



Blood pH and Gases Proficiency Test Program

Statistical Summary – July 2015 (Event 15-2)

This statistical report summarizes participant data for the five Blood pH and Gas/Chemistry proficiency survey specimens shipped July 6, 2015. Test specimens were commercially prepared and contained carbon dioxide and oxygen balanced with nitrogen in a physiologically buffered matrix. Five specimens (G61, G62, G63, G64, G65) were distributed to each participant laboratory for analysis.

Results for individual instrument systems where the number of laboratories using those systems is three or greater are provided. Mean and Standard Deviation (± 1 SD) values are calculated by a robust statistical technique that does not assume a Gaussian distribution.

Please note that Glucose, Sodium, Potassium, Chloride, Ionized Calcium, and Lactate, included in this proficiency test event as educational challenges, will be graded beginning with the March 2016 event.

Disclaimer:

Note: The use of brand and/or trade names in this report does not constitute an endorsement of the products on the part of the Wadsworth Center or the New York State Department of Health

Should you have any questions regarding this report, please contact the Clinical Chemistry Section at (518) 474-5582.

Summary of Participant Performance (Mean and Standard Deviation)

pH

Specimen: G61	Specimen: G62	Specimen: G63	Specimen: G64	Specimen: G65	Number	[Code] Instrument or Reagent System
7.338 ± 0.016	6.984 ± 0.023	7.577 ± 0.027	7.234 ± 0.016	7.440 ± 0.019	n = 222	[] All Instruments
7.367 ± 0.005	7.004 ± 0.009	7.633 ± 0.006	7.264 ± 0.005	7.469 ± 0.008	n = 27	[IAA] Abbott i-STAT
7.315 ± 0.025	6.863 ± 0.038	7.583 ± 0.029	7.169 ± 0.008	7.405 ± 0.009	n = 3	[EPO] Epocal epoc
7.343 ± 0.005	6.996 ± 0.013	7.601 ± 0.009	7.230 ± 0.005	7.455 ± 0.006	n = 13	[MAA] IL Gem Premier 3000
7.332 ± 0.006	6.982 ± 0.011	7.577 ± 0.007	7.223 ± 0.005	7.436 ± 0.008	n = 20	[MAC] IL Gem Premier 4000
7.344 ± 0.006	6.999 ± 0.010	7.595 ± 0.007	7.232 ± 0.006	7.453 ± 0.005	n = 11	[MAD] IL Gem Premier 3500
7.351 ± 0.005	7.022 ± 0.006	7.567 ± 0.000	7.259 ± 0.002	7.446 ± 0.000	n = 3	[NOW] NOVA pHOX Ultra
7.322 ± 0.006	7.028 ± 0.008	7.569 ± 0.016	7.225 ± 0.008	7.433 ± 0.007	n = 5	[AVQ] Opti Medical OPTI CCA
7.332 ± 0.009	6.951 ± 0.018	7.554 ± 0.010	7.231 ± 0.005	7.424 ± 0.008	n = 18	[RAX] Radiometer ABL 80 Flex
7.340 ± 0.007	6.973 ± 0.013	7.573 ± 0.006	7.233 ± 0.006	7.438 ± 0.006	n = 8	[RAY] Radiometer ABL 90 Flex
7.326 ± 0.005	6.977 ± 0.008	7.557 ± 0.005	7.228 ± 0.004	7.424 ± 0.005	n = 55	[RAP] Radiometer ABL800 series
7.340 ± 0.013	7.032 ± 0.019	7.544 ± 0.008	7.241 ± 0.011	7.423 ± 0.013	n = 6	[ROW] Roche OMNI/Cobas series
7.335 ± 0.005	6.961 ± 0.007	7.581 ± 0.006	7.225 ± 0.006	7.440 ± 0.006	n = 16	[BYS] Siemens Rapid Point 405
7.331 ± 0.004	6.962 ± 0.005	7.576 ± 0.005	7.225 ± 0.005	7.439 ± 0.003	n = 16	[BYQ] Siemens Rapid Point 500
7.360 ± 0.007	6.999 ± 0.007	7.599 ± 0.005	7.259 ± 0.005	7.462 ± 0.005	n = 17	[BYT] Siemens RapidLab 1200 Series

Summary of Participant Performance (Mean and Standard Deviation)

Pco2 (mmHg)

Specimen: G61	Specimen: G62	Specimen: G63	Specimen: G64	Specimen: G65	Number	[Code] Instrument or Reagent System
43.99 ± 1.98	71.54 ± 4.06	24.79 ± 1.29	54.05 ± 2.78	35.41 ± 1.57	n = 222	[] All Instruments
41.05 ± 1.08	68.39 ± 1.53	23.53 ± 0.38	50.00 ± 0.96	32.77 ± 0.63	n = 27	[IAA] Abbott i-STAT
42.36 ± 3.52	77.66 ± 8.09	22.54 ± 0.93	56.89 ± 0.66	33.97 ± 0.76	n = 3	[EPO] Epocal epoc
46.00 ± 0.91	70.31 ± 1.84	24.53 ± 0.65	57.39 ± 0.80	36.00 ± 0.79	n = 13	[MAA] IL Gem Premier 3000
43.32 ± 0.62	69.30 ± 2.47	23.92 ± 0.49	53.62 ± 1.29	34.57 ± 0.77	n = 20	[MAC] IL Gem Premier 4000
45.62 ± 0.91	70.05 ± 1.91	24.55 ± 0.81	57.25 ± 1.77	36.00 ± 0.79	n = 11	[MAD] IL Gem Premier 3500
43.53 ± 0.97	69.58 ± 2.46	25.29 ± 0.20	52.65 ± 2.38	35.72 ± 0.51	n = 3	[NOW] NOVA pHOX Ultra
43.85 ± 1.04	68.63 ± 1.64	26.23 ± 1.41	53.56 ± 1.64	34.38 ± 0.54	n = 5	[AVQ] Opti Medical OPTI CCA
45.26 ± 1.09	78.22 ± 3.57	24.68 ± 1.00	55.69 ± 1.60	36.05 ± 1.08	n = 18	[RAX] Radiometer ABL 80 Flex
43.54 ± 0.50	70.08 ± 2.47	25.10 ± 0.55	53.12 ± 0.51	35.55 ± 0.70	n = 8	[RAY] Radiometer ABL 90 Flex
43.58 ± 0.76	70.77 ± 1.85	25.69 ± 0.53	53.15 ± 1.20	35.88 ± 0.67	n = 55	[RAP] Radiometer ABL800 series
45.49 ± 1.32	69.07 ± 3.66	26.16 ± 0.92	55.90 ± 1.66	37.08 ± 1.26	n = 6	[ROW] Roche OMNI/Cobas series
45.92 ± 1.97	78.28 ± 3.05	25.16 ± 1.25	57.47 ± 2.56	36.64 ± 1.49	n = 16	[BYS] Siemens Rapid Point 405
46.18 ± 0.62	77.03 ± 2.58	25.77 ± 0.88	56.68 ± 1.73	36.74 ± 1.21	n = 16	[BYQ] Siemens Rapid Point 500
43.10 ± 1.28	73.95 ± 1.68	22.79 ± 0.74	52.96 ± 1.21	33.71 ± 1.09	n = 17	[BYT] Siemens RapidLab 1200 Series

Summary of Participant Performance (Mean and Standard Deviation)

Po2 (mmHg)

Specimen: G61	Specimen: G62	Specimen: G63	Specimen: G64	Specimen: G65	Number	[Code] Instrument or Reagent System
177.58 ± 7.24	115.74 ± 5.87	76.48 ± 7.81	140.92 ± 5.48	89.42 ± 7.15	n = 222	[] All Instruments
170.01 ± 5.06	119.02 ± 4.41	83.43 ± 5.23	139.39 ± 4.96	95.67 ± 6.06	n = 27	[IAA] Abbott i-STAT
188.31 ± 9.15	112.99 ± 6.67	76.89 ± 21.38	135.54 ± 1.72	82.49 ± 4.93	n = 3	[EPO] Epocal epoc
186.80 ± 5.29	116.92 ± 2.64	73.91 ± 2.42	147.22 ± 3.75	87.31 ± 2.93	n = 13	[MAA] IL Gem Premier 3000
179.66 ± 4.21	116.34 ± 3.88	74.04 ± 2.59	142.36 ± 3.87	87.59 ± 3.42	n = 20	[MAC] IL Gem Premier 4000
188.78 ± 3.22	118.33 ± 3.72	74.89 ± 2.62	148.55 ± 1.94	88.26 ± 2.49	n = 11	[MAD] IL Gem Premier 3500
184.88 ± 6.25	114.16 ± 0.47	68.24 ± 1.00	143.03 ± 0.69	83.66 ± 0.73	n = 3	[NOW] NOVA pHOX Ultra
172.00 ± 5.10	108.48 ± 8.56	80.02 ± 1.30	134.79 ± 3.17	87.10 ± 1.53	n = 5	[AVQ] Opti Medical OPTI CCA
175.01 ± 5.97	108.02 ± 4.16	62.82 ± 3.89	136.40 ± 5.29	78.14 ± 3.26	n = 18	[RAX] Radiometer ABL 80 Flex
177.80 ± 4.63	108.19 ± 1.83	59.78 ± 1.16	139.35 ± 3.27	77.20 ± 1.86	n = 8	[RAY] Radiometer ABL 90 Flex
177.46 ± 4.09	118.35 ± 2.98	80.25 ± 1.90	142.27 ± 2.79	93.17 ± 2.28	n = 55	[RAP] Radiometer ABL800 series
180.49 ± 4.47	135.53 ± 5.86	92.87 ± 1.56	149.51 ± 3.37	104.76 ± 3.33	n = 6	[ROW] Roche OMNI/Cobas series
173.94 ± 5.46	115.07 ± 3.06	77.72 ± 3.48	138.82 ± 3.66	88.87 ± 3.07	n = 16	[BYS] Siemens Rapid Point 405
173.31 ± 5.87	112.27 ± 3.00	75.24 ± 2.17	135.88 ± 3.37	88.71 ± 3.45	n = 16	[BYQ] Siemens Rapid Point 500
180.01 ± 6.05	107.93 ± 2.02	68.53 ± 4.85	137.03 ± 3.82	81.49 ± 2.81	n = 17	[BYT] Siemens RapidLab 1200 Series

Summary of Participant Performance (Mean and Standard Deviation)

Glucose (mg/dL)

Specimen: G61	Specimen: G62	Specimen: G63	Specimen: G64	Specimen: G65	Number	[Code]	Instrument or Reagent System
194.0 ± 5.46	375.7 ± 9.57	331.5 ± 10.41	160.5 ± 5.06	229.1 ± 5.74	n = 65	[]	All Instruments
191.9 ± 2.37	374.8 ± 6.61	337.2 ± 4.88	156.1 ± 1.60	228.0 ± 3.35	n = 7	[IAA]	Abbott i-STAT
187.6 ± 5.87	370.2 ± 9.08	332.2 ± 9.26	148.9 ± 9.45	221.2 ± 4.16	n = 4	[MAA]	IL Gem Premier 3000
190.7 ± 4.12	381.5 ± 10.14	334.4 ± 10.89	154.3 ± 5.05	227.6 ± 5.39	n = 5	[MAC]	IL Gem Premier 4000
203.5 ± 1.86	390.7 ± 19.37	343.3 ± 15.87	165.3 ± 0.51	232.5 ± 1.86	n = 3	[NOW]	NOVA pHOX Ultra
189.5 ± 1.86	376.9 ± 6.08	324.6 ± 4.72	156.7 ± 0.51	225.3 ± 1.37	n = 3	[RAY]	Radiometer ABL 90 Flex
195.3 ± 3.15	376.0 ± 6.26	332.4 ± 4.71	163.1 ± 2.61	230.5 ± 4.02	n = 29	[RAP]	Radiometer ABL800 series
198.5 ± 3.63	374.2 ± 11.16	334.0 ± 7.27	160.8 ± 2.36	234.5 ± 7.78	n = 3	[BYS]	Siemens Rapid Point 405
187.4 ± 3.05	359.3 ± 8.38	313.8 ± 5.72	156.2 ± 4.41	213.1 ± 12.37	n = 5	[BYT]	Siemens RapidLab 1200 Series

Sodium (mmol/L)

Specimen: G61	Specimen: G62	Specimen: G63	Specimen: G64	Specimen: G65	Number	[Code]	Instrument or Reagent System
128.1 ± 1.64	149.5 ± 1.70	136.8 ± 2.01	119.5 ± 1.89	132.9 ± 1.96	n = 81	[]	All Instruments
130.4 ± 0.70	151.0 ± 0.00	139.7 ± 0.51	121.6 ± 0.56	135.7 ± 0.51	n = 9	[IAA]	Abbott i-STAT
129.7 ± 0.82	151.5 ± 1.94	139.5 ± 1.22	122.0 ± 0.75	135.1 ± 1.13	n = 4	[MAA]	IL Gem Premier 3000
128.4 ± 0.55	149.8 ± 0.73	137.2 ± 0.42	120.7 ± 0.62	133.8 ± 0.66	n = 10	[MAC]	IL Gem Premier 4000
126.7 ± 0.51	149.7 ± 0.51	135.7 ± 0.51	119.0 ± 0.00	131.7 ± 0.51	n = 3	[NOW]	NOVA pHOX Ultra
128.2 ± 0.41	151.2 ± 0.41	137.5 ± 0.57	119.8 ± 0.41	133.2 ± 0.41	n = 4	[RAY]	Radiometer ABL 90 Flex
128.1 ± 0.79	149.3 ± 1.14	136.5 ± 1.02	119.2 ± 0.93	132.6 ± 0.97	n = 31	[RAP]	Radiometer ABL800 series
125.7 ± 0.51	148.0 ± 0.00	134.7 ± 0.51	116.0 ± 0.00	130.3 ± 0.51	n = 3	[BYS]	Siemens Rapid Point 405
125.7 ± 0.51	148.0 ± 0.00	134.3 ± 0.51	116.0 ± 0.00	130.3 ± 0.51	n = 3	[BYQ]	Siemens Rapid Point 500
125.2 ± 0.73	144.8 ± 0.73	134.0 ± 0.00	117.0 ± 0.56	130.0 ± 0.00	n = 7	[BYT]	Siemens RapidLab 1200 Series

Potassium (mmol/L)

Specimen: G61	Specimen: G62	Specimen: G63	Specimen: G64	Specimen: G65	Number	[Code]	Instrument or Reagent System
3.79 ± 0.04	6.11 ± 0.11	4.81 ± 0.07	2.53 ± 0.08	4.24 ± 0.07	n = 81	[]	All Instruments
3.76 ± 0.06	6.04 ± 0.06	4.80 ± 0.00	2.53 ± 0.05	4.23 ± 0.05	n = 9	[IAA]	Abbott i-STAT
3.65 ± 0.06	6.00 ± 0.00	4.70 ± 0.00	2.40 ± 0.00	4.15 ± 0.06	n = 4	[MAA]	IL Gem Premier 3000
3.80 ± 0.00	6.23 ± 0.05	4.90 ± 0.00	2.50 ± 0.00	4.30 ± 0.00	n = 8	[MAC]	IL Gem Premier 4000
3.80 ± 0.00	6.33 ± 0.05	4.97 ± 0.05	2.63 ± 0.05	4.37 ± 0.05	n = 3	[NOW]	NOVA pHOX Ultra
3.72 ± 0.04	6.00 ± 0.00	4.72 ± 0.04	2.58 ± 0.04	4.20 ± 0.00	n = 4	[RAY]	Radiometer ABL 90 Flex
3.80 ± 0.00	6.13 ± 0.07	4.83 ± 0.05	2.57 ± 0.05	4.26 ± 0.06	n = 31	[RAP]	Radiometer ABL800 series
3.77 ± 0.05	6.07 ± 0.05	4.77 ± 0.05	2.50 ± 0.00	4.20 ± 0.00	n = 3	[BYS]	Siemens Rapid Point 405
3.80 ± 0.00	6.10 ± 0.00	4.80 ± 0.00	2.50 ± 0.00	4.22 ± 0.08	n = 5	[BYQ]	Siemens Rapid Point 500
3.70 ± 0.00	6.06 ± 0.10	4.78 ± 0.05	2.40 ± 0.06	4.20 ± 0.00	n = 7	[BYT]	Siemens RapidLab 1200 Series

Summary of Participant Performance (Mean and Standard Deviation)

Chloride (mmol/L)

Specimen: G61	Specimen: G62	Specimen: G63	Specimen: G64	Specimen: G65	Number	[Code]	Instrument or Reagent System
89.7 ± 3.10	127.7 ± 3.33	103.1 ± 3.17	82.4 ± 2.95	97.0 ± 2.97	n = 55	[]	All Instruments
83.6 ± 0.79	125.0 ± 0.55	96.7 ± 0.51	76.9 ± 0.59	90.2 ± 0.73	n = 6	[IAA]	Abbott i-STAT
93.2 ± 0.80	128.8 ± 0.41	107.5 ± 0.83	85.0 ± 0.64	100.5 ± 0.83	n = 5	[MAC]	IL Gem Premier 4000
94.7 ± 0.51	132.3 ± 0.51	107.7 ± 0.51	88.0 ± 0.00	101.3 ± 0.51	n = 3	[NOW]	NOVA pHOX Ultra
89.3 ± 0.51	123.7 ± 10.61	102.7 ± 0.51	82.0 ± 0.00	96.3 ± 0.51	n = 3	[RAY]	Radiometer ABL 90 Flex
88.6 ± 0.88	127.4 ± 1.03	102.2 ± 0.90	81.5 ± 0.71	96.2 ± 0.71	n = 25	[RAP]	Radiometer ABL800 series
91.0 ± 0.00	131.3 ± 0.51	105.0 ± 0.00	84.0 ± 0.00	98.7 ± 0.51	n = 3	[BYS]	Siemens Rapid Point 405
90.3 ± 0.51	128.6 ± 1.02	103.3 ± 0.51	83.3 ± 0.51	97.3 ± 0.51	n = 3	[BYQ]	Siemens Rapid Point 500
93.0 ± 0.00	131.0 ± 3.58	106.3 ± 0.51	86.7 ± 0.51	100.3 ± 0.51	n = 3	[BYT]	Siemens RapidLab 1200 Series

Ionized Calcium (mmol/L)

Specimen: G61	Specimen: G62	Specimen: G63	Specimen: G64	Specimen: G65	Number	[Code]	Instrument or Reagent System
1.286 ± 0.040	1.797 ± 0.068	0.738 ± 0.043	1.005 ± 0.028	1.128 ± 0.031	n = 90	[]	All Instruments
1.303 ± 0.009	1.785 ± 0.021	0.708 ± 0.006	0.998 ± 0.005	1.132 ± 0.013	n = 8	[IAA]	Abbott i-STAT
1.296 ± 0.019	1.882 ± 0.028	0.696 ± 0.006	0.993 ± 0.009	1.143 ± 0.021	n = 5	[MAA]	IL Gem Premier 3000
1.294 ± 0.008	1.793 ± 0.026	0.709 ± 0.005	1.015 ± 0.009	1.139 ± 0.010	n = 11	[MAC]	IL Gem Premier 4000
1.258 ± 0.008	1.708 ± 0.008	0.730 ± 0.000	0.990 ± 0.006	1.106 ± 0.006	n = 5	[RAY]	Radiometer ABL 90 Flex
1.308 ± 0.013	1.839 ± 0.020	0.787 ± 0.017	1.032 ± 0.017	1.148 ± 0.016	n = 29	[RAP]	Radiometer ABL800 series
1.247 ± 0.005	1.862 ± 0.041	0.700 ± 0.000	0.967 ± 0.014	1.114 ± 0.010	n = 3	[ROW]	Roche OMNI/Cobas series
1.234 ± 0.006	1.725 ± 0.011	0.705 ± 0.011	0.985 ± 0.008	1.100 ± 0.013	n = 5	[BYS]	Siemens Rapid Point 405
1.248 ± 0.019	1.742 ± 0.029	0.718 ± 0.013	0.984 ± 0.011	1.101 ± 0.018	n = 5	[BYQ]	Siemens Rapid Point 500
1.147 ± 0.016	1.709 ± 0.030	0.745 ± 0.045	0.982 ± 0.026	1.066 ± 0.029	n = 11	[BYT]	Siemens RapidLab 1200 Series

Lactate (mmol/L)

Specimen: G61	Specimen: G62	Specimen: G63	Specimen: G64	Specimen: G65	Number	[Code]	Instrument or Reagent System
4.59 ± 0.16	9.67 ± 0.68	8.58 ± 0.44	5.50 ± 0.22	6.42 ± 0.24	n = 70	[]	All Instruments
4.56 ± 0.06	9.26 ± 0.10	8.44 ± 0.07	5.48 ± 0.07	6.35 ± 0.08	n = 10	[IAA]	Abbott i-STAT
4.61 ± 0.19	9.46 ± 0.28	8.65 ± 0.32	5.36 ± 0.26	6.39 ± 0.24	n = 5	[MAA]	IL Gem Premier 3000
4.18 ± 0.08	8.70 ± 0.15	7.90 ± 0.10	5.00 ± 0.00	5.84 ± 0.11	n = 5	[MAC]	IL Gem Premier 4000
4.64 ± 0.26	9.96 ± 0.10	8.60 ± 0.00	5.41 ± 0.20	6.46 ± 0.10	n = 3	[NOW]	NOVA pHOX Ultra
4.48 ± 0.08	10.84 ± 0.41	9.09 ± 0.26	5.66 ± 0.30	6.60 ± 0.15	n = 5	[RAY]	Radiometer ABL 90 Flex
4.61 ± 0.10	9.87 ± 0.52	8.64 ± 0.47	5.52 ± 0.10	6.41 ± 0.20	n = 27	[RAP]	Radiometer ABL800 series
4.68 ± 0.16	9.36 ± 0.57	8.65 ± 0.54	5.40 ± 0.20	6.55 ± 0.23	n = 6	[BYQ]	Siemens Rapid Point 500
4.92 ± 0.75	9.13 ± 1.91	8.38 ± 0.20	6.36 ± 1.95	6.05 ± 0.73	n = 4	[BYT]	Siemens RapidLab 1200 Series