i-STAT Alinity v

Utilization Guide

i-STAT Alinity v

The i-STAT Alinity v delivers blood gas, acid-base, electrolyte, chemistry, and hematology results in a completely portable, handheld package. Accuracy is ensured by extensive quality checks and calibrations that occur automatically with each cartridge run. Results are obtained in approximately three minutes–making it the ideal solution for critical care situations, anesthetic monitoring, and field cases.

Cartridge Storage:
Refrigerate at 2 °C to 8 °C (35 °F to 46 °F).

Cartridge Stability:
Cartridges may be stored at room temperature 18-30 °C (64-86 °F), resulting in a shorter shelf life – refer to cartridge box for additional information. Once a cartridge has been warmed to room temperature, do not return it to the refrigerator.

Cartridges must be warmed to room temperature before removing them from their pouches. Allow five minutes for an individual cartridge.

Use cartridges immediately after opening pouch.

Sample Preparation and Considerations:
- Whole blood samples without anticoagulant or whole blood collected into a lithium heparin tube may be used.
- Blood may be either venous or arterial, depending on the analytes to be measured.
- Venipuncture is typically performed for acid-base, electrolyte, and hematologic studies.
- Samples for iCa should be collected in balanced heparin.
- For most accurate results, run samples immediately after collection.
    - Samples for pH, pCO_2, pO_2, TCO_2, and iCa should be tested within 10 minutes if stored anaerobically.
    - All other analytes should be tested within 30 minutes.

For additional information regarding individual cartridges and tests sample collection and handling, see Cartridge & Test Information sheets: **www.pointofcare.abbott**

Acid-Base Utilization

Acid-base analysis is vital to your diagnostic protocols

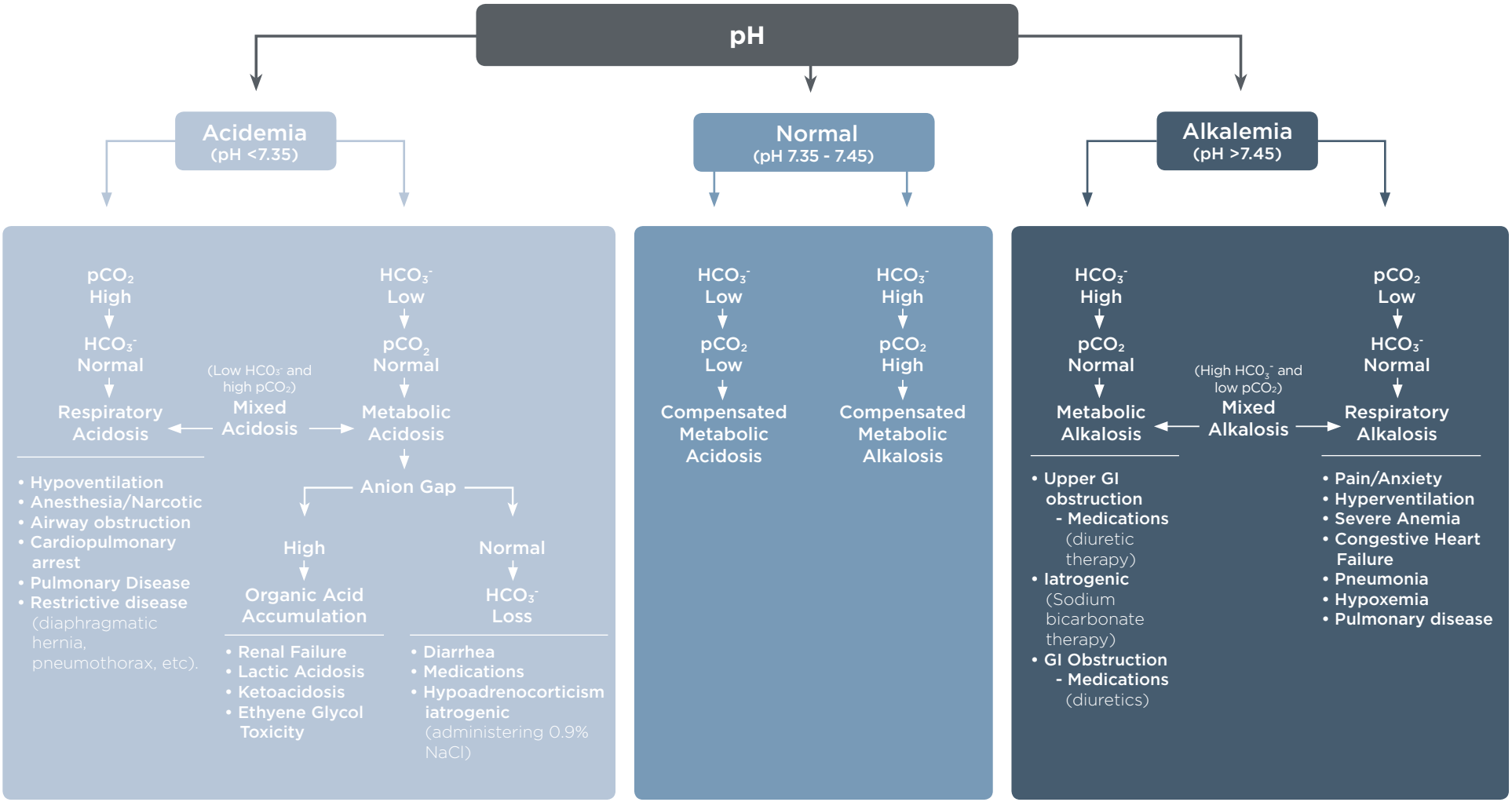
Chemical reactions, especially those occurring *in vivo*, are dependent on many factors, none more important than optimal pH. Illness, whether acute or chronic, often results in pH abnormalities. Failure to recognize and address these abnormalities may result in:

- Missed diagnoses
- Inappropriate treatment
- Delayed or poor patient response to therapy
- Increased time in hospital
- Frequent relapse
- Inability to thrive
- Patient death

Acid-base definitions	
pH	Measurement of the H^+ ion concentration
pCO_2	Partial pressure of the carbon dioxide; reflects the amount of carbonic acid present
HCO_3^-	Bicarbonation, the body's major buffer
Anion Gap	The difference between unmeasured cations and unmeasured anions $(Na^+ + K^+)-(Cl^- + HCO_3^-)$; helpful in determining the cause of acid-base abnormalities.
Base Excess	mEq/L of strong base or acid needed to return the pH to 7.40.
Electrolytes	Na^+, K^+ Cl^-
TCO_2	Total carbon dioxide, which is primarily HCO_3^- (95%)
pO2	Partial pressure of oxygen; measurement of the tension or pressure of oxygen dissolved in blood

Note: A venous sample is acceptable for interpretation of acid-base parameters. For detailed information on pO2, an arterial sample is recommended.

Acid-Base Diagnostic Chart



Common Disease States Where Acid-Base Analysis Is Beneficial

EXPECTED ACID-BASE ABNORMALITIES (DEPENDING ON SPECIES)

ACIDEMIA			ALKALEMIA	
pH < 7.35 (dogs and horses) **pH < 7.25** (cats)			**pH > 7.45** (dogs, cats, and horses)	
Metabolic acidosis HCO_3^- loss → ↓ pH • Most common presentation in veterinary patients			Metabolic alkalosis - H+ loss → ↑ pH →	Respiratory alkalosis - ↓ O_2 → hyperventilation → ↓ pCO_2 → ↑ pH
VOMITING/ DIARRHEA	**RENAL FAILURE**	**DIABETIC KETOACIDOSIS** (COMPLICATED DIABETES MELLITUS)	**UPPER GI OBSTRUCTION**	**CARDIOTHORACIC**
• Loss of sodium bicarbonate ($Na^+HCO_3^-$) • Electrolyte abnormalities • Potential loss of free body water • Anion gap often normal	• Uremic toxins increase acid levels • Loss of sodium bicarbonate ($Na^+HCO_3^-$) or Hydrogen (H^+) ion retention • Electrolyte abnormalities • Lactate elevation with anemia and/or severe dehydration	• Ketoacids • Electrolyte abnormalities • High/normal anion gap, depending on severity	• Loss of H^+ and Cl^- in the form of HCl (hydrochloric acid) • Loss of K^+ (usually K^+Cl^-) • Hypochloremia common • Potential loss of free body water • Lactate elevation with gastric torsion (GDV)	• Reduced ability to uptake or exchange O_2 • Hyperventiliation may result to compensate

CARTRIDGE CHOICES

ACIDEMIA	ALKALEMIA
● CG4+: Acid-base, lactate • Monitoring tool for emergencies or severe cases	● CG4+: Acid-base, pO_2, lactate • Helpful with cardiothoracic emergency or GDV
● CG8+: Acid-base, HCT, Na, K+, glucose, iCa • Helpful for monitoring diabetic patients	● CG8+: Acid-base, pO_2, HCT, all glucose, Na, K, iCa
● EC8+: Acid-base, HCT, all electrolytes, best if high anion gap expected • Helpful in monitoring renal failure patients and GI disease	● EC8+: Acid-base, HCT, electrolytes • Upper GI obstructive disease

i-STAT Alinity v Cartridge Test Menu

The i-STAT Alinity v uses a wide range of disposable, single-use cartridges that contain the necessary reagents to provide reference lab quality results, while improving efficiency throughout the animal health continuum of care.

		CG4+	CG8+	G	Crea	6+	CHEM8+	EC8+
Hematology	Hematocrit (Hct)		●			●	●	●
	Hemoglobin (Hb)*		●			●	●	●
Chemistry	Blood Urea Nitrogen (BUN)					●	●	●
	Creatinine (Crea)				●		●	
	Ionized Calcium (iCa)		●				●	
	Glucose (Glu)		●	●		●	●	●
Electrolytes	Chloride (Cl)					●	●	●
	Sodium (Na)		●			●	●	●
	Potassium (K)		●			●	●	●
Acid Base	pH	●	●					●
	Partial Pressure of Carbon Dioxide (PCO_2)	●	●					●
	Bicarbonate (HCO_3)*	●	●					●
	Total Carbon Dioxide (TCO_2)*	●	●				●	●
	Anion Gap (AnGap)*						●	●
	Base Excess (BE)*	●	●					●
Blood Gas	Partial Pressure of Oxygen (PO_2)	●	●					
	Oxygen Saturation (sO_2)*	●	●					
Specialty	Lactate (Lac)	●						

*Calculated Value

i-STAT Alinity v System and Reference Ranges

		Units	System Range	Reference Range		
				Canine	Feline	Equine
Hematology	Hematocrit (Hct)	% PCV	15 – 75	35 - 50	24 - 40	30 - 45
	Hemoglobin (Hb)*	g/dL	5.1 – 25.5	12.0 - 17.0	8.0 - 13.0	10.0 - 15.0
Chemistry	Blood Urea Nitrogen (BUN)	mg/dL	3 – 140	10 - 26	15 - 34	11 - 27
	Creatinine (Crea)	mg/dL	0.2 – 20.0	0.5 - 1.3	1.0 - 2.2	0.4 - 2.2
	Ionized Calcium (iCa)	mmol/L	0.25 – 2.50	1.12 - 1.40	1.20 - 1.32	1.25 - 1.75
	Glucose (Glu)	mg/dL	20 – 700	60 - 115	60 - 130	62 - 134
Electrolytes	Chloride (Cl)	mmol/L	65 – 140	106 - 127	112 - 129	100 - 111
	Sodium (Na)	mmol/L	100 – 180	139 - 150	147 - 162	128 - 142
	Potassium (K)	mmol/L	2.0 – 9.0	3.4 - 4.9	2.9 - 4.2	1.9 - 4.1
Acid-Base	pH		6.5 – 8.2	7.35 - 7.45	7.25 - 7.40	7.35 - 7.45
	Partial Pressure of Carbon Dioxide ($\boldsymbol{P}CO_2$)	mmHg	5 – 130	35.0 - 38.0	33.0 - 51.0	36.0 - 46.0
	Bicarbonate (HCO_3)*	mmol/L	1.0 – 85.0	15.0 - 23.0	13.0 - 25.0	25.0 - 30.0
	Total Carbon Dioxide (TCO_2)*	mmol/L	5 – 50	17 - 25	16 - 25	24 - 32
	Anion Gap (AnGap)*	mmol/L	(-10) – (+99)	8 - 25	10 - 27	5 - 15
	Base Excess (BE)*	mmol/L	(-30) – (+30)	(-5) - 0	(-5) - (+2)	(-5) - (+5)
Blood Gas	Partial Pressure of Oxygen ($\boldsymbol{P}O_2$)	mmHg	5 – 800	85 - 100	90 - 110	90 - 110
	Oxygen Saturation (sO_2)*	%	0 -100	>90	>90	>90
Specialty	Lactate (Lac)	mmol/L	0.30 – 20.00	0.6 - 2.9	0.5 - 2.7	0.3 - 1.5

*Calculated Value

Highlighted cells reflect ranges for arterial samples. No venous reference ranges are yet available.

These normal intervals are provided only as a guideline. The most definitive reference intervals are those established for your patient population. Test results should be interpreted in conjunction with the patient's clinical signs.

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GLOBAL DIAGNOSTICS

For Cartridge & Test Information sheets, please visit: www.pointofcare.abbott

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