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HEALTH

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Blood pH and Gases Proficiency Test Program
Blood Gas/Chemistry Educational Proficiency Test Program

Statistical Summary – November 2014 (Event 14-3)

This statistical report summarizes participant data for the five Blood pH and Gas/Chemistry proficiency survey specimens shipped November 3, 2014. Test specimens were commercially prepared and contained carbon dioxide and oxygen balanced with nitrogen in a physiologically buffered matrix. Five specimens (G51, G52, G53, G54, G55) 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.

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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: G51	Specimen: G52	Specimen: G53	Specimen: G54	Specimen: G55	Number	[Code]	Instrument
7.727 ± 0.041	7.243 ± 0.015	6.991 ± 0.023	7.630 ± 0.031	7.438 ± 0.017	n = 224	[ ]	All Instruments
7.726 ± 0.023	7.254 ± 0.008	7.044 ± 0.017	7.623 ± 0.017	7.434 ± 0.009	n = 6	[AVQ]	Opti Medical OPTI CCA
7.720 ± 0.003	7.233 ± 0.006	6.967 ± 0.007	7.627 ± 0.005	7.440 ± 0.004	n = 21	[BYS]	Siemens Rapid Point 405
7.720 ± 0.008	7.237 ± 0.004	6.970 ± 0.002	7.627 ± 0.007	7.440 ± 0.006	n = 13	[BYQ]	Siemens Rapid Point 500
7.736 ± 0.015	7.268 ± 0.005	7.010 ± 0.011	7.650 ± 0.004	7.463 ± 0.006	n = 19	[BYT]	Siemens RapidLab 1200 Series
7.810 ± 0.004	7.264 ± 0.006	7.005 ± 0.013	7.688 ± 0.005	7.457 ± 0.007	n = 26	[IAA]	i-STAT
7.778 ± 0.005	7.241 ± 0.006	6.998 ± 0.011	7.668 ± 0.006	7.452 ± 0.005	n = 13	[MAA]	IL Gem Premier 3000
7.749 ± 0.008	7.230 ± 0.000	6.995 ± 0.010	7.635 ± 0.007	7.432 ± 0.007	n = 19	[MAC]	IL Gem Premier 4000
7.774 ± 0.009	7.242 ± 0.009	7.006 ± 0.012	7.663 ± 0.006	7.450 ± 0.000	n = 11	[MAD]	IL Gem Premier 3500
7.711 ± 0.001	7.265 ± 0.009	7.029 ± 0.017	7.615 ± 0.010	7.444 ± 0.010	n = 5	[NOG]	NOVA Critical Care Xpress
7.704 ± 0.015	7.241 ± 0.010	6.954 ± 0.015	7.600 ± 0.015	7.425 ± 0.011	n = 19	[RAX]	Radiometer ABL 80 Flex
7.719 ± 0.006	7.241 ± 0.006	6.983 ± 0.009	7.624 ± 0.006	7.435 ± 0.003	n = 5	[RAY]	Radiometer ABL 90 Flex
7.697 ± 0.004	7.237 ± 0.005	6.986 ± 0.007	7.607 ± 0.004	7.423 ± 0.004	n = 53	[RAP]	Radiometer ABL800 series
7.678 ± 0.003	7.248 ± 0.007	7.022 ± 0.014	7.588 ± 0.006	7.422 ± 0.009	n = 6	[ROW]	Roche OMNI/Cobas series

Summary of Participant Performance (Mean and Standard Deviation)

Pco2 (mmHg)

Specimen: G51	Specimen: G52	Specimen: G53	Specimen: G54	Specimen: G55	Number	[Code] Instrument
16.67 ± 1.10	52.84 ± 2.87	70.53 ± 4.47	21.53 ± 1.04	35.58 ± 1.68	n = 224	[ ] All Instruments
19.22 ± 1.11	52.53 ± 0.53	67.97 ± 2.21	23.85 ± 0.70	35.86 ± 1.69	n = 6	[AVQ] Opti Medical OPTI CCA
16.82 ± 0.65	56.23 ± 2.17	78.07 ± 4.41	21.99 ± 0.99	36.50 ± 0.96	n = 21	[BYS] Siemens Rapid Point 405
17.21 ± 1.08	54.92 ± 1.71	76.02 ± 2.96	21.81 ± 1.08	36.65 ± 1.67	n = 13	[BYQ] Siemens Rapid Point 500
15.44 ± 0.63	51.15 ± 1.36	71.84 ± 1.96	20.32 ± 0.79	33.40 ± 0.67	n = 19	[BYT] Siemens RapidLab 1200 Series
18.00 ± 0.57	48.58 ± 0.85	66.60 ± 1.85	21.28 ± 0.46	32.52 ± 0.51	n = 26	[IAA] i-STAT
15.64 ± 0.76	56.24 ± 1.69	70.68 ± 2.09	20.87 ± 0.50	36.77 ± 1.06	n = 13	[MAA] IL Gem Premier 3000
16.00 ± 0.00	52.61 ± 1.82	66.51 ± 1.83	20.75 ± 0.56	35.33 ± 1.11	n = 19	[MAC] IL Gem Premier 4000
15.83 ± 0.57	56.78 ± 0.92	70.47 ± 1.62	21.00 ± 0.60	36.92 ± 1.05	n = 11	[MAD] IL Gem Premier 3500
16.95 ± 0.42	51.74 ± 1.09	67.27 ± 3.02	22.21 ± 1.04	35.51 ± 0.64	n = 5	[NOG] NOVA Critical Care Xpress
15.80 ± 0.87	54.67 ± 1.52	77.49 ± 3.50	21.40 ± 1.03	36.30 ± 0.90	n = 19	[RAX] Radiometer ABL 80 Flex
17.31 ± 0.39	51.90 ± 0.46	68.31 ± 1.71	22.06 ± 0.23	35.84 ± 0.11	n = 5	[RAY] Radiometer ABL 90 Flex
16.93 ± 0.45	51.85 ± 0.96	69.72 ± 1.74	22.08 ± 0.47	35.86 ± 0.72	n = 53	[RAP] Radiometer ABL800 series
17.28 ± 0.65	54.60 ± 0.35	70.16 ± 1.38	22.74 ± 0.57	36.94 ± 0.54	n = 6	[ROW] Roche OMNI/Cobas series

Summary of Participant Performance (Mean and Standard Deviation)

Po2 (mmHg)

Specimen: G51	Specimen: G52	Specimen: G53	Specimen: G54	Specimen: G55	Number	[Code] Instrument
191.48 ± 9.40	139.21 ± 5.88	115.35 ± 6.39	128.02 ± 5.67	90.96 ± 6.97	n = 224	[ ] All Instruments
185.22 ± 8.29	132.39 ± 8.13	114.31 ± 6.63	124.92 ± 6.60	91.24 ± 3.04	n = 6	[AVQ] Opti Medical OPTI CCA
193.31 ± 5.83	137.15 ± 2.94	113.94 ± 2.27	126.68 ± 2.83	91.90 ± 3.45	n = 21	[BYS] Siemens Rapid Point 405
189.62 ± 6.55	134.15 ± 3.81	111.73 ± 2.94	123.94 ± 2.97	88.03 ± 1.60	n = 13	[BYQ] Siemens Rapid Point 500
195.00 ± 5.16	133.93 ± 4.01	108.07 ± 3.83	121.63 ± 4.03	83.63 ± 5.46	n = 19	[BYT] Siemens RapidLab 1200 Series
176.85 ± 6.49	138.99 ± 5.30	120.42 ± 6.16	125.68 ± 4.72	97.17 ± 6.36	n = 26	[IAA] i-STAT
200.20 ± 5.05	146.41 ± 2.45	117.55 ± 2.47	132.94 ± 2.61	88.42 ± 1.54	n = 13	[MAA] IL Gem Premier 3000
198.84 ± 6.69	144.30 ± 4.73	118.88 ± 4.59	132.51 ± 3.28	92.90 ± 4.24	n = 19	[MAC] IL Gem Premier 4000
201.87 ± 5.98	146.21 ± 4.21	117.11 ± 4.29	134.76 ± 2.94	89.68 ± 2.12	n = 11	[MAD] IL Gem Premier 3500
200.83 ± 4.11	140.00 ± 1.53	112.80 ± 1.49	129.42 ± 1.87	85.38 ± 1.11	n = 5	[NOG] NOVA Critical Care Xpress
182.02 ± 8.90	132.97 ± 4.76	105.15 ± 4.95	121.95 ± 3.86	79.35 ± 3.71	n = 19	[RAX] Radiometer ABL 80 Flex
195.18 ± 1.91	137.10 ± 1.83	108.00 ± 1.54	123.86 ± 1.27	77.58 ± 1.05	n = 5	[RAY] Radiometer ABL 90 Flex
190.47 ± 5.05	139.74 ± 2.99	117.38 ± 2.74	130.26 ± 2.80	94.23 ± 2.01	n = 53	[RAP] Radiometer ABL800 series
192.27 ± 5.18	149.32 ± 4.07	136.66 ± 3.91	134.98 ± 2.78	109.22 ± 7.27	n = 6	[ROW] Roche OMNI/Cobas series

Summary of Participant Performance (Mean and Standard Deviation)

Glucose (mg/dL)

Specimen: G51	Specimen: G52	Specimen: G53	Specimen: G54	Specimen: G55	Number	[Code] Instrument or Reagent System
38.4 ± 2.15	157.4 ± 6.33	371.3 ± 11.95	51.2 ± 2.93	225.9 ± 7.33	n = 67	[ ] All Instruments
36.3 ± 0.51	161.4 ± 1.02	383.5 ± 2.74	51.0 ± 0.90	231.7 ± 1.37	n = 3	[BYS] Siemens Rapid Point 405
39.0 ± 0.90	153.5 ± 1.86	357.9 ± 11.96	51.0 ± 0.00	217.1 ± 3.16	n = 6	[BYT] Siemens RapidLab 1200 Series
38.1 ± 0.63	152.8 ± 1.16	364.9 ± 4.24	49.8 ± 0.65	222.6 ± 2.38	n = 9	[IAA] i-STAT
35.0 ± 1.65	149.0 ± 4.18	366.6 ± 3.22	44.8 ± 1.96	218.6 ± 5.63	n = 4	[MAA] IL Gem Premier 3000
35.0 ± 0.00	147.0 ± 1.00	363.7 ± 5.86	45.5 ± 0.83	217.4 ± 1.09	n = 5	[MAC] IL Gem Premier 4000
39.1 ± 3.06	164.7 ± 10.96	407.1 ± 10.38	49.8 ± 0.41	238.7 ± 10.41	n = 4	[NOG] NOVA Critical Care Xpress
39.1 ± 1.39	161.4 ± 2.82	376.1 ± 6.63	53.0 ± 1.82	229.5 ± 3.91	n = 26	[RAP] Radiometer ABL800 series

Sodium (mmol/L)

Specimen: G51	Specimen: G52	Specimen: G53	Specimen: G54	Specimen: G55	Number	[Code] Instrument or Reagent System
158.2 ± 1.64	119.2 ± 2.11	149.3 ± 2.14	152.4 ± 1.89	132.5 ± 2.24	n = 86	[ ] All Instruments
158.4 ± 1.02	116.3 ± 0.51	148.0 ± 0.00	151.4 ± 1.02	130.6 ± 1.02	n = 3	[BYS] Siemens Rapid Point 405
158.3 ± 1.82	116.1 ± 0.15	147.9 ± 1.81	151.1 ± 1.42	129.6 ± 0.47	n = 3	[BYQ] Siemens Rapid Point 500
156.4 ± 0.70	117.0 ± 0.00	145.5 ± 0.70	150.0 ± 0.69	129.9 ± 0.55	n = 9	[BYT] Siemens RapidLab 1200 Series
159.7 ± 0.69	122.2 ± 0.62	152.3 ± 0.51	155.7 ± 0.51	136.0 ± 0.79	n = 11	[IAA] i-STAT
161.3 ± 2.47	122.2 ± 1.27	150.7 ± 0.90	155.1 ± 1.13	134.2 ± 0.41	n = 4	[MAA] IL Gem Premier 3000
156.8 ± 0.50	120.6 ± 0.67	150.3 ± 0.87	152.0 ± 0.65	134.0 ± 0.00	n = 11	[MAC] IL Gem Premier 4000
156.5 ± 1.22	117.5 ± 1.22	149.0 ± 0.75	152.2 ± 1.46	130.2 ± 0.41	n = 4	[NOG] NOVA Critical Care Xpress
160.0 ± 0.00	119.0 ± 0.00	150.7 ± 0.51	154.0 ± 0.00	133.3 ± 0.51	n = 3	[RAY] Radiometer ABL 90 Flex
158.4 ± 0.95	118.8 ± 0.64	148.5 ± 0.98	151.9 ± 0.86	131.9 ± 0.82	n = 28	[RAP] Radiometer ABL800 series

Potassium (mmol/L)

Specimen: G51	Specimen: G52	Specimen: G53	Specimen: G54	Specimen: G55	Number	[Code] Instrument or Reagent System
2.31 ± 0.10	2.52 ± 0.08	6.10 ± 0.11	6.65 ± 0.12	4.22 ± 0.06	n = 87	[ ] All Instruments
2.30 ± 0.00	2.50 ± 0.00	6.07 ± 0.05	6.63 ± 0.05	4.23 ± 0.05	n = 3	[BYS] Siemens Rapid Point 405
2.30 ± 0.00	2.50 ± 0.00	6.06 ± 0.05	6.60 ± 0.00	4.22 ± 0.04	n = 5	[BYQ] Siemens Rapid Point 500
2.23 ± 0.05	2.40 ± 0.00	6.11 ± 0.10	6.77 ± 0.10	4.20 ± 0.00	n = 9	[BYT] Siemens RapidLab 1200 Series
2.30 ± 0.00	2.50 ± 0.00	6.00 ± 0.00	6.56 ± 0.06	4.20 ± 0.00	n = 11	[IAA] i-STAT
2.20 ± 0.00	2.40 ± 0.00	5.98 ± 0.04	6.57 ± 0.16	4.10 ± 0.00	n = 4	[MAA] IL Gem Premier 3000
2.20 ± 0.00	2.50 ± 0.00	6.24 ± 0.09	6.70 ± 0.00	4.28 ± 0.05	n = 10	[MAC] IL Gem Premier 4000
2.40 ± 0.00	2.60 ± 0.00	6.30 ± 0.00	6.95 ± 0.06	4.30 ± 0.00	n = 4	[NOG] NOVA Critical Care Xpress
2.37 ± 0.05	2.53 ± 0.05	5.97 ± 0.05	6.50 ± 0.00	4.20 ± 0.00	n = 3	[RAY] Radiometer ABL 90 Flex
2.39 ± 0.04	2.58 ± 0.04	6.10 ± 0.00	6.64 ± 0.06	4.23 ± 0.05	n = 28	[RAP] Radiometer ABL800 series

Summary of Participant Performance (Mean and Standard Deviation)

Chloride (mmol/L)

Specimen: G51	Specimen: G52	Specimen: G53	Specimen: G54	Specimen: G55	Number	[Code]	Instrument or Reagent System
110.5 ± 3.66	82.4 ± 3.32	127.6 ± 3.22	116.2 ± 3.27	97.0 ± 3.12	n = 58	[ ]	All Instruments
111.0 ± 0.00	83.0 ± 0.00	131.4 ± 1.02	117.7 ± 0.51	97.7 ± 0.51	n = 3	[BYS]	Siemens Rapid Point 405
109.7 ± 1.37	83.6 ± 1.02	128.2 ± 2.36	115.2 ± 1.54	97.7 ± 1.37	n = 3	[BYQ]	Siemens Rapid Point 500
113.6 ± 1.09	86.6 ± 0.55	131.2 ± 3.18	118.7 ± 1.38	100.0 ± 0.00	n = 5	[BYT]	Siemens RapidLab 1200 Series
104.8 ± 0.47	76.8 ± 0.47	124.8 ± 0.66	110.0 ± 0.00	91.0 ± 0.47	n = 7	[IAA]	i-STAT
116.3 ± 0.51	84.5 ± 0.57	126.0 ± 0.55	119.8 ± 0.73	99.3 ± 0.51	n = 6	[MAC]	IL Gem Premier 4000
114.5 ± 2.30	88.3 ± 0.82	133.7 ± 0.90	120.0 ± 0.75	101.5 ± 2.17	n = 4	[NOG]	NOVA Critical Care Xpress
109.2 ± 0.64	81.3 ± 0.78	127.4 ± 1.05	115.0 ± 1.02	95.9 ± 0.93	n = 22	[RAP]	Radiometer ABL800 series

Ionized Calcium (mmol/L)

Specimen: G51	Specimen: G52	Specimen: G53	Specimen: G54	Specimen: G55	Number	[Code]	Instrument or Reagent System
0.835 ± 0.053	1.001 ± 0.028	1.783 ± 0.063	0.545 ± 0.060	1.120 ± 0.033	n = 92	[ ]	All Instruments
0.819 ± 0.013	0.992 ± 0.013	1.721 ± 0.027	0.506 ± 0.013	1.098 ± 0.004	n = 5	[BYS]	Siemens Rapid Point 405
0.800 ± 0.006	0.988 ± 0.016	1.722 ± 0.018	0.517 ± 0.035	1.092 ± 0.019	n = 5	[BYQ]	Siemens Rapid Point 500
0.859 ± 0.029	0.983 ± 0.019	1.692 ± 0.036	0.564 ± 0.034	1.059 ± 0.027	n = 12	[BYT]	Siemens RapidLab 1200 Series
0.785 ± 0.012	0.991 ± 0.019	1.789 ± 0.034	0.494 ± 0.007	1.130 ± 0.013	n = 8	[IAA]	i-STAT
0.800 ± 0.000	1.000 ± 0.000	1.832 ± 0.004	0.500 ± 0.000	1.125 ± 0.011	n = 5	[MAA]	IL Gem Premier 3000
0.770 ± 0.000	0.994 ± 0.011	1.785 ± 0.019	0.472 ± 0.006	1.125 ± 0.012	n = 11	[MAC]	IL Gem Premier 4000
0.843 ± 0.014	0.994 ± 0.010	1.732 ± 0.068	0.575 ± 0.019	1.097 ± 0.023	n = 3	[NOG]	NOVA Critical Care Xpress
0.815 ± 0.006	0.985 ± 0.006	1.702 ± 0.013	0.548 ± 0.004	1.100 ± 0.011	n = 4	[RAY]	Radiometer ABL 90 Flex
0.888 ± 0.015	1.030 ± 0.014	1.821 ± 0.019	0.606 ± 0.026	1.142 ± 0.016	n = 27	[RAP]	Radiometer ABL800 series
0.813 ± 0.014	0.967 ± 0.014	1.820 ± 0.018	0.503 ± 0.014	1.104 ± 0.010	n = 3	[ROW]	Roche OMNI/Cobas series

Ionized Magnesium (mmol/L)

Specimen: G51	Specimen: G52	Specimen: G53	Specimen: G54	Specimen: G55	Number	[Code]	Instrument or Reagent System
1.076 ± 0.172	0.867 ± 0.042	0.943 ± 0.702	0.795 ± 0.036	0.600 ± 0.018	n = 3	[ ]	All Instruments

Lactate (mmol/L)

Specimen: G51	Specimen: G52	Specimen: G53	Specimen: G54	Specimen: G55	Number	[Code]	Instrument or Reagent System
0.91 ± 0.08	5.52 ± 0.23	9.65 ± 0.59	1.87 ± 0.10	6.47 ± 0.26	n = 67	[ ]	All Instruments
1.04 ± 0.05	5.80 ± 0.13	9.99 ± 0.41	2.00 ± 0.00	6.91 ± 0.15	n = 6	[BYQ]	Siemens Rapid Point 500
1.00 ± 0.00	5.55 ± 0.06	9.89 ± 0.61	1.98 ± 0.04	6.52 ± 0.04	n = 4	[BYT]	Siemens RapidLab 1200 Series
0.90 ± 0.00	5.60 ± 0.07	9.44 ± 0.19	1.90 ± 0.00	6.50 ± 0.07	n = 10	[IAA]	i-STAT
0.80 ± 0.00	5.36 ± 0.06	9.34 ± 0.11	1.80 ± 0.00	6.38 ± 0.08	n = 5	[MAA]	IL Gem Premier 3000
0.86 ± 0.06	4.85 ± 0.08	8.54 ± 0.11	1.70 ± 0.00	5.81 ± 0.13	n = 5	[MAC]	IL Gem Premier 4000
0.90 ± 0.09	5.72 ± 0.24	9.67 ± 0.97	2.00 ± 0.00	6.53 ± 0.23	n = 3	[NOG]	NOVA Critical Care Xpress
0.95 ± 0.06	5.42 ± 0.21	10.71 ± 0.48	1.85 ± 0.06	6.40 ± 0.17	n = 4	[RAY]	Radiometer ABL 90 Flex
0.89 ± 0.05	5.50 ± 0.15	9.87 ± 0.31	1.85 ± 0.07	6.44 ± 0.19	n = 23	[RAP]	Radiometer ABL800 series