

DATE:	2021 November 15
TO:	Edmonton Zone and North Zone – Physicians, Nurses, Directors, and Managers
FROM:	Clinical Biochemistry, Alberta Precision Laboratories (APL) North Sector and DynaLIFE Medical Labs
RE:	Standardization of Reference Intervals (RI) and Comments in Edmonton and North Zones for ALT, AST, Antistreptolysin O, Fecal Osmolality, Urate

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Key Messages

- Effective **November 24th, 2021**, provincially standardized reference intervals (RIs) and comments for several chemistry tests will be implemented at APL and DynaLIFE laboratories in Edmonton Zone (EZ) and North Zone (NZ) (see Appendix).

Why this is important

- As outlined in the appendix, all sites in EZ and NZ will adopt the new provincially standardized RIs and comments for ALT, AST, Antistreptolysin O, Fecal Osmolality, and Urate.
 - Note that there are two types of ALT and AST reagent in use across the province. Type 2 reagents generate systematically higher values than Type 1 reagents. ALT and AST reference intervals have been developed to reflect the differences in reagent formulation.
- There are no changes to the testing methods in use, but the RI and comment changes will provide more robust and accurate guidance for result interpretation that is reflective of the Alberta population and will support ongoing provincial laboratory standardization efforts.
- New provincial reference intervals are evidence-based and are derived via statistical analysis of provincial population data.

Action Required

- Be aware of updates to reference intervals indicated in the below tables (Appendix)

Inquiries and feedback may be directed to

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- Dr. Josh Raizman, Clinical Biochemist, APL, 780-718-2402 or josh.raizman@aplabs.ca
- Dr. Miranda Brun, Clinical Biochemist, APL, 780-7224123 or miranda.brun2@aplabs.ca
- Dr. Kaila Crawford, General Pathologist, APL, 780-735-2368 or kaila.crawford@aplabs.ca
- DynaLIFE Clinical Chemists, 780-451-3702 ext. 3572 or clinical.chemists@dynalife.ca

This bulletin has been reviewed and approved by

- Dr. Kareena Schnabl, Section Chief, Clinical Biochemistry, North Sector, APL
- Dr. Mathew Estey, Director of Chemistry, DynaLIFE Medical Labs
- Dr. Michael Mengel, Medical Director, North Sector, APL
- Dr. Raymond Lai, Medical Director, DynaLIFE Medical Labs



Appendix

Alanine Aminotransferase (ALT)

Applicable sites	Current RIs	Provincially Standardized RIs																						
<u>Edmonton Zone</u> University of Alberta Hospital Sturgeon Hospital DynaLIFE Medical Labs	Reporting Provincially Standardized RIs for ALT Reagent Type 1 (See table to the right)	ALT Reagent Type 1*: <table> <tr> <th>Age</th><th>Gender</th><th>RI (U/L)</th></tr> <tr> <td>< 18 y</td><td>All</td><td>< 35</td></tr> <tr> <td rowspan="2">≥ 18 y</td><td>M, U, X</td><td>< 60</td></tr> <tr> <td>F</td><td>< 40</td></tr> </table>	Age	Gender	RI (U/L)	< 18 y	All	< 35	≥ 18 y	M, U, X	< 60	F	< 40											
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<u>Edmonton Zone</u> Cross Cancer Institute Devon General Hospital East Edmonton Health Centre Fort Saskatchewan Community Hospital Leduc Community Hospital Northeast Community Health Centre Redwater Health Centre Strathcona Community Hospital Westview Health Centre	<table> <tr> <th>Age</th><th>Gender</th><th>RI (U/L)</th></tr> <tr> <td>All</td><td>All</td><td>< 50</td></tr> </table>	Age	Gender	RI (U/L)	All	All	< 50																	
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<u>North Zone</u> <i>Connect Care Sites:</i> Beaverlodge, Fairview, Fox Creek, Grande Cache, High Prairie, Manning, McLennan, Northern Lights Regional Health Centre, Northwest Health Centre, Peace River, Valleyview, Spirit River, St. Theresa General Hospital <i>Non-Connect Care (Meditech) sites:</i> Athabasca, Barrhead, Boyle, Bonnyville, Cold Lake, Edson, Elk Point, Hinton, Jasper, Lac La Biche, Mayerthorpe, Swan Hills, Slave Lake, Smoky Lake, St. Paul, Whitecourt, Wabasca, Westlock	<table> <tr> <th>Age</th><th>Gender</th><th>RI (U/L)</th></tr> <tr> <td>< 18 y</td><td>All</td><td>< 35</td></tr> <tr> <td rowspan="2">≥ 18 y</td><td>M, U, X</td><td>< 60</td></tr> <tr> <td>F</td><td>< 40</td></tr> </table>	Age	Gender	RI (U/L)	< 18 y	All	< 35	≥ 18 y	M, U, X	< 60	F	< 40	ALT Reagent Type 2*: <table> <tr> <th>Age</th><th>Gender</th><th>RI (U/L)</th></tr> <tr> <td>< 18 y</td><td>All</td><td>< 40</td></tr> <tr> <td rowspan="2">≥ 18 y</td><td>M, U, X</td><td>< 70</td></tr> <tr> <td>F</td><td>< 50</td></tr> </table>	Age	Gender	RI (U/L)	< 18 y	All	< 40	≥ 18 y	M, U, X	< 70	F	< 50
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	F	< 50																						

d = days; m = months; y = years; M = Male; F = Female; U = Unknown Sex; X = Gender X

*There are two types of ALT reagent formulations across the province. Type 2 reagents generate systematically higher values than Type 1, necessitating higher reference interval upper limits.



Aspartate Aminotransferase (AST)

Applicable sites	Current RIs	Provincially Standardized RIs																																			
<u>Edmonton Zone</u> University of Alberta Hospital Sturgeon Hospital DynaLIFE Medical Labs	<table><thead><tr><th>Age</th><th>Gender</th><th>RI (U/L)</th></tr></thead><tbody><tr><td>< 8 d</td><td>All</td><td>< 140</td></tr><tr><td>8 d to < 2 y</td><td>All</td><td>< 60</td></tr><tr><td>2 to < 10 y</td><td>All</td><td>< 50</td></tr><tr><td>≥ 10 y</td><td>All</td><td>< 40</td></tr></tbody></table>	Age	Gender	RI (U/L)	< 8 d	All	< 140	8 d to < 2 y	All	< 60	2 to < 10 y	All	< 50	≥ 10 y	All	< 40	AST Reagent Type 1*: <table><thead><tr><th>Age</th><th>Gender</th><th>RI (U/L)</th></tr></thead><tbody><tr><td>< 1 m</td><td>All</td><td><100</td></tr><tr><td>1 m to < 1 y</td><td>All</td><td><70</td></tr><tr><td>1 to < 7 y</td><td>All</td><td><50</td></tr><tr><td>7 to < 18 y</td><td>All</td><td><35</td></tr><tr><td rowspan="2">≥ 18 y</td><td>M, U, X</td><td><45</td></tr><tr><td>F</td><td><35</td></tr></tbody></table>	Age	Gender	RI (U/L)	< 1 m	All	<100	1 m to < 1 y	All	<70	1 to < 7 y	All	<50	7 to < 18 y	All	<35	≥ 18 y	M, U, X	<45	F	<35
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<u>Edmonton Zone</u> Cross Cancer Institute	Same as above	AST Reagent Type 2*: <table><thead><tr><th>Age</th><th>Gender</th><th>RI (U/L)</th></tr></thead><tbody><tr><td>< 1 m</td><td>All</td><td><115</td></tr><tr><td>1 m to < 1 y</td><td>All</td><td><80</td></tr><tr><td>1 to < 7 y</td><td>All</td><td><60</td></tr><tr><td>7 to < 18 y</td><td>All</td><td><45</td></tr><tr><td rowspan="2">≥ 18 y</td><td>M, U, X</td><td><55</td></tr><tr><td>F</td><td><45</td></tr></tbody></table>	Age	Gender	RI (U/L)	< 1 m	All	<115	1 m to < 1 y	All	<80	1 to < 7 y	All	<60	7 to < 18 y	All	<45	≥ 18 y	M, U, X	<55	F	<45															
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*There are two types of AST reagent formulations across the province. Type 2 reagents generate systematically higher values than Type 1, necessitating higher reference interval upper limits.



Antistreptolysin O (ASO)

Applicable sites	Current RIs	Provincially Standardized RIs*				
DynaLIFE Medical Labs				Age	Gender	RI (IU/mL)
				< 6 y	All	<101
				6 to < 18 y	All	<251
				≥ 18 y	All	<201

*Note change in units from kU/L to IU/mL. Pediatric RIs are specific to methodology in use at DynaLIFE. Adult RI is provincially standardized.

Fecal Osmolality

Applicable sites	Current RIs	Provincially Standardized RIs		
University of Alberta Hospital	None	Age	Gender	RI (mmol/kg)
		All	All	284 – 430

Urate

Applicable sites	Current RIs	Provincially Standardized RIs and Comment																																											
<u>Edmonton Zone</u> Cross Cancer Institute Grey Nuns Hospital Misericordia Hospital Royal Alexandra Hospital University of Alberta Hospital DynaLIFE Medical Labs	<table><tr><th>Age</th><th>Gender</th><th>RI (umol/L)</th></tr><tr><td>0 to < 10 y</td><td>All</td><td>100 – 300</td></tr><tr><td>10 to < 18 y</td><td>F</td><td>180 – 450</td></tr><tr><td>< 18 y</td><td>M, U, X</td><td>135 – 510</td></tr><tr><td rowspan="3">≥ 18 y</td><td>F</td><td>150 – 400</td></tr><tr><td>M</td><td>180 – 500</td></tr><tr><td>U, X</td><td>150 – 500</td></tr></table>	Age	Gender	RI (umol/L)	0 to < 10 y	All	100 – 300	10 to < 18 y	F	180 – 450	< 18 y	M, U, X	135 – 510	≥ 18 y	F	150 – 400	M	180 – 500	U, X	150 – 500	<table><tr><th>Age</th><th>Gender</th><th>RI (umol/L)</th></tr><tr><td>0 to < 5 y</td><td>All</td><td>100 – 300</td></tr><tr><td>5 to < 10 y</td><td>All</td><td>140 – 330</td></tr><tr><td>10 to < 18 y</td><td>M</td><td>160 – 500</td></tr><tr><td>≥ 18y</td><td>M</td><td>200 – 500*</td></tr><tr><td>10 to < 70 y</td><td>F</td><td>150 – 400*</td></tr><tr><td>≥ 70 y</td><td>F</td><td>150 – 500*</td></tr><tr><td>≥ 10 y</td><td>U, X</td><td>150 – 500*</td></tr></table>	Age	Gender	RI (umol/L)	0 to < 5 y	All	100 – 300	5 to < 10 y	All	140 – 330	10 to < 18 y	M	160 – 500	≥ 18y	M	200 – 500*	10 to < 70 y	F	150 – 400*	≥ 70 y	F	150 – 500*	≥ 10 y	U, X	150 – 500*
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<u>*Comment appended to all results from patients ≥18 y:</u> For patients with gout on serum/plasma urate lowering therapy, treat to target a urate of <350 umol/L. (American College of Rheumatology Guidelines for the Management of Gout, Arthritis & Rheumatology, June 2020).																																													

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