Updated Element DCX and Element DC5X Reference Intervals FAQ

FAQs for Veterinarians and Veterinary Technicians

IMPLEMENTATION

How will I receive the updated reference intervals on my Element DCX™ or Element DC5X™?

Beginning in August, Antech's Field Support team will begin implementing updated reference intervals during routine customer visits. Customers can expect a visit from their local Field Support representative before January 2027. During that visit, the representative will also perform a required analyzer software update that will enable access to new parameters planned for release in early 2027.

UNDERSTANDING THE CHANGES

Why have some reference intervals changed?

Reference intervals are periodically re-evaluated to ensure they continue to accurately represent the population of healthy animals encountered in general veterinary practice. The updated intervals were established from a study of 445 dogs and 168 cats, following CLSI (Clinical and Laboratory Standards Institute) guidelines. This is a rigorous statistical standard for reference interval studies. One important reason for periodic updates is that the breed demographics of the veterinary patient population change over time. Breeds that are now among the most seen in practice such as the French Bulldog, which has grown dramatically in popularity over recent years, were underrepresented in the earlier reference interval studies. As the composition of the study population evolves **to reflect modern practice, shifts in some reference limits are expected and appropriate.**

Changes between study periods therefore reflect both normal biological variation across populations and the improved representation of today's patient mix. **The analytical methodology and instrument performance are unchanged.**

Which parameters changed most significantly?

Several canine parameters show notable shifts:

- Alkaline phosphatase: upper limit increased from 140 to 229 U/L
- Cholesterol: upper limit increased from 310 to 402 mg/dL
- Glucose: range broadened from 75–125 to 69–148 mg/dL

For cats, the most clinically significant change is:

- Creatinine: upper limit increased from 1.8 to 2.2 mg/dL (see below)

In each case, these changes reflect the distribution of results in a well-characterized population of healthy animals and do not indicate a change in instrument performance or assay chemistry.

The upper reference limit for feline creatinine has increased to 2.2 mg/dL. How does this relate to IRIS Chronic Kidney Disease (CKD) staging?

The IRIS creatinine thresholds are tools for staging CKD, not for diagnosing it.

IRIS acknowledges that its Stage 1 creatinine threshold (<1.6 mg/dL in cats) falls within the reference interval used for many laboratory methods. Importantly, a cat can be diagnosed with CKD and assigned an IRIS stage while still having a creatinine concentration that is within the population reference interval. This is not a contradiction and reflects the known limitations of creatinine as a sole marker of renal function.

A CKD diagnosis can be supported by several pieces of evidence: a consistent upward trend in creatinine across serial measurements (even within the reference interval); persistent elevation of SDMA; reduced urine specific gravity; proteinuria; renal morphological changes on imaging; or other clinical and historical findings. **Many cats with early or mild CKD will have creatinine results well within the reference interval.**

A further important consideration is the influence of muscle mass on serum creatinine. Creatinine is a byproduct of muscle metabolism, so a healthy, well-muscled cat will naturally have a higher creatinine concentration than a thin, sarcopenic cat, even if both have identical renal function. This is clinically significant because muscle wasting is itself a common consequence of CKD and other chronic illnesses.

A cachexic cat may appear to have a 'normal' creatinine precisely because reduced muscle mass is masking the degree of GFR impairment. A single creatinine measurement interpreted against a population reference interval is therefore insufficient for CKD screening in cats; individual trends over time and complementary biomarkers, particularly SDMA, BUN, and urine specific gravity, which are less influenced by muscle mass, are important.

CLINICAL INTERPRETATION

My patient's result was outside the previous reference interval but now falls within the updated range. How should I interpret this?

A reference interval is a statistical range representing approximately 95% of healthy animals and it is not a definitive threshold for disease. A result now falling within the updated interval means it is consistent with the distribution found in a large population of healthy animals.

However, clinical context is always paramount. If a result has been trending in one direction across multiple visits, that trend carries diagnostic significance regardless of whether individual values fall inside or outside the reference interval. Always compare new results with the patient's own historical values and interpret findings in the context of clinical signs, history, and other diagnostic data.

My patient's result was previously within the reference interval but now falls outside the updated range. Should I be concerned?

A result that has been consistently stable at a level now just outside the updated interval is less likely to represent disease than one that has been rising or falling over time. Evaluate the result in the context of the patient's clinical presentation, previous trends, and other findings. A single out-of-range result in an otherwise healthy, asymptomatic patient warrants monitoring and re-testing rather than immediate intervention.

I am monitoring a dog being treated for hypothyroidism. How should I interpret lipid (cholesterol) results against the new reference intervals?

Hypothyroidism is a recognized cause of hypercholesterolemia and, in some dogs, hypertriglyceridemia. With thyroid hormone supplementation, lipid abnormalities often improve as euthyroidism is restored. Because the updated canine cholesterol reference interval is broader than previous intervals, interpretation should focus on the overall pattern of change rather than on a single result in isolation. Lipid results can provide supportive information during follow-up, but they should be interpreted alongside appropriately timed TT4 or fT4 testing and the dog's clinical response. A value that has decreased substantially from a previously elevated concentration may indicate improvement even if it remains above the reference interval, while a value within the reference interval does not by itself confirm optimal thyroid supplementation.

STUDY POPULATION AND METHODOLOGY

What criteria were used to classify animals as healthy for this study?

Animals were selected based on criteria established by experienced veterinary clinical pathologists, following CLSI guidelines. All animals were clinically healthy, free of known disease, and were not receiving medications associated with disease management. Animals receiving routine preventative treatments, such as flea and tick preventatives, were eligible for inclusion. Lithium heparin plasma samples were used, and hemolytic and lipemic samples were excluded from analysis as per standard practice.

Were the animals fasted before blood collection?

Patients included in the reference interval study were seen for routine wellness care and were not necessarily fasted. Although this may have influenced glucose and triglyceride results, the study population is representative of animals commonly evaluated in general practice for routine diagnostic testing.

Can I apply these reference intervals to all breeds?

The study included 57 canine breeds and 11 feline breeds, representing a broad cross-section of patients seen in general veterinary practice. Five hospital sites across the USA participated. Greyhounds were not in the study population.

As with any population-based reference interval, individual breed variation may be encountered in practice. For breeds with well-established biochemical differences, (e.g., Greyhounds) these intervals provide a useful population baseline, but individual trending over time is particularly valuable. If results are unexpected for a specific breed, review the patient's own historical data and consider breed-specific resources.

TECHNICAL AND INSTRUMENT QUESTIONS

Which analyzer was used for this study? Do the updated intervals apply to the Element DCX, as well as the Element DC5X?

The reference interval study was conducted using the Element DC5X analyzer. Antech has performed extensive comparative testing between the Element DCX and Element DC5X across control samples and patient samples over time, confirming equivalent analytical performance between the two platforms. The updated reference intervals are therefore applicable to both the Element DCX and Element DC5X.

Why was Globulin (GLOB) listed as N/A in the previous reference interval table?

Globulin is calculated as the arithmetic difference between Total Protein and Albumin (GLOB = TP - ALB) and was not included as a separate entry in the previous reference interval table. It is now reported with its own established reference interval.

Is feline lipase a validated parameter on the Element DCX/Element DC5X?

Feline lipase, measured using the triolein-based v-Lip-P method, has been included in the updated feline reference intervals. Reference limits were established for reporting this analyte on the Element DCX/Dlement DC5X in the healthy feline population studied, supporting its inclusion as part of a complete, matched chemistry panel.

However, this method has not been fully clinically validated as a standalone test for diagnosing feline pancreatitis. Results should therefore be interpreted in conjunction with the patient's history, clinical findings, and other diagnostic information, particularly ultrasound findings.

Customer Support

If you have any questions regarding the new reference intervals or need assistance during the update process, contact Antech Technical Support:

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800-341-3440, opt 3 or l**absupport.ca@antechdx.com**