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Blood pH and Gases Proficiency Test Program

Statistical Summary – July 2016 (Event 16-2)

This report summarizes participant data for the five Blood pH and Gases proficiency survey specimens shipped July 11, 2016. Test specimens were commercially prepared and contained carbon dioxide and oxygen balanced with nitrogen in a physiologically buffered matrix. Five specimens (G76, G77, G78, G79, G80) 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. Questions regarding this report should be directed to the Clinical Chemistry Section at (518) 474-5582 or via e-mail at clinchem@wadsworth.org.

The next scheduled proficiency testing in Blood pH and Gases will be shipped on November 7, 2016. After that test event, the New York State Clinical Laboratory Evaluation Program will no longer provide proficiency testing in this category.

Permitted laboratories will be required to enroll in a CMS-approved proficiency program for tests offered by the laboratory that are described in 42 CFR 493 subparts H and I.

For all other tests, laboratories must comply with the New York State Clinical Laboratory Evaluation Program Quality Assessment Sustaining Standard of Practice 3 (QA S3): Ongoing Verification of Examination Accuracy. Laboratories may choose to comply with QA S3 through a proficiency testing program or other process, but must have policies and procedures in place describing that process. Documentation of adherence to this standard, including internal or external proficiency testing results as applicable, will be reviewed on survey.

Please note that the discontinuation of proficiency testing does not change the process for adding or deleting tests and other New York State regulatory requirements including certificates of qualification and permit reapplication.

If you have questions regarding this proficiency test program change, please contact: PTadmin@health.ny.gov

Disclaimer:

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.

Summary of Participant Performance (Mean and Standard Deviation)

pH

Specimen: G76	Specimen: G77	Specimen: G78	Specimen: G79	Specimen: G80	Number	[Code]	Instrument or Reagent System
7.431 ± 0.017	6.989 ± 0.026	7.722 ± 0.043	7.334 ± 0.014	7.582 ± 0.024	n = 132	[---]	All Instruments
7.472 ± 0.009	7.012 ± 0.011	7.799 ± 0.006	7.376 ± 0.010	7.637 ± 0.008	n = 15	[IAA]	Abbott i-STAT
7.446 ± 0.006	6.998 ± 0.008	7.770 ± 0.000	7.340 ± 0.000	7.604 ± 0.006	n = 5	[MAA]	IL Gem Premier 3000
7.444 ± 0.006	7.003 ± 0.012	7.774 ± 0.009	7.342 ± 0.005	7.606 ± 0.007	n = 10	[MAD]	IL Gem Premier 3500
7.437 ± 0.007	6.992 ± 0.007	7.758 ± 0.006	7.337 ± 0.005	7.592 ± 0.006	n = 18	[MAC]	IL Gem Premier 4000
7.432 ± 0.008	7.038 ± 0.024	7.725 ± 0.022	7.328 ± 0.011	7.570 ± 0.009	n = 4	[AVQ]	Opti Medical OPTI CCA
7.420 ± 0.010	6.958 ± 0.020	7.693 ± 0.012	7.333 ± 0.011	7.561 ± 0.005	n = 14	[RAX]	Radiometer ABL 80 Flex
7.429 ± 0.003	6.980 ± 0.025	7.712 ± 0.008	7.329 ± 0.003	7.580 ± 0.008	n = 4	[RAY]	Radiometer ABL 90 Flex
7.417 ± 0.005	6.982 ± 0.007	7.696 ± 0.005	7.327 ± 0.004	7.567 ± 0.005	n = 28	[RAP]	Radiometer ABL800 series
7.424 ± 0.006	7.030 ± 0.007	7.678 ± 0.014	7.338 ± 0.008	7.554 ± 0.008	n = 5	[ROW]	Roche OMNI/Cobas series
7.424 ± 0.005	6.956 ± 0.006	7.703 ± 0.007	7.324 ± 0.006	7.575 ± 0.009	n = 7	[BYS]	Siemens Rapid Point 405
7.423 ± 0.006	6.964 ± 0.007	7.703 ± 0.006	7.326 ± 0.006	7.577 ± 0.007	n = 14	[BYQ]	Siemens Rapid Point 500
7.446 ± 0.010	7.007 ± 0.010	7.721 ± 0.017	7.358 ± 0.017	7.604 ± 0.015	n = 6	[BYT]	Siemens RapidLab 1200 Series

Pco2 (mmHg)

Specimen: G76	Specimen: G77	Specimen: G78	Specimen: G79	Specimen: G80	Number	[Code]	Instrument or Reagent System
36.28 ± 1.67	70.42 ± 5.21	17.04 ± 1.40	44.28 ± 2.35	24.36 ± 1.07	n = 132	[---]	All Instruments
32.17 ± 1.10	63.69 ± 2.76	18.50 ± 1.22	40.12 ± 1.52	22.85 ± 1.00	n = 15	[IAA]	Abbott i-STAT
37.24 ± 0.80	72.17 ± 1.07	15.63 ± 0.55	46.86 ± 1.27	24.00 ± 0.00	n = 5	[MAA]	IL Gem Premier 3000
37.01 ± 0.74	71.07 ± 1.87	15.37 ± 0.55	46.11 ± 1.84	24.11 ± 0.74	n = 10	[MAD]	IL Gem Premier 3500
35.66 ± 0.78	67.19 ± 2.02	16.18 ± 0.54	44.49 ± 1.49	24.00 ± 0.55	n = 18	[MAC]	IL Gem Premier 4000
35.14 ± 1.02	69.05 ± 4.12	19.75 ± 0.49	43.31 ± 2.34	26.31 ± 1.11	n = 4	[AVQ]	Opti Medical OPTI CCA
36.56 ± 1.00	75.85 ± 4.21	16.58 ± 1.02	45.30 ± 1.29	24.28 ± 0.72	n = 14	[RAX]	Radiometer ABL 80 Flex
35.54 ± 0.48	66.27 ± 5.05	16.74 ± 0.35	42.51 ± 0.93	23.64 ± 0.35	n = 4	[RAY]	Radiometer ABL 90 Flex
36.27 ± 0.51	69.61 ± 1.41	17.03 ± 0.35	43.31 ± 0.97	24.95 ± 0.48	n = 28	[RAP]	Radiometer ABL800 series
37.19 ± 0.96	68.38 ± 2.81	17.67 ± 1.59	45.28 ± 0.46	24.94 ± 0.53	n = 5	[ROW]	Roche OMNI/Cobas series
38.13 ± 0.77	77.91 ± 2.49	18.13 ± 0.63	46.64 ± 1.14	25.24 ± 0.96	n = 7	[BYS]	Siemens Rapid Point 405
38.30 ± 1.20	77.96 ± 4.34	17.70 ± 1.10	46.20 ± 1.47	24.80 ± 0.91	n = 14	[BYQ]	Siemens Rapid Point 500
35.05 ± 0.87	72.09 ± 3.18	15.34 ± 0.52	42.00 ± 1.79	22.03 ± 1.01	n = 6	[BYT]	Siemens RapidLab 1200 Series

Summary of Participant Performance (Mean and Standard Deviation)

Po2 (mmHg)

Specimen: G76	Specimen: G77	Specimen: G78	Specimen: G79	Specimen: G80	Number	[Code]	Instrument or Reagent System
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93.41 ± 6.77	115.13 ± 5.60	191.51 ± 7.83	178.83 ± 7.71	75.74 ± 7.45	n = 132	[---]	All Instruments
98.96 ± 5.97	120.38 ± 4.21	181.95 ± 5.44	173.93 ± 8.15	82.89 ± 3.84	n = 15	[IAA]	Abbott i-STAT
92.42 ± 1.33	117.39 ± 1.89	202.72 ± 3.93	190.27 ± 4.70	74.58 ± 1.98	n = 5	[MAA]	IL Gem Premier 3000
93.02 ± 4.05	115.71 ± 2.97	200.53 ± 4.79	188.91 ± 4.11	72.41 ± 2.24	n = 10	[MAD]	IL Gem Premier 3500
93.87 ± 2.28	115.85 ± 2.88	196.13 ± 5.82	184.28 ± 6.88	75.13 ± 1.60	n = 18	[MAC]	IL Gem Premier 4000
90.64 ± 1.37	113.87 ± 4.32	183.46 ± 5.56	174.08 ± 9.59	79.27 ± 0.58	n = 4	[AVQ]	Opti Medical OPTI CCA
77.23 ± 3.33	102.56 ± 4.76	186.74 ± 4.83	172.79 ± 4.53	59.20 ± 3.63	n = 14	[RAX]	Radiometer ABL 80 Flex
82.06 ± 0.99	111.53 ± 5.78	197.88 ± 3.81	184.04 ± 4.92	59.52 ± 3.54	n = 4	[RAY]	Radiometer ABL 90 Flex
96.40 ± 2.45	116.94 ± 2.36	191.22 ± 3.44	178.67 ± 2.87	77.76 ± 1.97	n = 28	[RAP]	Radiometer ABL800 series
107.50 ± 6.55	135.68 ± 4.26	195.72 ± 5.80	182.31 ± 6.23	92.38 ± 4.86	n = 5	[ROW]	Roche OMNI/Cobas series
94.02 ± 2.41	113.69 ± 1.92	192.69 ± 4.92	176.82 ± 3.80	75.09 ± 0.77	n = 7	[BYS]	Siemens Rapid Point 405
92.71 ± 2.67	113.45 ± 2.72	189.24 ± 5.28	175.55 ± 4.08	76.07 ± 3.34	n = 14	[BYQ]	Siemens Rapid Point 500
87.89 ± 4.05	108.93 ± 4.26	191.92 ± 9.49	178.58 ± 9.21	73.51 ± 9.81	n = 6	[BYT]	Siemens RapidLab 1200 Series

Glucose (mg/dL)

Specimen: G76	Specimen: G77	Specimen: G78	Specimen: G79	Specimen: G80	Number	[Code]	Instrument or Reagent System
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229.1 ± 6.83	378.2 ± 17.61	39.0 ± 2.16	194.0 ± 5.71	334.5 ± 14.56	n = 33	[---]	All Instruments
229.2 ± 1.07	377.5 ± 2.79	39.4 ± 0.55	193.5 ± 1.23	337.0 ± 0.00	n = 5	[IAA]	Abbott i-STAT
235.5 ± 5.51	400.0 ± 7.33	37.5 ± 2.03	200.0 ± 3.19	353.6 ± 3.16	n = 7	[MAC]	IL Gem Premier 4000
227.1 ± 4.63	368.8 ± 11.72	39.7 ± 2.07	193.1 ± 4.30	328.0 ± 8.08	n = 14	[RAP]	Radiometer ABL800 series
217.0 ± 4.60	358.7 ± 3.16	39.9 ± 2.86	186.0 ± 4.51	314.5 ± 1.86	n = 3	[BYT]	Siemens RapidLab 1200 Series

Sodium (mmol/L)

Specimen: G76	Specimen: G77	Specimen: G78	Specimen: G79	Specimen: G80	Number	[Code]	Instrument or Reagent System
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133.0 ± 1.82	149.3 ± 1.88	158.0 ± 1.48	127.9 ± 1.59	137.0 ± 1.81	n = 42	[---]	All Instruments
135.0 ± 0.47	151.2 ± 0.47	158.6 ± 0.56	129.6 ± 0.56	139.2 ± 0.66	n = 7	[IAA]	Abbott i-STAT
133.0 ± 0.00	149.3 ± 0.90	156.9 ± 0.60	128.1 ± 0.85	137.4 ± 0.72	n = 8	[MAC]	IL Gem Premier 4000
133.0 ± 1.26	148.8 ± 0.44	158.5 ± 1.28	127.6 ± 1.10	136.4 ± 1.18	n = 15	[RAP]	Radiometer ABL800 series
130.0 ± 0.75	145.2 ± 0.41	156.0 ± 0.75	125.2 ± 0.41	134.0 ± 0.75	n = 4	[BYT]	Siemens RapidLab 1200 Series

Summary of Participant Performance (Mean and Standard Deviation)

Potassium (mmol/L)

Specimen: G76	Specimen: G77	Specimen: G78	Specimen: G79	Specimen: G80	Number	[Code]	Instrument or Reagent System
4.25 ± 0.06	6.14 ± 0.10	2.32 ± 0.08	3.78 ± 0.06	4.83 ± 0.06	n = 44	[---]	All Instruments
4.20 ± 0.00	6.06 ± 0.06	2.30 ± 0.00	3.78 ± 0.05	4.80 ± 0.00	n = 7	[IAA]	Abbott i-STAT
4.30 ± 0.00	6.26 ± 0.07	2.30 ± 0.00	3.80 ± 0.00	4.90 ± 0.00	n = 9	[MAC]	IL Gem Premier 4000
4.27 ± 0.06	6.10 ± 0.00	2.40 ± 0.00	3.80 ± 0.00	4.83 ± 0.05	n = 15	[RAP]	Radiometer ABL800 series
4.25 ± 0.05	6.09 ± 0.02	2.32 ± 0.03	3.76 ± 0.05	4.84 ± 0.05	n = 3	[BYQ]	Siemens Rapid Point 500
4.22 ± 0.04	6.30 ± 0.44	2.25 ± 0.23	3.68 ± 0.04	4.80 ± 0.00	n = 4	[BYT]	Siemens RapidLab 1200 Series

Chloride (mmol/L)

Specimen: G76	Specimen: G77	Specimen: G78	Specimen: G79	Specimen: G80	Number	[Code]	Instrument or Reagent System
96.9 ± 3.69	127.3 ± 3.72	110.5 ± 4.86	89.7 ± 3.54	102.5 ± 3.98	n = 29	[---]	All Instruments
91.0 ± 0.00	125.2 ± 0.80	103.6 ± 0.55	83.6 ± 0.55	95.6 ± 1.09	n = 5	[IAA]	Abbott i-STAT
102.0 ± 0.00	132.1 ± 1.13	118.3 ± 0.90	94.0 ± 0.00	107.0 ± 0.00	n = 4	[MAC]	IL Gem Premier 4000
96.7 ± 0.82	126.1 ± 3.52	110.6 ± 1.12	89.5 ± 0.78	102.1 ± 1.05	n = 12	[RAP]	Radiometer ABL800 series

Ionized Calcium (mmol/L)

Specimen: G76	Specimen: G77	Specimen: G78	Specimen: G79	Specimen: G80	Number	[Code]	Instrument or Reagent System
1.125 ± 0.041	1.791 ± 0.071	0.831 ± 0.049	1.281 ± 0.051	0.730 ± 0.038	n = 46	[---]	All Instruments
1.124 ± 0.006	1.794 ± 0.016	0.777 ± 0.005	1.295 ± 0.011	0.700 ± 0.005	n = 7	[IAA]	Abbott i-STAT
1.144 ± 0.014	1.816 ± 0.015	0.798 ± 0.005	1.323 ± 0.011	0.710 ± 0.000	n = 10	[MAC]	IL Gem Premier 4000
1.157 ± 0.019	1.837 ± 0.025	0.895 ± 0.022	1.290 ± 0.026	0.785 ± 0.013	n = 12	[RAP]	Radiometer ABL800 series
1.120 ± 0.009	1.845 ± 0.045	0.807 ± 0.005	1.274 ± 0.010	0.700 ± 0.000	n = 3	[ROW]	Roche OMNI/Cobas series
1.094 ± 0.006	1.705 ± 0.016	0.838 ± 0.016	1.226 ± 0.011	0.727 ± 0.024	n = 5	[BYQ]	Siemens Rapid Point 500
1.050 ± 0.000	1.669 ± 0.021	0.861 ± 0.017	1.126 ± 0.017	0.745 ± 0.022	n = 5	[BYT]	Siemens RapidLab 1200 Series

Lactate (mmol/L)

Specimen: G76	Specimen: G77	Specimen: G78	Specimen: G79	Specimen: G80	Number	[Code]	Instrument or Reagent System
6.30 ± 0.29	9.49 ± 0.61	0.90 ± 0.00	4.52 ± 0.21	9.09 ± 0.38	n = 33	[---]	All Instruments
6.47 ± 0.09	9.61 ± 0.13	0.90 ± 0.00	4.74 ± 0.05	9.26 ± 0.17	n = 5	[IAA]	Abbott i-STAT
5.97 ± 0.14	8.96 ± 0.16	0.90 ± 0.00	4.30 ± 0.00	8.75 ± 0.17	n = 9	[MAC]	IL Gem Premier 4000
6.31 ± 0.20	9.80 ± 0.40	0.90 ± 0.00	4.54 ± 0.10	8.98 ± 0.42	n = 11	[RAP]	Radiometer ABL800 series