



Technical Memorandum

TO: Our Valued Clients

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DATE: January 15, 2026

SUBJECT: New Chemistry & Immunology Instrumentation and Reference Ranges

Diagnostic Laboratory Services, Inc. (DLS) continues to work on improving its quality and efficiency to provide improved services for our clients and their patients. We have been with our current system for 7 years and after much investigation, DLS has made the decision to upgrade all of our Chemistry and Immunology testing platforms.

Effective January 19, 2026, the DLS QMC-West Oahu and January 26, 2026, the DLS QMC-Punchbowl (Manamana) will be transitioning from the current Roche to the new Beckman automated instrumentation. This will improve operational efficiency while offering flexibility to expand our test menu in the future.

The following table summarizes changes to reference ranges and possible reportable ranges that will occur when moving from the Roche system to the new Beckman analyzers for Chemistry and Immunoassay testing:

Analyte	Units	CURRENT Reference Range	NEW Reference Range	CURRENT Reportable Range	NEW Reportable Range	Collection Tube
Albumin	g/dL	3.5 - 5.2	14D 3.0 - 3.9 12M 2.2 - 4.8 15Y 3.6 - 5.2 ≥16Y 3.5 - 5.7	1.0 - 12.2	1.5 - 18.0	PST (Green)
Alkaline Phosphatase	U/L	1D <250 5D <231 6M <449 1Y <462 3Y <281 6Y <269 12Y <300 17Y (M) <390 17Y (F) <187 ≥18Y 35-129	No Change	11 - 4800	5 - 15000	PST (Green)
Amikacin (Peak)	µg/mL	20.0 - 30.0	No Change	1.0 - 40.0	2.5 - 50.0	Lavender
Amikacin (Trough)	µg/mL	0.0 - 10.0	No Change	1.0 - 40.0	2.5 - 50.0	Lavender
Ammonia	µmol/L	12 - 41	18 - 72	10 - 700	15 - 1000	Lavender
Amylase	U/L	28 - 110	29 - 103	4 - 5250	10 - 20000	PST (Green)
ALT (SGPT)	U/L	0 - 41	7 - 52	5 - 20000	No Change	PST (Green)
AST (SGOT)	U/L	0 - 40	13 - 39	5 - 21000	3 - 20000	PST (Green)

Analyte	Units	CURRENT Reference Range	NEW Reference Range	CURRENT Reportable Range	NEW Reportable Range	Collection Tube
B-Type Natriuretic Peptide (BNP)	pg/mL	See Memo	<101	See Memo	1 - 4700	Lavender
NT-Pro B-Type Natriuretic Peptide (NT-ProBNP)	pg/mL	See Memo	<300	See Memo	10 - 35,000	PST (Green)
Beta-Hydroxybutyrate	mmol/L	0.02 - 0.27	No Change	0.01 - 9.0	0.01 - 4.50	PST (Green)
Bilirubin, Direct	mg/dL	≤0.3	No Change	0.0 - 30.0	No Change	PST (Green)
Bilirubin, Total	mg/dL	1D ≤8.0 2D ≤14.0 4D ≤17.0 2W 0 - 12.0 16Y 0 - 1.0 ≥17Y 0 - 1.2	No Change	0.2 - 64.4	0.0 - 60.0	PST (Green)
BUN (Urea Nitrogen)	mg/dL	6 - 23	7 - 25	3 - 279	2 - 390	PST (Green)
Carbamazepine	µg/mL	4 - 12	4.0 - 12.0	2 - 40	2.0 - 60.0	PST (Green)
Calcium	mg/dL	ALL: 8.3 - 10.5	9D 7.6 - 10.4 1Y 9.0 - 11.0 11Y 8.8 - 10.8 ≥12Y 8.6 - 10.3	0.8 - 35	4 - 54.0	PST (Green)
Chloride	mEq/L	95 - 108	98 - 107	60 - 140	50 - 200	PST (Green)
Cholesterol, Total	mg/dL	<200	No Change	9 - 800	25 - 7000	PST (Green)
CK, Total	U/L	Male: 39 - 308 Female: 26 - 192	No Change	7 - 80000	10 - 80000	PST (Green)
CK MB	ng/mL	≤3.8	0.6 - 6.3	1.0 - 500	0.1 - 270.0	PST (Green)
CO2	mEq/L	21 - 30	21 - 31	3 - 50	2 - 45	PST (Green)
Cortisol, No Time	µg/dL	N/A	N/A	1.0 - 634.0	0.4 - 120.0	PST (Green)
Cortisol, A.M.	µg/dL	6.0 - 25.0	6.7 - 22.6	1.0 - 634.0	0.4 - 120.0	PST (Green)
Cortisol, P.M.	µg/dL	3.0 - 16.0	<10	1.0 - 634.0	0.4 - 120.0	PST (Green)
Creatinine	mg/dL	0.6 - 1.4	0.6 - 1.3	0.2 - 50	0.2 - 75.0	PST (Green)
CRP	mg/L	0.0 - 10.0	< 5.0	3.0 - 280	5.0 - 900	SST (Gold)
Cyclosporine	ng/mL	100 - 400		30 - 1500		Lavender
Digoxin	ng/mL	0.6 - 2.0	0.8 - 2.0	0.4 - 5.0	0.3 - 10.0	PST (Green)
Ethanol	g/dL	Neg < 0.1	Not Detected, if < 0.1	0.01 - 0.50	0.01 - 0.60	PST (Green)
Gamma GT (GGT)	U/L	8 - 61	9 - 64	4 - 13200	3 - 12000	Lavender
Gentamicin (Peak)	µg/mL	5.0 - 10.0	5.0 - 10.0	0.3 - 24.0	0.3 - 30.0	PST (Green)
Gentamicin (Trough)	µg/mL	<2.0	< 2.0	0.3 - 24.0	0.3 - 30.0	PST (Green)
Glucose	mg/dL	4M 70 - 99 ≥5M 70 - 99	1D 40 - 60 2D 50 - 80 4M 70 - 99 ≥5M 70 - 99	8 - 1500	10 - 1600	PST (Green)

Analyte	Units	CURRENT Reference Range	NEW Reference Range	CURRENT Reportable Range	NEW Reportable Range	Collection Tube
hCG, Quantitative, Pregnancy	mIU/mL	Non-Pregnant <5 3rd week 6-71 4th week 9-750 5th week 217 - 7138 6th week 158 - 31795 7th week 3697 - 163563 8th week 32065 - 149571 9th week 63803 - 151410 10th week 46509 - 186977 12th week 27832 - 210612 14th week 13950 - 62530 15th week 9040 - 56451 17th week 8175 - 55868 18th week 8099 - 58176	No Change	2 - 1000000	1 - 248400	PST (Green)
hCG, Qualitative	mIU/mL	Negative: <5 Positive: ≥5	No Change	2 - 1000000	1 - 248400	PST (Green)
HDL-Cholesterol	mg/dL	≥40	No Change	3 - 240	3 - 200	PST (Green)
Lactic Acid	mmol/L	0.5 - 2.2	0.5 - 2.0	0.2 - 14	0.2 - 29.9	Fluoride
LDH, Total	U/L	ALL: 135 - 250	Male: 14D 309 - 1,222 12M 163 - 452 9Y 192 - 321 14Y 170 - 283 >15Y 130 - 250 Female: 157 - 272 14Y	10 - 2500	25 - 6000	PST (Green)
Lidocaine	µg/mL	N/A	1.5 - 5.0	N/A	1 – 36	Glass Red
Lithium	mmol/L	0.5 - 1.2	0.6 - 1.2	0.1 - 6.0	0.1 - 5.0	Lavender
Lipase	U/L	13 - 60	11 - 82	3 - 3000	3 - 6000	PST (Green)
Magnesium	mg/dL	1.6 - 2.6	1.5 - 2.5	0.2 - 9.8	0.5 - 24.0	PST (Green)
Myoglobin	ng/mL	<80	Male: 17.4 - 105.7 Female: 14.3 - 65.8	25 - 2500	5.0 - 3680.0	PST (Green)
Phenobarbital	µg/mL	15.0 - 40.0	10.0 - 40.0	2.4 - 120	5.0 - 240.0	PST (Green)
Phosphorus	mg/dL	1W 4.5 - 6.5 15Y 2.4 - 6.5 >16Y 2.5 - 4.5	14D 4.7 - 7.0 12M 2.5 - 7.0 >13M 2.6 - 4.9	0.3 - 40	1 - 100.0	PST (Green)
Potassium	mEq/L	1D 3.7 - 5.9 2Y 4.1 - 5.3 12Y 3.4 - 4.7 >13Y 3.3 - 5.1	No Change	1.5 - 10	1.0 - 10.0	PST (Green)
Procainamide/N- Acetylprocainamide (NAPA) (MM ONLY)	µg/mL	N/A	5.0 - 30.0	N/A		PST (Green)
Procainamide	µg/mL	N/A	4.0 - 10	N/A	1.0 - 36.0	PST (Green)
N- Acetylprocainamide (NAPA)	µg/mL	N/A	N/A	N/A	1.0 - 48.0	PST (Green)
Procalcitonin	ng/mL	<0.05	<0.10	0.05 - 100	0.05 - 880	PST (Green)
PTH, Routine	pg/mL	15 - 65	12 - 88	6 - 5,000	2 - 28,000	PST (Green)
PTH, Intra- Operative	pg/mL	15 - 65	12 - 88	6 - 5000	6 - 23620	PST (Green)
Salicylates	mg/dL	3.0 - 29.0	3.0 - 29.9	1 - 70	1.5 - 240	Lavender

Analyte	Units	CURRENT Reference Range	NEW Reference Range	CURRENT Reportable Range	NEW Reportable Range	Collection Tube
Sodium	mEq/L	133 - 145	136 - 145	80 - 180	50 - 200	PST (Green)
Tacrolimus	ng/mL	5.0 - 20.0	No Change	2 - 30	1.0 - 30.0	Lavender
T4, Free	ng/dL	0.9 - 2.1	0.7 - 1.8	0.2 - 7.7	0.32 - 5.60	PST (Green)
Theophylline	µg/mL	10.0 - 20.0	No Change	1 - 80	2.5 - 120.0	PST (Green)
Tobramycin (Peak)	µg/mL	5.0 - 10.0	No Change	5 - 20	0.6 - 30.0	PST (Green)
Tobramycin (Trough)	µg/mL	<2.0	0 - 1.9	0.5 - 20	0.6 - 30.0	PST (Green)
Total Protein	g/dL	6.4 - 8.3	14D 4.4 - 7.6 12M 5.1 - 7.3 2Y 5.6 - 7.5 15Y 6.0 - 8.0 >16Y 6.4 - 8.9	1 - 30	3.0 - 36.0	PST (Green)
Troponin I, High Sensitivity	ng/L	See Memo	<18	See Memo	2 - 22973	PST (Green)
Triglycerides	mg/dL	<150	No Change	9 - 4425	10 - 10000	PST (Green)
TSH	uIU/mL	1D 9.20 - 28.40 2D 6.60 - 15.60 3D 0.83 - 8.65 1M 0.67 - 5.57 ≥2M 0.27 - 4.20	1D 9.20 - 28.40 2D 6.60 - 15.60 3D 0.83 - 8.65 1M 0.67 - 5.57 ≥2M 0.30 - 4.20	0.07 - 100	0.01 - 460.00	PST (Green)
Uric Acid	mg/dL	Male ALL: 3.4 - 7.0 Female ALL: 2.4 - 5.7	Male ALL: 4.4 - 7.6 Female ALL: 2.3 - 6.6	0.7 - 62.5	1.5 - 60.0	PST (Green)
Valproic Acid	µg/mL	50 - 125	50 - 100	3 - 300	10 - 450	PST (Green)
Vancomycin	µg/mL	10.0 - 20.0 (Trough) 30 - 40 (Peak)	No Change	4.0 - 80.0	2.0 - 150.0	PST (Green)
Phenytoin	µg/mL	10.0 - 20.0	No Change	1.0 - 40.0	2.5 - 40	PST (Green)

Because numerical changes to results for certain tests can potentially occur when switching instrument manufacturers, consideration should be given to re-baselining patients that are being followed regularly with certain laboratory tests, if clinically indicated.

For more information on all of our tests, visit <https://til.dlslab.com/>. If you have any questions, please call DLS Client Services at (808) 589-5101 or Dr. Wesley Kim at (808) 589-5131.