

**Medical Center, Navicent Health**  
**MEDICAL LABORATORIES COMMUNIQUE'**  
**VOLUME 27, NUMBER 4**  
**December 2014**

**LABORATORY NEW AUTOMATED CHEMISTRY NORMAL RANGES**  
**Effective 1/20/2015**

(see Communiqué 27, #3 for additional information)  
(blood specimen type is serum unless otherwise specified)

TEST	Old Reference Range		New Reference Range
<b>GENERAL CHEMISTRY</b>			
Albumin, g/dl	3.5 – 5.0 2.8 – 4.6	Adult 0 – 1 month	3.5 – 5.0 1 Yr - Adult 3.2 – 4.8 >59 yr 2.8 – 4.6 0 – 11 mo.
Alk, Phosphatase, u/l	30 – 112 40 – 190 50 – 272 75 – 275 60 - 260	Adult 14 – 16 years 12 – 14 years 2 – 12 years 0 – 2 years	35 – 141 Adult 90 – 273 0 – 15 days 134 – 518 15 d – 12 mo 156 – 369 1yr – 10 yr 141 – 460 10yr - 13 yr 62 – 517 13 – 14 yr 54 – 365 15 – 17 yr 48 – 164 17 – 19 yr
Ammonia, um/l (heparin plasma collection tube)	18 – 54 ven 9 – 33 Art		14 – 72 Venous 9- 51 Arterial
Amylase, u/l	22 – 132	Serum	25 – 125, 0 – 70Y 20 -160 > 70Y
B-Hydroxybutyrate, mmol/L	0 – 0.30		0 – 0.30 Normals are for 12 hr fast before blood collection. BHB is major blood ketone with 4x conc of acetone & AA BHB inc in response to fasting but should be less than 0.4 at 12 hr BHB in DKA is generally > 2.0 BHB levels of 1 – 1.5 are typically reported in patients with resolved ketosis
Bilirubin, Conjugated	0 – 0.2		0.1 – 0.5 16d - Adult 0.3 – 0.7 0 – 15d
Bilirubin, Neonatal, mg/dl	1 – 7.0	0 – 1 months	0.1 – 6.0 0 – 24 hr 0.1 – 10.0 24hr – 48hr 0.1 – 12.0 48hr – 5 day 0.1 – 10.0 5 – 15 day 0.1 – 0.7 15d – 1 yr 0.1 – 0.8 1yr – 18 yr
Bilirubin, Total, mg/dl	0.2 – 1.3	Adults	0.1 – 1.2 Adult 0.1 – 6.0 0 – 24 hr

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TEST	Old Reference Range		New Reference Range
			0.1 – 10.0 24hr – 48hr 0.1 – 12.0 48hr – 5 day 0.1 – 10.0 5 – 15 day 0.1 – 0.7 15d – 1 yr 0.1 – 0.8 1yr – 18 yr
BUN, mg/dl	5 – 22 5 – 20	Adult 0 – 17 months	3 – 23 0 – 14 d 3 – 17 15d – 1 yr 7 – 23 1 y – 50 y 8 – 26 > 50 yr
Calcium, mg/dl	8.5 – 10.2 7.6 – 10.4	Adult 0 – 1 month	8.5 – 10.3 Adult 7.6 – 10.4 0 – 10 d
Chloride meq/l	99 - 109	Serum	98 – 110 98 - 113 0 – 30d
Cholesterol, mg/dl	114 – 200 114 – 170 53 - 170	Adult 1 – 19 years 0 – 1 year	100 – 199 Adult 100 – 170 1 – 19 yr 53 – 170 0 – 1 yr
Cholesterol, HDL, mg/dl	40 – 70 40 – 80 > 60	Male Female Low CHD Risk	40 – 60 Adult >60 Low CHD Risk 45 – 60 2 – 19 yr
Cholesterol, LDL, mg/dl	60 – 130 < 100	Desirable Optimal / Low Risk	60 – 130 Desirable <100 Optimal/Low Risk 50 – 110 2 – 19 yr
CO2, meq/l	22 – 32	Adult	20 – 30 Adult 14 – 26 1 – 5y 10 – 24 0 – 1 yr
CPK, u/l	39 – 195 39 – 162	Male Female	43 – 312 Male 43 - 237 Female
Creat., mg/dl	0.50 – 1.37 0.50 – 1.17 0.50 – 1.07 0.50 – 0.97 0.40 – 0.77	Adult Male Adult Female 10 – 12 years 7 – 10 years 0 – 7 years	0.72 – 1.25 Male 0.57 – 1.11 Female 0.42 – 1.10 0 – 14 d 0.31 – 0.58 15 – 11 mo 0.39 – 0.75 1 – 14 yr 0.65 – 1.15 15 – 17 M 0.59 – 0.93 15- 17 F
CRP – hs, mg/dl	0.02 – 0.722 < 0.1 0.1 – 0.3 > 0.30 > 1.0	Normal (95% of population) Low CHD Risk Average CHD Risk High CHD Risk	0.02 – 0.50 Adult 0.02 – 0.62 0 – 14 d <0.1 Low CHD Risk 0.10 – 0.30 Avg CHD Risk > 0.30 High CHD Risk > 1.0 Suspect Acute Inflammation,

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		Suspect Acute Inflammation, repeat hsCRP for CHD Risk assessment in 2 wks	repeat hsCRP for CHD Risk assessment in 2 weeks
CSF Fl. Prot., mg/dl	15 – 45 20 – 80	< 1 month	15 – 45 20 – 80 < 1 mo
Glucose, mg/dl	70 – 99 100-125	Adult Impaired fasting glucose	70 – 99 Adult 40 – 60 0 – 1 d 50 – 80 2d – 11 mo 60 – 99 1 – 11 yr
GGT, u/l	6 – 39 12 – 80 30 – 150	> 3 months 1 – 3 months < 1 month	12 – 64 Male 9 – 54 Female 23 – 219 0 – 14 d 8 – 127 15d – 1 yr
Hemoglobin A1c stat	4.2 – 5.6 5.7 – 6.4 ≥6.5	Normal Increased risk Consistent with Diabetes	4.2 – 5.6 Normal 5.7 – 6.4 Inc Risk ≥6.5 Consistent with diabetes
Iron, ug/dl	38 – 160 34 – 160	Male Female	50 – 175 Male 45 - 170 Female 16 – 128 0 – 14 d
Iron – TIBC, ug/dl	245 – 435		250 - 450
Iron - % Sat.	20 – 50		20 – 50 Male 15 – 50 Female
K+, meq/l	3.5 – 5.0 4.0 – 6.2	Adult 0-3 months	3.5 – 5.1 Adult 4.0 – 6.2 0 – 1 mo 4.0 – 5.7 1 – 3 mo Serum (plasma is 0.2 lower)
Lactic Acid mmol/L	0.5 – 2.2		0.5 – 2.2 venous blood 0.4 – 1.6 arterial blood 0.5 – 2.8 CSF
Lipase, u/l	22 – 55		8 – 78 4 – 40 0 – 18 yr
LDH, u/l	97 – 190 140 – 242	Adult 6 - 12 years	121 – 246 Adult 309 – 1222 0 – 14d

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TEST	Old Reference Range		New Reference Range
	140 – 279	1 – 6 years	163 – 452 15d – 1 yr
	150 – 360	0 - 1 year	192 – 321 1 – 10 yr
			130 – 283 10 – 18y
HDL – Chol	40 – 80	Female	40-60 Adult
	40 – 70	Male	>60 Low Risk Adult
	> 60	Low CHD Risk	45-60 0 - 19 yr
LDL – Chol	60 – 130	Desirable	50 – 129
	< 100	Optimal / Low Risk	< 100 Optimal / low risk
			30 - 110 0 – 19 yr
Magnesium, mg/dl	1.7 – 2.5		1.6 – 2.6
			2.0 – 3.1 0 – 1yr
Na+, meq/l	135 – 145		136 - 144
PCHE <sub>k</sub> u/L	4.9 - 11.9		4.9 – 11.9
Phosphorus, mg/dl	2.5 – 4.8	> 12 yrs	2.3 – 4.7 Adult
	3.0 – 5.6	3 – 12 yrs	5.6 – 10.5 0 – 14 d
	3.6 – 6.0	1 – 3 yrs	4.8 – 8.4 15d – 1 yr
	3.5 – 6.6	< 1 yr	4.3 - 6.8 1 yr – 5 yr
			3.2 – 6.2 5 yr – 15 yr
			2.9 – 5.0 16 – 18 yr
SGOT (AST), u/l	5 - 38	Adult	5 - 40 Adult
	15 - 62	0 – 3 months	32 – 162 0 – 15 d
			20 – 67 15d – 1yr
			20 – 44 1 yr – 7 yr
SGPT (ALT), u/l	5 – 37	Adult	5 – 55 Adult
			5 – 33 0 – 1 yr
			8 – 25 1 – 18 yr
Total Protein, g/dl	6.2 – 8.0	> 3 yrs	6.1 – 8.3 Adult
	5.6 – 7.5	1 – 3 yrs	5.2 – 7.2 0 – 1 yr
	5.1 – 7.3	0 – 1 yr	6.1 – 7.7 1 yr – 5 yr
Triglycerides, mg/dl	20 – 149		20 – 149 Adult
			20 – 99 0 – 9 yr
			20 – 129 10 – 19 yr
Uric Acid, mg/dl	2.5 – 7.7	Adult	4.4 – 7.6 Adult Male <60
	2.3 – 6.7	9 – 13 yrs	2.3 – 6.6 Adult Female < 60
	1.8 – 5.0	0 – 9 yrs	4.2 – 8.0 Male ≥ 60y
			3.5 – 7.3 Female ≥60y
			2.0 – 5.5 0 – 12y

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TEST	Old Reference Range	New Reference Range
<b>GENERAL CHEMISTRY CALCULATED VALUES</b>		
Anion Gap (Na-(Cl+CO2))	3.0 – 11.0	5 - 13
Albumin/Globulin Ratio	1.2 – 3.1	1.2 – 3.1
BUN/Creatinine Ratio	6 – 22	6 – 25
LDL, mg/dl	50 – 129      0 – 19 yrs 60 – 129      19 – 29 yrs, <100 optimal 70 – 129      > 29 yrs, <100 optimal	50 – 129 >19 yr < 100 Optimal / low risk 30 - 110    0 – 19 yr
Non-HDL Chol	50 - 159	50 – 159    Adult < 130 desirable 30 – 144    0 – 19 yr < 120 desirable 0–19y
TIBC, ug/mL	245 – 435	250 - 450

TEST	Old Reference Range	New Reference Range
<b>IMMUNOASSAY / IMMUNOLOGY</b>		
Anti-CCP, U/mL	<5.0	< 5.0
Anti-Thyroid Peroxidase AB, IU/ml	<5.61	< 5.61
B12, pg/ml	180 – 914      95 percentile < 130            Deficiency > 300            No Deficiency	213 - 1041 < 150 deficiency 150 – 400 borderline, consider homocysteine evaluation
BNP, pg/ml	< 100	< 100 100 - <200, likely compensated CHF 200– 400, likely moderate CHF >400, likely moderate to severe CHF
C-Peptide, ng/ml	1 – 5	0.78 - 5.2
CKMB, ng/ml	0.6 – 6.3	0.0 – 6.6 RI: 0 – 2.1

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TEST	Old Reference Range	New Reference Range
Complement C-3, mg/dl	86 – 184	82 – 193 >1Y 50 – 121 0 – 14 d 51 – 160 - 15d – 1 yr
Complement C-4, mg/dl	20 – 59	15 – 57 7 – 30 0 – 1 yr 13 – 37 1 yr – 19yr
Cortisol, ug/dl	7 – 25 2-14	AM (collected between 6-8 am) PM (collected between 4-6 pm)
		5.7 – 21.0 AM collected 6-8 am 1.7 – 11.7 PM collected 4 -6 pm Interp: AM normals for 6 – 8 am collect PM normals for 4-6 pm collect At 10 pm normal <50% of 8 AM value
Cystatin C, mg/L	No ref range 0-22Y 0.60-1.03 23-29Y Male 0.64-1.12 30-39Y M 0.68-1.22 40-49Y M 0.72-1.32 50-59Y M 0.77-1.42 60-69Y M 0.82-1.52 >70Y M  0.57-0.90 23-29Y F 0.59-0.98 30-39Y F 0.62-1.07 40-49Y F 0.64-1.17 50-59Y F 0.66-1.26 60-69Y F 0.68-1.36 70-80Y F 0.70-1.45 >80Y F  eGFR >60 mL/min/BSA Not calculated for <18Y	0.8-2.3 0-3M 0.7-1.5 4-11M 0.5-1.3 1-17Y 0.5-1.1 18-22 0.60-1.03 23-29Y Male 0.64-1.12 30-39Y M 0.68-1.22 40-49Y M 0.72-1.32 50-59Y M 0.77-1.42 60-69Y M 0.82-1.52 >70 Y M  0.57-0.90 23-29Y F 0.59-0.98 30-39Y F 0.62-1.07 40-49Y F 0.64-1.17 50-59Y F 0.66-1.26 60-69Y F 0.68-1.36 70-80Y F 0.70-1.45 >80Y F  eGFR >60 Not calculated mL/min/BSA for <18Y
DHEA Sulphate, ug/dl	108 - 607 108-607 32 - 431	Male and Male&Female, 0-6 days Male and Female, 1-4
		24 – 303 M&F, 0 - <1W 24-303 M&F, 0 –<1W 9-317 M&F, 1 – 4W 32-214 M&F, 1-12M 32-276 M&F, 1-4Y

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	3 - 124 weeks Male and Female, 1-11 mths 0 - 19 Male and Female, 1-4 yrs Male and Female, 5-9 yrs 3 - 85 Male, 10-14 yrs 34 - 280 Male, 15-19 yrs 65 - 368 Female, 10-14 yrs 24 - 247 Female, 15-19 yrs 70 - 492 Male, 20-24 yrs 238 - 539 Male, 25-44 yrs 140 - 592 Male, 45-54 yrs 136 - 450 Male, 55-64 yrs 49 - 362 Male, >65 yrs 229 - 284 Female, 20-24 yrs 134 - 407 Female, 25-44 yrs 75 - 511 Female, 45-54 yrs 56 - 283 Female, >55 yrs 34 - 182	24-210 M&F, 5-10Y 17-242 M, 11-14Y 45-385 M, 15-19 Y 238-539M, 20-24Y 168-592M, 25-34Y 140-484M, 35-44Y 136-448M, 45-54Y 49-361M, >=55Y 9-170F, 11-14Y 61-494,F 15-19Y 134-407,F 20-24Y 96-512,F 25-34Y 75-410F, 35-44Y 56-283,F, 45-54Y 30-182,F, >=55
Ferritin, ng/ml	23.9 – 336 Male 11 – 306 Female	24–336 Male 15-204 Female >336 Male Iron Overload >307 Female Iron Overload
Folate, ng/ml	3.0 – 20.0 2 – 4 Suggestive of deficiency	5.9 – 20.0 < 4.0 suggestive of deficiency 4.0 – 5.8 borderline
RBC Folate	266 - 1356 ng/ml packed RBC	266 – 1,356 ng/mL packed RBC
FSH, MIU/ml	1.27 – 19.26 Male	1.0 – 12.0 Male >= 19y

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TEST	Old Reference Range	New Reference Range
	3.85 – 8.78 Female: 4.54 – 22.51 Mid-follicular 1.79 – 5.12 Mid-cycle peak 6.74–113.59 Mid-luteal Post-menopausal	0 – 1.6 Male 1y – 9 y 0 – 2.4 Male 0-11m 0.4 – 5.1 Male 10-18y  Female 0.5-11 0-11m 0.4-5.5 1y-10y 0.3 – 7.8 11-14y Interpretativeguide>14y 3.0–8.1 Follicular phase 2.5-17.0 MidCycle Peak 1.3-5.5 Luteal Phase 25-135 postmenopausal
FTI, ug/mL	5.05 – 9.42	5.05-9.42
Haptoglobin, mg/dl	33 – 200	30 – 258
HCG, mIU/ml	0 – 5 ≤ 7	0 – 5 Females 0 – 2 Males ≤ 7 Females > 40 yr 5 – 24 Indeterminate for Preg, consider repeat in 72 hr. >= 25 positive for Preg
Hemoglobin A1C, %	4.2 – 5.6 5.7 – 6.4 ≥6.5	4.2 – 5.6 5.7 – 6.4 Increased risk ≥6.5 Consistent with Diabetes
Homocysteine, umol/l (heparin plasma)	5.08 – 15.39 < 7.2	Desirable 5.00 – 13.00 < 10 desirable, CV risk >13 abnormal in patients evaluated for nutritional deficiencies (B12 & Folate)



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TEST	Old Reference Range	New Reference Range
IgA, mg/dl	90 – 440	65 –421 Female 19-60y 63– 484 Male 19 – 60y 69-517 Female > 60y 101-645 Male >60y 1.– 34 0 – 3 mo. 8 – 91 3m – 3 yr 30 – 150 3yr-6yr 50 – 220 6yr – 14yr 50 – 290 14 – 18 yr
IgG, mg/dl	570 – 1800	552-1631 Female, >=19y 540-1822 Male, >=19y 660-1530 10-19y 540-1360 4-<10y 320-1150 1-<4y 110-700 15d-<1yr 320-1400 0-<15d
IgM, mg/dl	35 – 260	33-293 Female >=19y 22-240 Male >=19y 50-190 Female 1y-19y 40-150 Male 1y-19y 20-90 13week-<1y 10-70 15d-<13week 10-40 0 -<15d
Insulin, uIU/ml	1.9 – 23	Fasting
LH, MIU/ml	1.0 – 5.8 1.24 – 8.62 2.12 – 10.89 19.18–103.03 1.2 – 12.86 10.97 – 58.64	Child Male Female: Mid-follicular Mid-cycle peak Mid-luteal Post-menopausal
Myoglobin, ng/ml	17.4 – 105.7 14.3 – 65.8	Male Female
PTH, pg/ml	11 – 67	16 – 63 0 – 8 Y

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TEST	Old Reference Range	New Reference Range
(heparin plasma, no gel tube)		22 – 88 9 – 16Y 9 – 77 > 16Y
PTH, Intraoperative, pg/ml	12 – 72	12 – 72
Prealbumin, mg/dl	18 – 38	2-12 0-14d 5-24 15d-1Y 12-23 1Y-5Y 14-26 5-13Y 18-31 13-16Y 17-35 16-19Y 16-45 19-60Y 14-42 >60Y
Progesterone, ng/ml	0.10 – 0.84 Male 0.31 – 1.52 Female: 5.16 – 18 Mid-follicular Mid-luteal ND – 0.78 Post- 4.73 – 50.74 menopausal 19.41 – 45.3 Preg. – 1 <sup>st</sup> Trimester Preg. – 2 <sup>nd</sup> Trimester	0 – 0.7, 0 – 11Mo 0 – 0.3, 1Y – 9 Y 0.1 – 0.8, 10 – 14Y 0.1 – 0.6, M 15 – 18Y 0 – 0.2, M > 18Y Female Interp Table Normal Menstruating Female Follicular Phase <0.3 Luteal Phase 1.2 – 15.9 Postmenopausal < 0.2  Pregnant Females First trimester 2.8 – 147 Second trimester 22.5 – 95.3 Third trimester 27.9 – 242.5
Prolactin, ng/ml	2.64 – 13.13 Male 3.34 – 26.72 Female: 2.74 – 19.64 Pre-menopausal Post- menopausal	3.46 – 19.4 Male 3.0 – 27 Female
Rheumatoid Factor, u/ml	0 – 25	0 – 30
T3, Free, pg/ml	2.5 – 3.9	1.71 – 3.83
T3, Total, ng/dl	87 – 178 15 - 200 0 – 30 days	113 – 189 1Y-11Y 98–176 12-14Y 92-156 15-18Y 58-160 >=18Y
T4 Total	4.87 – 11.72	6.16-10.32 1Y-8Y 5.48-9.31 9-11Y

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		5.07-8.62 12-14Y 4.87-11.72 >=15Y
T4, Free (measured), ng/dl	0.58 – 1.60	1.05-3.21 5d - <15d 0.68-2.53 15-<30d 0.89-1.8 1mo-1Y 0.89-1.37 1-<18Y 0.70-1.48 >18Y
T-Uptake, T-Uptake Units	0.69 – 1.41	0.69-1.41
Testosterone, ng/dl	1 – 10 0 – 5 years 3 – 50 Male, 5 – 11 years 10 – 570 Male, 11 – 14 years 160 – 781 Male, 14 – 16 years 175-781 Male, ≥ 17 years 2 – 25 Female, 5 – 11 years 10 – 75 Female, 11 - 17 years	8.6 – 299 M, 0d-6Mo 0 – 35.7 M, 6M-<11Y 0 – 444 M, 11Y- <14Y 36 – 632 M, 14-<16Y 147 – 795 M, 16 - <19 years 240 – 871 M, 19-50Y 221 – 716 M, >50Y 0 - 61 F, 4d-<9Y 0 - 24.2 F, 9Y-<13Y 13 – 54 F, 14-<50Y 12 – 36 F, >=50Y
Transferrin, mg/dl	181 – 340	104-224 0-8w 107-324 9w-1Y 220-337 1Y-17Y 174-382 >=18Y
Troponin, ng/ml	≤ 0.049 Normal = 0.050 99% URL ≥ 0.050 Possible Cardiac Injury >=0.50 Critical	<=0.039 Normal = 0.039 99% URL (by correlation to prior method) >= 0.040 Possible Cardiac Injury >=0.30 Critical  Significant delta within a 12 hour period for samples in the 0.00 – 0.08 range are: >= +/- 30% or 0.02 whichever is larger
TSH, UIU/ml	0.34 – 5.6	0.40-15 0-3d 0.37-5.54 4d-6Mo 0.61-4.43 6mo-<14Y 0.33 – 4.94 >=14
TSH Reflex Cut-Off Value (intended for > 15 yr only)	Reflex Panels offered for	If TSH <=0.10 then perform Free T4; If Free T4 is normal order Total T3 (possible hyperthyroidism).

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	TSH order per requisition	If TSH is 0.11-0.32 order Free T4. (Borderline low TSH). If TSH is >4.94 then order Free T4 and TPO Antibodies (possible hypothyroidism)
Vitamin D, ng/ml	<12 Severedeficiency <20 Deficiency >60 Potential for Adverse Effects >80 Toxicity	30-60 Adult 20-29 Insufficiency < 20 Deficiency 60-80 potential for adverse effects >80 Possible Toxicity

TEST	Old Reference Range	New Reference Range
<b>TDM &amp; TOXICOLOGY</b>		
Acetaminophen, mg/dl	< 20	< 20
Amikacin, ug/ml	20 – 25 Peak 1 – 8 Trough 4 – 8 Severe Infections	20 – 25 Peak 1 – 8 Trough 4 – 8 Severe Infection
Carbamazepine, ug/ml	8 – 12	8 – 12
Digoxin, ug/ml	0.8 – 2.0	0.8 – 2.0
Gentamicin, ug/ml	5 – 10 Peak 1 – 2 Trough	5 – 10 Peak 1 – 2 Trough
Lithium, mEq/L	0.5 – 1.3	0.5 – 1.3
Phenobarbital, ug/ml	15 – 30	15 – 30
Phenytoin, ug/ml (Dilantin)	10 – 20	10 – 20
Phenytoin, Free, ug/ml	1.0 – 2.0	1.0 – 2.0
Salicylate, mg/dl	2 – 29	2 – 29
Theophylline, ug/ml	10 – 20 Adults 6 – 11 Neonates (< 6	10 – 20 Adults 6 – 11 neonates (<6mo

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	mos. old)	
Tobramycin, ug/ml	4 – 10 Peak 1 – 2 Trough	4 – 10 1 – 2
Valproic Acid, ug/ml	50 – 100	50 – 100
Vancomycin, ug/ml	30 – 40 Peak 10 – 20 Trough	30 – 40 Peak (not recommended) 10 – 20 Trough 15 – 20 complicated infections Trough
Ethanol, mg/dl	None Detected	< 10 none detected
<b>Urine Drug Screening</b>		
Amph	None Detected	None Detected
Benzo's	None Detected	None Detected
Barb	None Detected	None Detected
Cocaine met	None Detected	None Detected
Ecstasy	NA	None Detected
Opiate	None Detected	None Detected
Oxycodone	NA	None Detected
PCP	None Detected	None Detected
THC	None Detected	None Detected

TEST	Old Reference Range	New Reference Range
<b>URINE CHEMISTRIES</b>		
Amylase, Urine	16 -491 M 21 – 447 F	14 -441 M 19-402 F
Amylase Urine, Timed (>=2hr collection)	Requires a 2 or more hour timed collection	Any timed collection of 1 hr or more.
Calc =( U/l) X(V in L) / #Hr (collection)	2 -30 u/2Hr	1-17 U/hr. (this is a change in reporting from prior # /2hr.)
Calcium, urine, mg/24 hrs	50 – 150 Low to Avg diet 100 – 300 High Avg diet	50-150 Low Calcium diet 100-300 Avg-High Calcium diet
Chloride (Cl), urine, meq/24 hr	110 – 250	110 – 250

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**LABORATORY NEW AUTOMATED CHEMISTRY NORMAL RANGES**  
**Effective 1/20/2015**

(see Communiqué 27, #3 for additional information)  
(blood specimen type is serum unless otherwise specified)

TEST	Old Reference Range	New Reference Range
Creatinine Clearance, ml/min/1.73 m <sup>2</sup>	70 – 130 > 3 years	77 – 159 Adult Male 72–161 Female 18–39y 62–139 Female 40 -59y 56-131 Female >60Y 70-130 0-17Y
Creatinine, urine, g/day g/24 hrs	1.0 – 2.0 Male 0.8 – 1.8 Female	0.7 – 2.5 M >=18Y 0.7 – 2.3 F >=18Y 0.11- 0.68 0-8yr 0.17-1.41 9-12Y 0.29 – 1.87 13-17Y
Fractional Excretion of Sodium (FeNa)	FeNa = $\frac{\text{UrNa/Serum Na} \times 100}{\text{Ur Crea/Serum Crea}}$ <u>Previously not an orderable test.</u>	< 1 % prerenal azotemia >1.5% acute tubular necrosis
Glucose, mg/dl	none	<15 mg/dL Tietz Clinical Guide 3 <sup>rd</sup> edition
Magnesium, urine, mg/24 hrs	73 – 122	70 – 120
Microalbumin/Creat Ratio Random  Timed  24 hr		< 30 mg/g creat Microalbuminuria 30 – 299 mg/g creat Clinical Albuminuria >= 300 mg/g creat  < 20 ug/minute Microalbuminuria 20 – 200 ug/minute Clinical Albuminuria > 200 ug/min  < 30 mg/24 hr Microalbuminuria 30 – 300 mg/24 Clinical Albuminuria >=300 mg/24  ADA classification of MA
Microalbumin, urine,	0 – 1.9	0 – 1.9

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TEST	Old Reference Range	New Reference Range
mg/dl	<30 mg/24 hr	or < 30 mg/24 hr
Phosphorous, urine Random mg/dL 24 hr , mg/day	None	0 – 150 mg/dL 400 – 1,300 mg/day, on restricted diet
Potassium (K), urine meq/24 hr	25 – 125	25 – 125
Protein, urine, mg/dl g/24 hrs	< 15  0.05 – 0.15	0 – 14 mg/dL or <0 - 199 mg/g creatinine  0.05 – 0.299 g/day after exercise 0.05 – 0.080 g/day at rest
Sodium, urine meq/24 hr	40 – 220	40 – 220
Urea nitrogen, urine, g/24 hrs	5 – 20	6 – 20
Uric Acid, urine, mg/24 hrs	250 – 750	250 – 800
Urine Protein/Urine Creatinine Ratio	< 0.20	< 0.20