	epoc BGEM Test Card - Assay Interferences

This table outlines known interferences for the assays on the Siemens epoc BGEM test card. As with any laboratory test, other unknown interferences may affect patient results. Consult a Clinical Biochemist if assay interference is suspected but not listed below.

Analyte	Interfering Substances	Effect on Results
pH	Benzalkonium salts used in coatings for in-dwelling lines. Lines must be properly flushed prior to sampling.	Falsely **decreases** pH
	Exposure to air	Falsely **increases** pH
pCO2	Bromide salts	**Increases** pCO2 by 0.2 mmHg/mM Br
	Exposure to air	Falsely **decreases** pCO2
pO2	Metronidazole	**Increases** pO_2 by 4 mmHg at 100 µM Metronidazole (therapeutic range)
	Exposure to air	Falsely **increases** pO2
Sodium	High total protein (e.g. multiple myeloma)	**Decreases** Na+ by 1.3 mM for every additional 10 g/L protein above 80 g/L
	β-hydroxybutyrate	20 mmol/L βHB will **decrease** Na+ by 3 mmol/L. Results above 18 mmol/L have not been reported in Manitoba.
	Bromide	16 mmol/L Bromide will **increase** Na+ by 5 mmol/L
	Benzalkonium salts used in coatings for in-dwelling lines. Lines must be properly flushed prior to sampling.	Causes significant elevations in Na+
	Teriflunomide	Causes **decrease** in Na+ at supra-therapeutic levels (>720 µmol/L)
Potassium	Benzalkonium salts used in coatings for in-dwelling lines. Lines must be properly flushed prior to sampling.	Causes significant **increase** in K+
	Excessive pulling on syringe plunger; use of small-bore needles; aggressive sample mixing—all cause hemolysis *in vitro*	Falsely **increases** K+
Ionized Calcium	β-hydroxybutyrate (*extremely elevated*)	20 mmol/L βHB will **decrease** iCa by 0.038 mmol/L. Results above 18 mmol/L have not been reported in Manitoba.
	Salicylates	4.3 mmol/L salicylate (supratherapeutic levels) will **decrease** iCa by 0.06 mmol/L
	Bromide	10 mmol/L Bromide will **increase** iCa by 0.05 mmol/L
	Sodium perchlorate	1 mmol/L perchlorate will **decrease** iCa by 0.23 mmol/L
	Leflunomide	Causes **decrease** in iCa at therapeutic levels
	Teriflunomide	Causes **decrease** in iCa at therapeutic levels

Analyte	Interfering Substances	Effect on Results
Chloride	β-hydroxybutyrate	βHB above 8.3 mmol/L **will increase** chloride by 0.37 mmol/L for every additional 1 mmol/L βHB. βHB results this high are only observed in severe diabetic ketoacidosis.
	Bromide	Bromide will **increase** Cl^- by up to 2.75 mmol/L per mmol/L Bromide
	Citrate	Citrate may **increase** Cl^- by up to 1.13 mmol/L per mmol/L citrate
	N-acetylcysteine (NAC)	Supratherapeutic concentrations may **decrease** Cl^- by up to 5.55 mmol/L per mmol/L NAC
	Salicylates	Supratherapeutic concentrations may **decrease** Cl^- by 2.94 mmol/L for every 1 mmol/L salicylate above 1.67.
	Thiocyanate (SCN^-)	Can **increase** Cl^- by up to 5.62 mmol/L for every mmol/L Thiocyanate
Total CO_2	Exposure to air	Falsely **decreases** TCO_2
	Benzalkonium salts used in coatings for in-dwelling lines. Lines must be properly flushed prior to sampling.	Causes significant **decrease** in TCO_2
	Citrate	Can **increase** TCO_2 by up to 0.24 mmol/L per mmol/L citrate
	EDTA	Can **increase** TCO_2 by up to 0.57 mmol/L per mmol/L EDTA
	N-acetylcysteine (NAC)	Supratherapeutic concentrations may **increase** TCO_2 by up to 0.54 mmol/L per mmol/L NAC
Glucose	Capillary collection	Typically, 0.1-0.3 mmol/L higher than venous or arterial glucose
	Potassium Iodide	May falsely **decrease** glucose concentration by up to 0.01 mmol/L per µmol/L KI
	Bromide	May falsely **decrease** glucose by 0.013 mmol/L per mmol/L Bromide
	N-acetylcysteine (NAC)	Supratherapeutic concentrations may **decrease** glucose by up to 0.4 mmol/L per mmol/L NAC.
	Thiocyanate (SCN^-)	May **decrease** glucose by up to 1.7%
	Uric Acid	Uric acid concentrations above 700 µmol/L may **decrease** glucose concentrations by 0.2 mmol/L for every µmol/L uric acid over this threshold

Analyte	Interfering Substances	Effect on Results
Glucose (cont'd)	Mannose, Xylose	Both may falsely **increase** glucose concentration
Lactate	Acetaminophen	May falsely **increase** lactate in overdose situations. Expected increase of 0.3 mmol/L for every 150 mg/L acetaminophen above 120.
	Iodide	May falsely **decrease** lactate readings by up to 1.0 mmol/L
	Bromide	May falsely **decrease** lactate concentration by up to 0.15 mmol/L for every mmol/L Br.
	Thiocyanate (SCN$^-$)	May falsely **decrease** lactate concentration by up to 0.97 mmol/L for every mmol/L KSCN
	N-acetylcysteine (NAC)	Supratherapeutic concentrations may **decrease** lactate by up to 0.96 mmol/L per mmol/L NAC.
Urea	Benzalkonium salts used in coatings for in-dwelling lines. Lines must be properly flushed prior to sampling.	Causes significant **increase** in urea
	Citrate	Can **decrease** urea readings by up to 0.1 mmol/L per mmol/L citrate
	EDTA	Can **decrease** urea readings by up to 0.15 mmol/L per mmol/L EDTA
	Glutathione	Long-term oral glutathione or IV glutathione administration may falsely **increase** urea concentrations by 0.68 mmol/L per mmol/L GSH. Short-term oral intake should not affect results.
	β-hydroxybutyrate (*extremely elevated*)	βHB above 17 mmol/L **will increase** urea by 0.05 mmol/L for every additional 1 mmol/L βHB. Results above 18 mmol/L have not been reported in Manitoba.
	Intravenous hydroxyurea	Plasma concentrations of hydroxyurea above 1.3 mmol/L may increase Urea by 0.6 mmol/L per mmol/L hydroxyurea above this threshold.
	N-acetylcysteine (NAC)	Supratherapeutic concentrations (>9 mmol/L) may **decrease** urea by up to 0.04 mmol/L per mmol/L NAC.
	Sodium Thiosulfate ($Na_2S_2O_3$)	Concentrations above 4.1 mmol/L can **decrease** urea concentration by up to 0.15 mmol/L per mmol/L sodium thiosulfate.

Analyte	Interfering Substances	Effect on Results
Creatinine	Creatine	Will falsely **increase** creatinine concentration if consumed within 48 hours of testing
	Iodide	Plasma concentrations above 0.45 mmol/L may **decrease** creatinine concentrations by up to 44 µmol/L for every mmol/L iodide.
	N-acetylcysteine (NAC)	Therapeutic concentrations (>0.4 mmol/L) may **decrease** creatinine concentration by up to 64 µmol/L per mmol/L NAC.
	Glycolic acid (metabolite of ethylene glycol)	Plasma concentrations above 1.69 mmol/L can decrease creatinine by up to 5%.
Hematocrit	Abnormally high lipids	Falsely **increase** hematocrit results
	Abnormally high white blood cell count	May falsely **increase** hematocrit results
	Total protein content	Normal plasma total protein content is 46 – 80 g/L accounting for all age groups. A 10 g/L increase in total protein can falsely **increase** hematocrit by 0.01 L/L. Similarly, a 10 g/L decrease in total protein can falsely **decrease** hematocrit by approximately 0.01 L/L.