

Blood pH and Gas/Chemistry Educational Proficiency Test Program

Statistical Summary – July 2014 (Event 14-2)

This statistical report summarizes participant data for the five Blood pH and Gas/Chemistry proficiency survey specimens shipped July 7, 2014. Test specimens were commercially prepared and contained carbon dioxide and oxygen balanced with nitrogen in a physiologically buffered matrix. Five specimens (G46, G47, G48, G49, G50) 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.

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: G46	Specimen: G47	Specimen: G48	Specimen: G49	Specimen: G50	Number	[Code]	Instrument
7.338 ± 0.015	7.586 ± 0.025	7.240 ± 0.014	7.139 ± 0.023	6.987 ± 0.023	n = 219	[---]	All Instruments
7.330 ± 0.000	7.571 ± 0.011	7.247 ± 0.005	7.160 ± 0.000	7.039 ± 0.015	n = 6	[AVQ]	Opti Medical OPTI CCA
7.330 ± 0.006	7.588 ± 0.006	7.229 ± 0.005	7.112 ± 0.007	6.961 ± 0.010	n = 22	[BYS]	Siemens Rapid Point 405
7.334 ± 0.004	7.589 ± 0.005	7.231 ± 0.000	7.116 ± 0.004	6.962 ± 0.007	n = 12	[BYQ]	Siemens Rapid Point 500
7.361 ± 0.006	7.609 ± 0.007	7.263 ± 0.004	7.161 ± 0.004	7.005 ± 0.009	n = 19	[BYT]	Siemens RapidLab 1200 Series
7.360 ± 0.007	7.637 ± 0.005	7.262 ± 0.006	7.169 ± 0.004	7.000 ± 0.008	n = 23	[IAA]	i-STAT
7.348 ± 0.008	7.610 ± 0.005	7.241 ± 0.005	7.126 ± 0.008	6.999 ± 0.016	n = 13	[MAA]	IL Gem Premier 3000
7.344 ± 0.006	7.610 ± 0.000	7.237 ± 0.005	7.120 ± 0.006	6.996 ± 0.007	n = 12	[MAD]	IL Gem Premier 3500
7.328 ± 0.005	7.577 ± 0.008	7.230 ± 0.000	7.110 ± 0.006	6.992 ± 0.006	n = 17	[MAC]	IL Gem Premier 4000
7.363 ± 0.007	7.586 ± 0.009	7.269 ± 0.006	7.173 ± 0.005	7.030 ± 0.010	n = 5	[NOG]	NOVA Critical Care Xpress
7.338 ± 0.010	7.570 ± 0.011	7.239 ± 0.007	7.149 ± 0.007	6.955 ± 0.016	n = 19	[RAX]	Radiometer ABL 80 Flex
7.339 ± 0.006	7.580 ± 0.001	7.241 ± 0.004	7.140 ± 0.006	6.985 ± 0.010	n = 5	[RAY]	Radiometer ABL 90 Flex
7.329 ± 0.004	7.568 ± 0.004	7.235 ± 0.005	7.139 ± 0.003	6.982 ± 0.007	n = 53	[RAP]	Radiometer ABL800 series
7.338 ± 0.005	7.554 ± 0.007	7.246 ± 0.008	7.148 ± 0.010	7.031 ± 0.011	n = 6	[ROW]	Roche OMNI/Cobas series

Summary of Participant Performance (Mean and Standard Deviation)

Pco2 (mmHg)

Specimen: G46	Specimen: G47	Specimen: G48	Specimen: G49	Specimen: G50	Number	[Code]	Instrument
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43.70 ± 2.07	24.13 ± 1.16	52.89 ± 2.89	68.09 ± 4.17	70.88 ± 4.67	n = 219	[---]	All Instruments
43.76 ± 2.76	25.80 ± 1.00	52.94 ± 0.81	68.84 ± 1.24	68.76 ± 3.17	n = 6	[AVQ]	Opti Medical OPTI CCA
47.17 ± 1.68	24.52 ± 0.79	57.26 ± 2.21	76.60 ± 4.62	79.88 ± 4.75	n = 22	[BYS]	Siemens Rapid Point 405
46.61 ± 1.16	24.92 ± 0.76	56.03 ± 1.11	73.31 ± 2.79	78.80 ± 2.03	n = 12	[BYQ]	Siemens Rapid Point 500
43.17 ± 1.04	22.66 ± 0.41	51.67 ± 1.32	67.29 ± 2.06	72.33 ± 2.59	n = 19	[BYT]	Siemens RapidLab 1200 Series
40.78 ± 0.80	22.36 ± 0.46	49.18 ± 1.13	63.33 ± 1.61	67.67 ± 2.08	n = 23	[IAA]	i-STAT
44.42 ± 1.16	24.00 ± 0.51	55.80 ± 2.13	70.85 ± 1.88	69.14 ± 2.37	n = 13	[MAA]	IL Gem Premier 3000
45.00 ± 0.55	23.91 ± 0.66	56.02 ± 2.91	72.15 ± 1.71	70.30 ± 1.28	n = 12	[MAD]	IL Gem Premier 3500
42.76 ± 0.91	24.00 ± 0.00	52.10 ± 1.12	68.16 ± 1.01	66.01 ± 1.34	n = 17	[MAC]	IL Gem Premier 4000
42.33 ± 2.44	24.45 ± 0.75	51.11 ± 0.54	64.35 ± 0.43	68.34 ± 1.20	n = 5	[NOG]	NOVA Critical Care Xpress
44.23 ± 1.04	23.85 ± 0.88	54.39 ± 0.94	69.76 ± 1.81	75.71 ± 3.20	n = 19	[RAX]	Radiometer ABL 80 Flex
42.74 ± 0.65	24.03 ± 0.37	51.51 ± 0.56	65.03 ± 0.98	67.06 ± 1.69	n = 5	[RAY]	Radiometer ABL 90 Flex
43.16 ± 0.90	24.84 ± 0.54	51.89 ± 1.16	66.06 ± 1.38	70.19 ± 1.91	n = 53	[RAP]	Radiometer ABL800 series
45.31 ± 0.89	25.35 ± 0.72	54.55 ± 0.84	70.63 ± 0.97	70.05 ± 1.74	n = 6	[ROW]	Roche OMNI/Cobas series

Summary of Participant Performance (Mean and Standard Deviation)

Po2 (mmHg)

Specimen: G46	Specimen: G47	Specimen: G48	Specimen: G49	Specimen: G50	Number	[Code]	Instrument
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177.97 ± 7.78	76.08 ± 7.99	139.28 ± 5.88	164.81 ± 6.53	115.36 ± 6.36	n = 219	[---]	All Instruments
177.08 ± 6.26	79.14 ± 2.23	137.62 ± 3.51	162.28 ± 3.89	112.06 ± 3.98	n = 6	[AVQ]	Opti Medical OPTI CCA
180.20 ± 6.54	76.74 ± 3.82	137.64 ± 3.70	163.36 ± 4.86	114.86 ± 3.94	n = 22	[BYS]	Siemens Rapid Point 405
174.19 ± 4.79	73.61 ± 1.69	133.57 ± 1.55	157.98 ± 3.31	111.22 ± 2.23	n = 12	[BYQ]	Siemens Rapid Point 500
177.81 ± 6.28	66.99 ± 5.20	133.73 ± 4.51	163.78 ± 3.39	107.66 ± 3.18	n = 19	[BYT]	Siemens RapidLab 1200 Series
168.42 ± 4.52	83.37 ± 3.84	139.16 ± 5.02	160.29 ± 5.07	120.62 ± 4.84	n = 23	[IAA]	i-STAT
187.69 ± 4.29	74.41 ± 2.23	146.25 ± 2.36	173.64 ± 4.31	117.95 ± 2.08	n = 13	[MAA]	IL Gem Premier 3000
191.33 ± 2.10	74.00 ± 2.22	148.03 ± 2.92	176.17 ± 3.03	119.55 ± 1.50	n = 12	[MAD]	IL Gem Premier 3500
179.54 ± 5.07	74.20 ± 1.87	140.69 ± 2.79	165.92 ± 4.84	114.90 ± 3.79	n = 17	[MAC]	IL Gem Premier 4000
188.70 ± 7.63	66.23 ± 2.08	142.27 ± 3.93	173.60 ± 5.57	114.28 ± 3.19	n = 5	[NOG]	NOVA Critical Care Xpress
174.59 ± 6.06	61.15 ± 2.91	133.63 ± 3.27	161.75 ± 6.09	106.30 ± 3.35	n = 19	[RAX]	Radiometer ABL 80 Flex
175.77 ± 1.55	54.94 ± 1.43	132.48 ± 2.17	160.29 ± 1.99	102.36 ± 1.09	n = 5	[RAY]	Radiometer ABL 90 Flex
176.61 ± 4.68	79.82 ± 2.67	140.52 ± 3.00	164.83 ± 4.00	118.00 ± 2.60	n = 53	[RAP]	Radiometer ABL800 series
184.19 ± 6.04	94.30 ± 3.97	151.78 ± 3.78	172.40 ± 6.90	136.73 ± 3.90	n = 6	[ROW]	Roche OMNI/Cobas series

Summary of Participant Performance (Mean and Standard Deviation)

Glucose (mg/dL)

Specimen: G46	Specimen: G47	Specimen: G48	Specimen: G49	Specimen: G50	Number	[Code]	Instrument
193.0 ± 6.39	330.2 ± 10.60	159.4 ± 6.50	87.7 ± 5.04	374.1 ± 12.88	n = 64	[---]	All Instruments
198.6 ± 3.87	346.8 ± 5.00	163.9 ± 2.86	89.7 ± 1.37	392.5 ± 5.43	n = 3	[BYS]	Siemens Rapid Point 405
188.7 ± 3.19	312.0 ± 3.73	155.2 ± 0.81	86.8 ± 1.86	356.5 ± 8.41	n = 6	[BYT]	Siemens RapidLab 1200 Series
190.8 ± 1.20	333.6 ± 1.68	154.4 ± 0.98	83.7 ± 0.69	370.7 ± 2.58	n = 8	[IAA]	i-STAT
182.3 ± 8.71	334.0 ± 6.68	154.3 ± 4.21	78.3 ± 5.89	372.1 ± 6.38	n = 4	[MAA]	IL Gem Premier 3000
181.2 ± 4.89	322.7 ± 7.67	146.0 ± 2.70	78.6 ± 1.02	375.9 ± 3.72	n = 3	[MAD]	IL Gem Premier 3500
186.2 ± 2.68	326.5 ± 7.82	148.7 ± 2.47	79.2 ± 1.96	375.9 ± 4.76	n = 4	[MAC]	IL Gem Premier 4000
208.3 ± 9.30	341.8 ± 4.38	162.0 ± 3.49	89.0 ± 0.75	390.7 ± 3.33	n = 4	[NOG]	NOVA Critical Care Xpress
195.6 ± 3.70	330.5 ± 6.32	162.9 ± 2.93	91.1 ± 1.81	373.8 ± 10.83	n = 26	[RAP]	Radiometer ABL800 series

Sodium (mmol/L)

Specimen: G46	Specimen: G47	Specimen: G48	Specimen: G49	Specimen: G50	Number	[Code]	Instrument
127.7 ± 2.15	136.6 ± 2.31	119.1 ± 2.15	109.7 ± 1.43	149.2 ± 2.41	n = 83	[---]	All Instruments
125.2 ± 0.57	134.4 ± 0.47	116.2 ± 0.92	106.7 ± 0.51	147.7 ± 0.49	n = 3	[BYS]	Siemens Rapid Point 405
125.0 ± 0.00	133.7 ± 0.51	116.0 ± 0.00	106.7 ± 0.51	147.3 ± 0.51	n = 3	[BYQ]	Siemens Rapid Point 500
125.0 ± 0.00	133.4 ± 0.56	116.6 ± 0.56	109.0 ± 1.99	144.9 ± 0.79	n = 9	[BYT]	Siemens RapidLab 1200 Series
130.8 ± 0.73	140.1 ± 0.84	122.0 ± 0.64	110.5 ± 0.57	152.0 ± 0.84	n = 10	[IAA]	i-STAT
128.8 ± 0.41	138.5 ± 0.57	120.5 ± 0.57	110.0 ± 0.75	151.2 ± 2.58	n = 4	[MAA]	IL Gem Premier 3000
129.3 ± 0.51	139.0 ± 0.90	122.3 ± 3.37	110.4 ± 1.02	151.0 ± 0.90	n = 3	[MAD]	IL Gem Premier 3500
128.2 ± 0.73	137.6 ± 0.81	120.8 ± 0.48	110.6 ± 0.55	150.0 ± 0.00	n = 10	[MAC]	IL Gem Premier 4000
124.5 ± 1.23	133.3 ± 0.82	117.0 ± 0.75	108.7 ± 0.90	147.5 ± 1.22	n = 4	[NOG]	NOVA Critical Care Xpress
127.5 ± 0.95	136.1 ± 0.94	118.7 ± 1.00	109.4 ± 0.91	148.7 ± 1.19	n = 28	[RAP]	Radiometer ABL800 series

Potassium (mmol/L)

Specimen: G46	Specimen: G47	Specimen: G48	Specimen: G49	Specimen: G50	Number	[Code]	Instrument
3.77 ± 0.07	4.80 ± 0.08	2.53 ± 0.08	7.41 ± 0.17	6.08 ± 0.10	n = 84	[---]	All Instruments
3.75 ± 0.05	4.80 ± 0.00	2.49 ± 0.02	7.42 ± 0.04	6.10 ± 0.01	n = 3	[BYS]	Siemens Rapid Point 405
3.80 ± 0.00	4.80 ± 0.00	2.50 ± 0.00	7.34 ± 0.11	6.00 ± 0.00	n = 5	[BYQ]	Siemens Rapid Point 500
3.68 ± 0.05	4.80 ± 0.00	2.43 ± 0.07	7.56 ± 0.14	6.09 ± 0.08	n = 9	[BYT]	Siemens RapidLab 1200 Series
3.75 ± 0.06	4.76 ± 0.06	2.50 ± 0.00	7.20 ± 0.00	6.00 ± 0.00	n = 10	[IAA]	i-STAT
3.62 ± 0.04	4.68 ± 0.04	2.42 ± 0.04	7.35 ± 0.06	5.95 ± 0.06	n = 4	[MAA]	IL Gem Premier 3000
3.63 ± 0.05	4.70 ± 0.00	2.48 ± 0.15	7.43 ± 0.05	6.98 ± 1.79	n = 3	[MAD]	IL Gem Premier 3500
3.80 ± 0.00	4.90 ± 0.08	2.52 ± 0.04	7.64 ± 0.05	6.22 ± 0.09	n = 9	[MAC]	IL Gem Premier 4000
3.78 ± 0.04	4.90 ± 0.00	2.60 ± 0.00	7.65 ± 0.06	6.25 ± 0.06	n = 4	[NOG]	NOVA Critical Care Xpress
3.80 ± 0.00	4.81 ± 0.05	2.60 ± 0.00	7.39 ± 0.07	6.09 ± 0.06	n = 28	[RAP]	Radiometer ABL800 series

Summary of Participant Performance (Mean and Standard Deviation)

Chloride (mmol/L)

Specimen: G46	Specimen: G47	Specimen: G48	Specimen: G49	Specimen: G50	Number	[Code]	Instrument
89.9 ± 3.23	102.4 ± 3.07	82.6 ± 3.10	72.4 ± 2.74	128.2 ± 3.59	n = 55	[---]	All Instruments
90.0 ± 0.00	102.7 ± 0.51	83.0 ± 0.00	72.0 ± 0.00	130.6 ± 1.02	n = 3	[BYS]	Siemens Rapid Point 405
91.0 ± 0.00	103.3 ± 0.51	83.7 ± 0.51	73.3 ± 0.51	131.0 ± 0.90	n = 3	[BYQ]	Siemens Rapid Point 500
93.0 ± 0.00	105.4 ± 0.55	86.2 ± 0.80	75.4 ± 1.09	133.3 ± 3.39	n = 5	[BYT]	Siemens RapidLab 1200 Series
83.0 ± 0.00	97.0 ± 0.00	77.0 ± 0.55	69.0 ± 0.90	125.1 ± 0.59	n = 6	[IAA]	i-STAT
92.5 ± 0.57	105.4 ± 0.79	85.0 ± 0.00	74.7 ± 0.51	126.9 ± 1.80	n = 6	[MAC]	IL Gem Premier 4000
95.7 ± 0.90	108.5 ± 1.22	88.5 ± 1.23	78.0 ± 1.50	134.4 ± 1.90	n = 4	[NOG]	NOVA Critical Care Xpress
88.8 ± 1.08	101.5 ± 0.93	81.7 ± 1.00	71.5 ± 1.42	127.9 ± 1.76	n = 22	[RAP]	Radiometer ABL800 series

Ionized Calcium (mmol/L)

Specimen: G46	Specimen: G47	Specimen: G48	Specimen: G49	Specimen: G50	Number	[Code]	Instrument
1.276 ± 0.042	0.734 ± 0.045	1.004 ± 0.029	1.344 ± 0.045	1.778 ± 0.074	n = 89	[---]	All Instruments
1.230 ± 0.006	0.710 ± 0.017	0.980 ± 0.006	1.323 ± 0.011	1.699 ± 0.016	n = 5	[BYS]	Siemens Rapid Point 405
1.225 ± 0.011	0.706 ± 0.014	0.976 ± 0.011	1.320 ± 0.009	1.696 ± 0.014	n = 5	[BYQ]	Siemens Rapid Point 500
1.155 ± 0.028	0.733 ± 0.026	0.989 ± 0.012	1.287 ± 0.018	1.700 ± 0.034	n = 12	[BYT]	Siemens RapidLab 1200 Series
1.280 ± 0.000	0.694 ± 0.011	0.976 ± 0.008	1.302 ± 0.027	1.768 ± 0.038	n = 7	[IAA]	i-STAT
1.291 ± 0.013	0.693 ± 0.009	0.990 ± 0.011	1.357 ± 0.009	1.849 ± 0.029	n = 5	[MAA]	IL Gem Premier 3000
1.310 ± 0.009	0.693 ± 0.005	1.035 ± 0.082	1.370 ± 0.009	1.853 ± 0.014	n = 3	[MAD]	IL Gem Premier 3500
1.285 ± 0.009	0.699 ± 0.011	1.007 ± 0.008	1.372 ± 0.011	1.777 ± 0.018	n = 10	[MAC]	IL Gem Premier 4000
1.217 ± 0.023	0.745 ± 0.019	0.997 ± 0.014	1.315 ± 0.027	1.697 ± 0.014	n = 3	[NOG]	NOVA Critical Care Xpress
1.246 ± 0.010	0.720 ± 0.000	0.983 ± 0.005	1.323 ± 0.005	1.693 ± 0.005	n = 3	[RAY]	Radiometer ABL 90 Flex
1.299 ± 0.016	0.785 ± 0.020	1.032 ± 0.013	1.376 ± 0.018	1.821 ± 0.027	n = 27	[RAP]	Radiometer ABL800 series
1.272 ± 0.015	0.700 ± 0.009	0.960 ± 0.018	1.315 ± 0.036	1.808 ± 0.015	n = 3	[ROW]	Roche OMNI/Cobas series

Ionized Magnesium (mmol/L)

Specimen: G46	Specimen: G47	Specimen: G48	Specimen: G49	Specimen: G50	Number	[Code]	Instrument
0.195 ± 0.108	1.245 ± 0.097	0.915 ± 0.017	0.655 ± 0.040	1.330 ± 0.194	n = 2	[---]	All Instruments

Lactate (mmol/L)

Specimen: G46	Specimen: G47	Specimen: G48	Specimen: G49	Specimen: G50	Number	[Code]	Instrument
4.60 ± 0.24	9.10 ± 0.46	5.49 ± 0.25	3.69 ± 0.18	9.63 ± 0.50	n = 63	[---]	All Instruments
4.85 ± 0.13	9.59 ± 0.46	5.77 ± 0.21	3.84 ± 0.13	9.62 ± 0.74	n = 6	[BYQ]	Siemens Rapid Point 500
4.61 ± 0.34	8.94 ± 0.70	5.39 ± 0.31	3.73 ± 0.20	9.26 ± 1.05	n = 5	[BYT]	Siemens RapidLab 1200 Series
4.78 ± 0.04	9.08 ± 0.13	5.58 ± 0.08	3.83 ± 0.04	9.41 ± 0.08	n = 7	[IAA]	i-STAT
4.42 ± 0.27	9.56 ± 0.61	5.37 ± 0.20	3.55 ± 0.23	9.43 ± 0.41	n = 5	[MAA]	IL Gem Premier 3000
4.62 ± 0.15	9.39 ± 0.37	5.55 ± 0.19	3.80 ± 0.09	9.77 ± 0.23	n = 3	[MAD]	IL Gem Premier 3500
4.10 ± 0.08	8.05 ± 0.14	4.87 ± 0.13	3.30 ± 0.11	8.53 ± 0.18	n = 4	[MAC]	IL Gem Premier 4000
4.38 ± 0.24	9.01 ± 0.20	5.35 ± 0.19	3.63 ± 0.14	9.73 ± 0.14	n = 3	[NOG]	NOVA Critical Care Xpress
4.27 ± 0.05	9.09 ± 0.29	5.16 ± 0.10	3.40 ± 0.09	10.08 ± 0.41	n = 3	[RAY]	Radiometer ABL 90 Flex
4.60 ± 0.09	9.07 ± 0.33	5.50 ± 0.15	3.68 ± 0.08	9.82 ± 0.29	n = 23	[RAP]	Radiometer ABL800 series