

DATE:	2021 July 12
TO:	North Sector Areas 2 and 3, Physicians and Laboratory Staff
FROM:	Janelle Vetsch, Consultant Technologist
RE:	Changes to Blood Gas Reference Intervals and Critical Values

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Key Message

- Effective **July 21, 2021** the following reference intervals and critical values were standardized for the province in preparation for Connect Care Implementation through Clinical Knowledge and Content Management (CKCM). The Working Group assigned to this was created in consultation with the Critical Care Strategic Clinical Network, the Provincial Respiratory Professional Practice Council, and Laboratory Point of Care Testing Network, with additional experts consulted as required.

Background

Arterial

Analyte	Reference Interval	Units	Critical Values	
pH	7.35 – 7.45	-	<7.20	>7.60
pCO ₂	35 – 45	mmHg	<20	>70
pO ₂	70 – 90	mmHg	<56	None
Bicarbonate (HCO ₃)	20 – 27	mmol/L	<10	>40
Total CO ₂	Not Reported	-	-	-
Base Excess	-4 to 1	mmol/L	-	-
Oxygen Saturation	90 – 100	%	-	-

Venous

Analyte	Reference Interval	Units	Critical Values	
pH	7.30 – 7.40	-	<7.15	>7.55
pCO ₂	35 – 50	mmHg	<15	>55 if pH <7.2
pO ₂	30 – 50	mmHg	-	-
HCO ₃	20 – 27	mmol/L	<10	>40
Total CO ₂	Not Reported	-	-	-
Base Excess	-4 to 1	mmol/L	-	-
Oxygen Saturation	50 – 80	%	-	-



Cord Blood Gas - Arterial

Analyte	Reference Interval	Units	Critical Values	
pH	7.2 – 7.4	None	<7.15	-
pCO ₂	35 – 70	mmHg	-	-
pO ₂	Not Reported	-	-	-
HCO ₃	17 – 27	mmol/L	-	-
Total CO ₂	Not Reported	-	-	-
Base Excess	-9 to +2	mmol/L	<-10	-
Oxygen Saturation	Not Reported	-	-	-

Cord Blood Gas - Venous

Analyte	Reference Interval	Units	Critical Values	
pH	7.25 – 7.45	-	<7.15	-
pCO ₂	30 – 55	mmHg	-	-
pO ₂	Not Reported	-	-	-
HCO ₃	16 – 25	mmol/L	-	-
tCO ₂	Not Reported	-	-	-
Base Excess	-10 to 0	mmol/L	<-10	-
Oxygen Saturation	Not Reported	-	-	-

How this will impact you

- No change or impact to ordering process or turn around time.

Action Required

- No change to ordering process.

Effective

- **July 21, 2021**

Questions/Concerns

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Approved by

- Dr. Susan Nahirniak, Associate Medical Director, North Sector, Alberta Precision Laboratories (APL)