Intermountain Health

Laboratory Services

Roche Chemistry Implementation: Changes from Current Abbott Assays

Version 10/12/2023

This document provides information about Roche chemistry assays scheduled to be implemented at Utah Valley Hospital, Orem Community Hospital, and Spanish Fork Hospital on October 30, 2023. Other Intermountain Hospitals will not be impacted until later dates to be announced.

***Assays***

|  |  |
| --- | --- |
| **NEW Roche Assay** | **OLD Abbott Assay** |
| Troponin T, High Sensitivity (hsTnT)  NOTE: hsTnT is reported in whole numbers with units of ng/L. Reference intervals are 0-14 for females and 0-22 for males. For more information, refer to Intermountain’s algorithm “Suspected Acute Coronary Syndrome (ACS) – ED and Inpatient” (https://kr.ihc.com/ckr-ext/Dcmnt?ncid=530420539). | Troponin I  Reference interval is 0.00-0.04 ng/mL. |
| NT-proBNP (N-terminal pro-B-type Natriuretic Peptide)   |  |  |  | | --- | --- | --- | | Age | NT-proBNP, pg/mL | Interpretation | | <50 y | >450  300-450 | ADHF likely  Indeterminate | | 50-75 y | >900  300-900 | ADHF likely  Indeterminate | | >75 y | >1800  300-1800 | ADHF likely  Indeterminate |   ADHF = acute decompensated heart failure | BNP (B-type Natriuretic Peptide)  Reference interval is 0-100 pg/mL. |
| Hepatitis A Virus Antibody, Total (IgG + IgM) | Hepatitis A Virus Antibody, IgG |

***Biotin Interference with Roche Assays***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| High biotin (vitamin B7) concentrations in blood (e.g., from nutritional supplements) may interfere with some immunoassays, causing falsely low or falsely high results. The daily recommended allowance for biotin, 0.03 mg, does not typically interfere with assays; however, supplements may contain 20 mg or more and could interfere with assays listed on the right.  To reduce the potential impact on test results, patients taking biotin are encouraged to wait at least 8 hours after biotin ingestion before having blood drawn for these tests. When investigating unexpected test results, it is important to communicate a patient’s biotin use to the laboratory.  Some assays have recently been reformulated by Roche to minimize the potential for biotin interference, but mega-doses (>300,000 µg/day) may interfere with the assays listed on the right. | |  |  | | --- | --- | | Assay | Biotin potential interference | | Cortisol | False elevation | | Digoxin | False elevation | | Estradiol | False elevation | | Free T4 | False elevation | | LH | False decrease | | Progesterone | False elevation | | PTH, intact | False decrease |  |  |  | | --- | --- | | Assay | **Mega-dose** potential interference | | FSH | False decrease | | HBV surface ag | False decrease | | hCG, quant. | False decrease | | NT-proBNP | False decrease | | Procalcitonin | False decrease | | PSA, total | False decrease | | Troponin T | False decrease | | TSH | False decrease | |

***Reference Intervals***

|  |  |  |
| --- | --- | --- |
| **Test** | **NEW Roche Reference Intervals** | **OLD Abbott Reference Intervals** |
| Alkaline Phosphatase (U/L) | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 0-14 d | 83-248 | 83-248 | | 15 d-11 m | 122-469 | 122-469 | | 1-9 y | 142-335 | 142-335 | | 10-12 y | 129-417 | 129-417 | | 13-14 y | 57-254 | 116-468 | | 15-16 y | 50-117 | 82-331 | | 17 y | 45-87 | 55-149 | | ≥18 y | 35-104 | 40-129 | | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 0-14 d | 90-273 | 90-273 | | 15 d-11 m | 134-518 | 134-518 | | 1-9 y | 156-369 | 156-369 | | 10-12 y | 141-460 | 141-460 | | 13-14 y | 62-280 | 127-517 | | 15-16 y | 54-128 | 89-365 | | 17 y | 48-95 | 59-164 | | ≥18 y | 40-120 | 40-120 | |
| C-Reactive Protein (mg/dL) | |  |  | | --- | --- | | Age | Range | | 0-17 y | <0.3 | | ≥18 y | <0.5 | | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 0-17 y | ≤0.7 | ≤0.7 | | ≥18 y | ≤1.5 | ≤1.0 | |
| Cortisol, AM or Untimed (µg/dL) | |  |  | | --- | --- | | Age | Range | | 0-30 d | 0.5-14.0 | | 1-11 m | 0.7-20.0 | | 1-10 y | 2.4-15.0 | | 12-17 y | 3.6-17.0 | | ≥18 y | 4.8-19.5 | | |  |  | | --- | --- | | Age | Range | | 0-1 d | None | | 2-14 d | 5.0-12.3 | | 15 d-11 m | 5.0-16.6 | | 1-8 y | 5.0-10.8 | | 9-13 y | 5.0-12.7 | | 14-16 y | 5.0-16.4 | | 17 y | 5.0-18.3 | | ≥18 y | 5.0-23.0 | |
| Cortisol, PM (µg/dL) | |  |  | | --- | --- | | Age | Range | | 0-30 d | 0.5-14.0 | | 1-11 m | 0.7-20.0 | | 1-10 y | 2.4-15.0 | | 12-17 y | 3.6-17.0 | | ≥18 y | 2.5-11.9 | | |  |  | | --- | --- | | Age | Range | | 0-1 d | None | | 2-14 d | 5.0-12.3 | | 15 d-11 m | 5.0-16.6 | | 1-8 y | 5.0-10.8 | | 9-13 y | 5.0-12.7 | | 14-16 y | 5.0-16.4 | | 17 y | 5.0-18.3 | | ≥18 y | 3.0-16.0 | |

|  |  |  |
| --- | --- | --- |
| **Test** | **NEW Roche Reference Intervals** | **OLD Abbott Reference Intervals** |
| Creatine Kinase (U/L) | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 0-5 m | None | None | | 6 m – 2 y | 38-260 | 50-272 | | 3-5 y | 42-227 | 59-296 | | 6-8 y | 50-231 | 54-275 | | 9-11 y | 52-256 | 55-324 | | 12-14 y | 45-257 | 63-407 | | 15-17 y | 45-458 | 68-914 | | ≥18 y | 36-184 | 56-356 | | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 0-1 d | 0-1031 | 0-1031 | | 2-10 d | 0-756 | 0-756 | | 11 d-11 m | 0-461 | 0-461 | | 1-6 y | 0-295 | 0-295 | | 7-9 y | 0-238 | 0-298 | | 10-11 y | 80-230 | 55-215 | | 12-13 y | 50-295 | 60-330 | | 14-15 y | 50-240 | 60-335 | | 16-17 y | 45-230 | 55-370 | | ≥18 y | 36-184 | 56-356 | |
| Estradiol (pg/mL) | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 0 | None | None | | 18 | Varies\* | 11.3-43.2 |   \* Adult female ranges   |  |  | | --- | --- | | Follicular Phase | 30.9-90.4 | | Ovulation | 60.4-533 | | Luteal Phase | 60.4-232 | | Post-menopausal | <5-138 | |  |  | | 1st Trimester | 154-3243 | | 2nd Trimester | 1561-21,280 | | 3rd Trimester | 8525->30,000 | | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 1-8 y | 5-14 | 3-12 | | 9-10 Y | 5-55 | 3-12 | | 11-12 Y | 5-270 | 3-12 | | 13-15 y | 22-370 | 5-28 | | 16-17 y | 34-370 | 5-42 | | ≥18 y | ≤508 | ≤77 |   Adult female interpretation   |  |  | | --- | --- | | Follicular Phase | 39-189 | | Mid-cycle Peak | 94-508 | | Luteal Phase | 48-309 | | Post-menopausal | ≤41 | |
| Ethanol (mg/dL) | <10 | <13 |
| Human Chorionic Gonadotropin (hCG), Quantitative (mIU/mL) | Non-Pregnant Female: <5   |  |  | | --- | --- | | Weeks of Gestation | Range | | 3 | 5-70 | | 4 | 10-700 | | 5 | 220-8200 | | 6 | 150-32000 | | 7 | 4000-154,000 | | 8 | 31,000-149,000 | | 9 | 59,000-136,000 | | 10 | 44,000-170,000 | | 12 | 27,000-202,000 | | Non-Pregnant Female: <5   |  |  | | --- | --- | | Weeks of Gestation | Range | | 0-1 | 5-50 | | 1-2 | 50-500 | | 2-3 | 100-10,000 | | 3-4 | 1000-30,000 | | 4-5 | 3500-115,000 | | 6-8 | 12,000-270,000 | | 12 | 15,000-220,000 | |

|  |  |  |
| --- | --- | --- |
| **Test** | **NEW Roche Reference Intervals** | **OLD Abbott Reference Intervals** |
| Luteinizing Hormone (mIU/mL) | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 0-5 m | 0.0-8.2 | 0.0-6.2 | | 6 m-10 y | 0.0-1.3 | 0.0-1.3 | | 11-13 y | 0.0-10.0 | 0.0-2.0 | | 14-17 y | 0.4-25.0 | 1.3-8.4 | | ≥18 y | Varies\* | 1.7-8.6 |   \* Adult female ranges   |  |  | | --- | --- | | Follicular Phase | 2.4-12.6 | | Ovulation | 14.0-95.6 | | Luteal Phase | 1.0-11.4 | | Post-menopausal | 7.7-58.5 | | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 0-6 y | None | None | | 7-9 y | 0.0-0.7 | 0.0-0.7 | | 10-12 y | 0.0-6.8 | 0.0-3.4 | | 13-15 y | 0.3-23.0 | 0.3-5.6 | | 16-17 y | 0.0-26.4 | 1.1-9.0 | | ≥18 y | Varies\* | 0.6-12.1 |   \* Adult female ranges   |  |  | | --- | --- | | Follicular Phase | 1.8-11.8 | | Ovulation | 7.6-89.1 | | Luteal Phase | 0.6-14.0 | | Post-menopausal | 5.2-62.0 | |
| Parathyroid Hormone, Intact (pg/mL) | |  |  | | --- | --- | | Age | Range | | 0-30 d | 6.6-59.4 | | 1-11 m | 8.5-61.3 | | 1-10 y | 11.3-60.0 | | 11-17 y | 15.1-68.0 | | ≥18 y | 15.0-65.0 | | |  |  | | --- | --- | | Age | Range | | 6 d-11 m | 6-89 | | 1-8 y | 16-63 | | 9-16 y | 22-88 | | ≥17 y | 22-94 | |
| Procalcitonin (ng/mL) | |  |  | | --- | --- | | Age | Range | | ≥4 d | ≤0.09 |   Additional interpretation  <0.10: serious bacterial infections are very unlikely.  0.10-0.25: Significant bacterial infections are unlikely.  0.26-2.00: Risk of infection increases as PCT increases from 0.25 to 2.00 but there is considerable uncertainty.  >2.00: Highly suggestive of systemic bacterial infection or severe local bacterial infection. | |  |  | | --- | --- | | Age | Range | | ≥4 d | ≤0.09 |   Additional interpretation  <0.10: Indicates absence of bacterial infection  0.10-0.25: Bacterial infection unlikely  0.26-0.50: Bacterial infection possible  >0.50: Suggestive of presence of bacterial infection |
| Prolactin (ng/mL) | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 0-30 d | 1.1-470.0 | 1.1-470.0 | | 1-11 m | 5.2-60.0 | 5.2-60.0 | | 1-17 y | 3.0-25.0 | 3.0-25.0 | | ≥18 y | 4.8-23.3 | 4.0-15.2 | | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 0-6 d | 30.0-495.0 | 30.0-495.0 | | 7-30 d | 0.3-95.0 | 0.3-95.0 | | 1-11 m | 0.3-30.0 | 0.3-30.0 | | 1-2 y | 2.0-20.0 | 2.0-25.0 | | 3-6 y | 1.0-18.0 | 1.0-16.0 | | 7-10 y | 2.0-12.0 | 2.0-11.0 | | 11-17 y | 3.0-18.0 | 2.0-14.0 | | ≥18 y | 3.6-26.5 | 3.5-19.4 | |
| Prostate Specific Antigen, Total (ng/mL) | |  |  |  | | --- | --- | --- | | Age | Female | Male | | 0-39 y | <0.01 | None | | 40-49 y | <0.01 | ≤2.50 | | 50-59 y | <0.01 | ≤3.50 | | 60-69 y | <0.01 | ≤4.50 | | ≥70 y | <0.01 | ≤6.50 | | |  |  |  | | --- | --- | --- | | Age | Female | Male | | All | None | ≤4.0 | |

|  |  |  |
| --- | --- | --- |
| **Test** | **NEW Roche Reference Intervals** | **OLD Abbott Reference Intervals** |
| T4, Free (ng/dL) | |  |  | | --- | --- | | Age | Range | | 0-30 d | 1.24-3.89 | | 1-11 m | 1.09-1.71 | | 1-17 y | 1.01-1.63 | | ≥18 y | 0.93-1.70 | | |  |  | | --- | --- | | Age | Range | | 0-11 m | 0.70-2.10 | | 1-5 y | 0.77-1.73 | | 6-10 y | 0.74-1.56 | | 11-14 y | 0.70-1.42 | | 15-17 y | 0.73-1.57 | | 18-20 y | 0.78-1.45 | | 21-40 y | 0.76-1.44 | | 41-60 y | 0.74-1.46 | | 61-80 y | 0.75-1.50 | | ≥81 y | 0.75-1.55 | |
| Thyroid Stimulating Hormone (µIU/mL) | |  |  | | --- | --- | | Age | Range | | 0-30 d | 1.23-27.20 | | 1-11 m | 1.03-6.80 | | 1-14 y | 1.12-5.01 | | 15-17 y | 0.68-4.09 | | ≥18 y | 0.27-4.20 | | |  |  | | --- | --- | | Age | Range | | 0-20 y | 0.50-5.00 | | ≥20 y | 0.46-4.88 | |
| Urine Drug Screen Cutoffs (ng/mL) | |  |  | | --- | --- | | Drug Class | Cutoff | | Amphetamines / Methamphetamines | 500 | | Barbiturates | 200 | | Benzodiazepines | 100 | | Cocaine metabolite | 150 | | Fentanyl | 5 | | Methadone | 300 | | Opiates | 300 | | Synthetic Opioids | 100 | | THC / Cannabinoids | 50 | | Buprenorphine | 10 | | |  |  | | --- | --- | | Drug Class | Cutoff | | Amphetamines / Methamphetamines | 1000, \*500 | | Barbiturates | 200, \*150 | | Benzodiazepines | 200, \*100 | | Cocaine metabolite | 300, \*150 | | Fentanyl | 1 | | Methadone | 300, \*150 | | Opiates | 300, \*150 | | Synthetic Opioids | 100, \*75 | | THC / Cannabinoids | 50 |   \* age 0-12 years |

***Specimen Types***

|  |  |  |
| --- | --- | --- |
| **Test** | **NEW Roche Specimen Tube Types** | **OLD Abbott Specimen Tube Types** |
| Ammonia | Lavendar top only | Mint, green, lavender tops OK |
| Acetaminophen | Red top preferred; lavender top OK | Red, gold, mint, green tops OK |
| Serum Drug Screen | Red top preferred; lavender top OK | Red, gold, mint, green tops OK |
| Troponin | Mint top only | Red, gold, mint, green tops OK |
| Vancomycin | Red top preferred; lavender top OK | Red, gold, mint, green, lavendar tops OK |