholinesterase and migration to the new serum cholinesterase assay will commence on September 1st, 2023.

Q: Who can be reached for additional questions and how?
A: Account Managers are available to support private accounts. For technical questions, please email dl.scientific_chemists.