

HIGHLAND HOSPITAL CHEMISTRY REFERENCE RANGES

| TEST                               | AGE<br>from → up to<br>but NOT including | CURRENT                           | CURRENT                         | UNITS       | NEW 9.23.09  | NEW 9.23.09  | CRITICAL | CRITICAL |
|------------------------------------|--|-----------------------------------|---------------------------------|-------------|--------------|--------------|----------|----------|
|                                    |  | FEMALE RANGE<br>Highland Hospital | MALE RANGE<br>Highland Hospital |             | FEMALE RANGE | MALE RANGE   |          |          |
| <b>GENERAL CHEMISTRIES</b>         |  |                                   |                                 |             |              |              |          |          |
| 50g SCREEN (GLU)                   | ALL                                      | 63-135                            | -                               | mg/dL       | 63-135       | -            | 40       | 500      |
| ALBUMIN                            | ALL                                      | 3.2-4.8                           | 3.2-4.8                         | g/dL        | 3.5 - 5.2    | 3.5 - 5.2    |          |          |
| ALKALINE PHOS<br>age range changes | 0-5D                                     | 45-129                            | 45-129                          | U/L         | 110-300      | 110-300      |          |          |
|                                    | 5D-4Y                                    | 45-129                            | 45-129                          |             | 145-320      | 145-320      |          |          |
|                                    | 4Y-7Y                                    | 45-129                            | 45-129                          |             | 150-380      | 150-380      |          |          |
|                                    | 7Y-10Y                                   | 45-129                            | 45-129                          |             | 175-420      | 175-420      |          |          |
|                                    | 10Y-12Y                                  | 45-129                            | 45-129                          |             | 130-560      | 135-530      |          |          |
|                                    | 12Y-14Y                                  | 45-129                            | 45-129                          |             | 105-420      | 200-495      |          |          |
|                                    | 14Y-16Y                                  | 45-129                            | 45-129                          |             | 70-230       | 130-525      |          |          |
|                                    | 16Y-20Y                                  | 45-129                            | 45-129                          |             | 50-130       | 65-260       |          |          |
| ≥ 20Y                              | 45-129                                   | 45-129                            |                                 | 35 - 105    | 40 - 130     |              |          |          |
| ALT                                | ALL                                      | 10 - 44                           | 12 - 49                         | U/L         | 0 - 35       | 0 - 50       |          |          |
| AMMONIA EDTA plasma                | ALL                                      | 10 - 47                           | 10 - 47                         | micro mol/L | 10 - 47      | 10 - 47      |          |          |
| AMYLASE                            | ALL                                      | 30-118                            | 30-118                          | U/L         | 28 - 100     | 28 - 100     |          |          |
| AST                                | ALL                                      | 0-34                              | 0-34                            | U/L         | 0 - 35       | 0 - 50       |          |          |
| BHCG                               | ALL                                      | none                              | none                            | mIU/mL      | 0-7          | -            |          |          |
| CALCIUM age range changes          | 0-11Y                                    | 9.0-10.8                          | 9.0-10.8                        | mg/dL       | 9.0-10.8     | 9.0-10.8     | 6.5      | 13.0     |
|                                    | 11Y-25Y                                  | 9.0-10.4                          | 9.3-10.5                        |             | 9.0-10.4     | 9.3-10.5     | 6.5      | 13.0     |
|                                    | 25Y-45Y                                  | 8.8-10.2                          | 9.0-10.3                        |             | 8.8-10.2     | 9.0-10.3     | 6.5      | 13.0     |
|                                    | 45Y-75Y                                  | 8.8 - 10.2                        | 8.8-10.1                        |             | * see >45    | * see >45    |          |          |
|                                    | >75Y                                     | 8.6-10.0                          | 8.6-10.0                        |             | * see >45    | * see >45    |          |          |
| ≥ 45 Y                             | -  | -                                 |                                 | 8.6-10.2    | 8.6-10.2     | 6.5          | 13.0     |          |
| CREAT- Age range changes           |  |                                   |                                 |             |              |              |          |          |
| (Enzymatic)                        | 0D-4D                                    | 0.3-1.0                           | 0.3-1.0                         | mg/dL       | 0.3-1.0      | 0.3-1.0      |          |          |
|                                    | 4D-7D                                    | 0.3-0.7                           | 0.3-0.7                         |             | * see 4D-2Y  | * see 4D-2Y  |          |          |
|                                    | 7D-12Y                                   | 0.3-0.7                           | 0.3-0.7                         |             | * see 2Y-12Y | * see 2Y-12Y |          |          |
|                                    | 4D-2Y                                    | -                                 | -                               |             | 0.2-0.4      | 0.2-0.4      |          |          |
|                                    | 2Y-12Y                                   | -                                 | -                               |             | 0.3-0.7      | 0.3-0.7      |          |          |
|                                    | 12Y-21Y                                  | 0.5-1.0                           | 0.5-1.0                         |             | 0.5-1.0      | 0.5-1.0      |          |          |
|                                    | ≥ 21Y                                    | 0.5-0.8                           | 0.6-1.1                         |             | 0.51 - 0.95  | 0.67 - 1.17  |          |          |
| CK                                 | ALL                                      | 26 - 140                          | 38 - 174                        | U/L         | 34 - 145     | 46 - 171     |          |          |
| CKMB                               | ALL                                      | 0-4.5                             | 0-4.5                           | ng/ml       | 0-4.5        | 0-4.5        |          |          |
| CHLORIDE                           | ALL                                      | 99-109                            | 99-109                          | mmol/L      | 96 - 108     | 96 - 108     | 80       | 120      |
| CO2                                | ALL                                      | 20-32                             | 20-32                           | mmol/L      | 20 - 28      | 20 - 28      | 10       | 40       |
| CRP                                | ALL                                      | 0-10                              | 0-10                            | mg/L        | 0-10         | 0-10         |          |          |
| DIRECT BILIRUBIN                   |  |                                   |                                 |             |              |              |          |          |
|                                    | 0-6D                                     | 0-0.6                             | 0-0.6                           | mg/dL       | 0-0.6        | 0-0.6        |          |          |
|                                    | ≥ 6D                                     | 0-0.5                             | 0-0.5                           |             | 0 - 0.3      | 0 - 0.3      |          |          |

HIGHLAND HOSPITAL CHEMISTRY REFERENCE RANGES

| TEST  | AGE<br>from → up to<br>but NOT including | CURRENT                           | CURRENT                         | UNITS      | NEW 9.23.09  | NEW 9.23.09 | CRITICAL | CRITICAL |
|---|--|-----------------------------------|---------------------------------|------------|--------------|-------------|----------|----------|
|   |  | FEMALE RANGE<br>Highland Hospital | MALE RANGE<br>Highland Hospital |            | FEMALE RANGE | MALE RANGE  |          |          |
| ETHANOL                                     | ALL                                      | 0                                 | 0                               | mg/dL      | 0            | 0           |          | 300      |
| IRON  | ALL                                      | 38-138                            | 40-159                          | micro g/dL | 34 - 165     | 45 - 170    |          |          |
| GGT   | ALL                                      | 0-38                              | 0-73                            | U/L        | 5 - 36       | 8 - 61      |          |          |
| GLUCOSE                                     | 0D                                       | 36-110                            | 36-110                          | mg/dL      | 36-110       | 36-110      | 25       | 200      |
|   | 1D-7D                                    | 47-117                            | 47-117                          |            | 47-117       | 47-117      | 40       | 200      |
|   | ≥ 7D                                     | 74-106                            | 74-106                          |            | 74-106       | 74-106      | 40       | 500      |
| TIBC calculated                             | ALL                                      | 250-450                           | 250-450                         | micro g/dL | 250-450      | 250-450     |          |          |
| UIBC  | ALL                                      |                                   |                                 | micro g/dL | 110 - 370    | 110 - 370   |          |          |
| K<br><i>age range changes</i>               | 0-2D                                     | 3.5-6.4                           | 3.5-6.4                         | mmol/L     | 4.5-7.7      | 4.5-7.7     | 2.8      | 8.0      |
|   | 2D-7D                                    | 3.5-6.4                           | 3.5-6.4                         |            | * see 2D-4M  | * see 2D-4M |          |          |
|   | 7D-4M                                    | 4.0-6.4                           | 4.0-6.4                         |            | * see 2D-4M  | * see 2D-4M |          |          |
|   | 2D-4M                                    | -                                 | -                               |            | 4.0-6.4      | 4.0-6.4     | 2.8      | 7.0      |
|   | 4M-2Y                                    | 3.7-5.6                           | 3.7-5.6                         |            | 3.7-5.6      | 3.7-5.6     | 2.8      | 6.2      |
|   | 2Y-17Y                                   | 3.6-5.2                           | 3.6-5.2                         |            | 3.6-5.2      | 3.6-5.2     | 2.8      | 6.2      |
| ≥ 17Y                                       | 3.5-5.5                                  | 3.5-5.5                           | 3.5-5.5                         | 3.3 - 5.1  | 3.3 - 5.1    | 2.8         | 6.2      |          |
| LD  | ALL                                      | 120-246                           | 120-246                         | U/L        | 118 - 225    | 118 - 225   |          |          |
| LIPASE                                      | ALL                                      | 6 - 51                            | 6 - 51                          | U/L        | 13 - 60      | 13 - 60     |          |          |
| MAGNESIUM                                   | ALL                                      | 1.1 - 2.2                         | 1.1 - 2.2                       | mEq/L      | 1.3 - 2.1    | 1.3 - 2.1   | 0.8      | 4.0      |
| SODIUM                                      | ALL                                      | 132-146                           | 132-146                         | mmol/L     | 133 - 145    | 133 - 145   | 120      | 160      |
| TOTAL BILIRUBIN<br><i>age range changes</i> | 0D                                       | 2.0-6.0                           | 2.0-6.0                         | mg/dL      | 2.0-6.0      | 2.0-6.0     |          | 15.0     |
|   | 1D                                       | 2.0-6.0                           | 2.0-6.0                         |            | 6.0-7.0      | 6.0-7.0     |          | 15.0     |
|   | 2D                                       | 6.0-7.0                           | 6.0-7.0                         |            | 4.0-12.0     | 4.0-12.0    |          | 15.0     |
|   | 3D                                       | 4.0-12.0                          | 4.0-12.0                        |            | 0.0 - 1.4    | 0.0 - 1.4   |          | 15.0     |
|   | 4D-7D                                    | 0.0 - 1.4                         | 0.0 - 1.4                       |            | 0.0 - 1.4    | 0.0 - 1.4   |          | 15.0     |
|   | ≥ 7D                                     | 0.3-1.5                           | 0.3-1.5                         |            | 0 - 1.2      | 0 - 1.2     |          |          |
| PHOS  | 0D                                       | 4.2-8.5                           | 4.2-8.5                         | mg/dL      | 4.2-8.5      | 4.2-8.5     | 1.1      | 9.0      |
|   | 1D-13Y                                   | 4.0-6.5                           | 4.0-6.5                         |            | 4.0-6.5      | 4.0-6.5     | 1.1      | 9.0      |
|   | ≥ 13Y                                    | 2.4-5.1                           | 2.4-5.1                         |            | 2.7 - 4.5    | 2.7 - 4.5   | 1.1      | 9.0      |
| TOTAL PROTEIN                               | ALL                                      | 5.7-8.2                           | 5.7-8.2                         | g/dL       | 6.3 - 7.7    | 6.3 - 7.7   |          |          |
| UN  | ALL                                      | 9.-23                             | 9.-23                           | mg/dL      | 6 - 20       | 6 - 20      |          |          |
| URATE                                       | ALL                                      | 3.1-7.8                           | 3.7-9.2                         | mg/dL      | 2.7 - 6.8    | 3.9 - 9.0   |          |          |

HIGHLAND HOSPITAL CHEMISTRY REFERENCE RANGES

| TEST                | AGE<br>from → up to<br>but NOT including                        | CURRENT  | CURRENT  | UNITS | NEW 9.23.09  | NEW 9.23.09  | CRITICAL<br>VALUE<br>LOW | CRITICAL<br>VALUE<br>HIGH |
|---------------------|---|--|--|-------|--|--|--------------------------|---------------------------|
|                     |   | FEMALE RANGE<br>Highland Hospital  | MALE RANGE<br>Highland Hospital  |       | FEMALE RANGE   | MALE RANGE   |                          |                           |
| CHOL, TOTAL         | ALL   | <200 Desirable<br>200-239 Borderline High<br>>239 High   | <200 Desirable<br>200-239 Borderline High<br>>239 High   | mg/dL | <200 Desirable<br>200-239 Borderline High<br>>239 High   | <200 Desirable<br>200-239 Borderline High<br>>239 High   |                          |                           |
| CHOL, HDL           | ALL   | <40 Low<br>>60 High  | <40 Low<br>>60 High  | mg/dL | <40 Low<br>>60 High  | <40 Low<br>>60 High  |                          |                           |
| CHOL,LDL Calculated | ALL   | <100 Optimal<br>100-129 Near or above Optimal<br>130-159 Borderline High<br>160-189 High<br>>189 Very High | <100 Optimal<br>100-129 Near or above Optimal<br>130-159 Borderline High<br>160-189 High<br>>189 Very High | mg/dL | <100 Optimal<br>100-129 Near or above Optimal<br>130-159 Borderline High<br>160-189 High<br>>189 Very High | <100 Optimal<br>100-129 Near or above Optimal<br>130-159 Borderline High<br>160-189 High<br>>189 Very High |                          |                           |
| TRIG                | ALL   | <150 Normal<br>150-199 Borderline High<br>200-499 High<br>>499 Very High                                   | <150 Normal<br>150-199 Borderline High<br>200-499 High<br>>499 Very High                                   | mg/dL | <150 Normal<br>150-199 Borderline High<br>200-499 High<br>>499 Very High                                   | <150 Normal<br>150-199 Borderline High<br>200-499 High<br>>499 Very High                                   |                          |                           |
| CSF                 |   |  |  |       |  |  |                          |                           |
| GLUCOSE, CSF        | ALL   | 50-80  | 50-80  | mg/dL | 50-80  | 50-80  | 37                       |                           |
| TOTAL PROTEIN, CSF  | 0-8D<br>8D-1M<br>1M<br>2M<br>3M-6M<br>6M-10Y<br>10Y-16Y<br>≥16Y | 15-45<br>15-45<br>15-45<br>15-45<br>15-45<br>15-45<br>15-45<br>15-45                                       | 15-45<br>15-45<br>15-45<br>15-45<br>15-45<br>15-45<br>15-45<br>15-45                                       | mg/dL | 33-108<br>31-90<br>27-77<br>18-60<br>10-.40<br>10-.32<br>10-.41<br>12-.60                                  | 33-108<br>31-90<br>27-77<br>18-60<br>10-.40<br>10-.32<br>10-.41<br>12-.60                                  |                          |                           |

HIGHLAND HOSPITAL CHEMISTRY REFERENCE RANGES

| TEST                                     | AGE<br>from → up to<br>but NOT including | CURRENT                           | CURRENT                         | UNITS         | NEW 9.23.09     | NEW 9.23.09     | CRITICAL | CRITICAL |
|--|--|-----------------------------------|---------------------------------|---------------|-----------------|-----------------|----------|----------|
|  |  | FEMALE RANGE<br>Highland Hospital | MALE RANGE<br>Highland Hospital |               | FEMALE RANGE    | MALE RANGE      |          |          |
| <b>THERAPEUTIC DRUG MONITORING (TDM)</b> |  |                                   |                                 |               |                 |                 |          |          |
|  |  | THERAPEUTIC RANGE<br>FEMALE       | THERAPEUTIC RANGE<br>MALE       |               |                 |                 |          |          |
| ACETAMINOPHEN                            | ALL                                      | -                                 | -                               | micro gram/mL | -               | -               |          | 50       |
| CARBAMAZEPINE                            | ALL                                      | 4.0-12.0                          | 4.0-12.0                        | micro gram/mL | 4.0-12.0        | 4.0-12.0        |          | 15       |
| DIGOXIN                                  | ALL                                      | 0.8 - 2.0                         | 0.8 - 2.0                       | ng/mL         | 0.8 - 2.0       | 0.8 - 2.0       |          | 2.5      |
| LITHIUM                                  | ALL                                      | 0.6-1.2                           | 0.6-1.2                         | mmol/L        | 0.6-1.2         | 0.6-1.2         |          | 1.5      |
| PHENOBARBITAL                            | ALL                                      | 15.0-40.0                         | 15.0-40.0                       | micro gram/mL | 15.0-40.0       | 15.0-40.0       |          | 50       |
| PHENYTOIN                                | ALL                                      | 10.0-20.0                         | 10.0-20.0                       | micro gram/mL | 10.0-20.0       | 10.0-20.0       |          | 40       |
| SALICYLATE                               | ALL                                      | 15.0-30.0                         | 15.0-30.0                       | mg/dL         | 15.0-30.0       | 15.0-30.0       |          | 50       |
| THEOPHYLLINE                             | ALL                                      | 10.0-20.0                         | 10.0-20.0                       | micro gram/mL | 10.0-20.0       | 10.0-20.0       |          | 25       |
| GENTAMYCIN random                        | ALL                                      | -                                 | -                               | micro gram/ml | -               | -               |          | 20       |
| trough                                   | ALL                                      | 0.5-1.5                           | 0.5-1.5                         | micro gram/ml | 1.0-2.0         | 1.0-2.0         |          | 4.0      |
| peak                                     | ALL                                      | 5.0-10.0                          | 5.0-10.0                        | micro gram/ml | 5.0-10.0        | 5.0-10.0        |          | 20       |
| VANCOMYCIN random                        | ALL                                      | -                                 | -                               | micro gram/ml | -               | -               |          | 80       |
| trough                                   | ALL                                      | 10.0-20.0                         | 10.0-20.0                       | micro gram/ml | 10.0-20.0       | 10.0-20.0       |          | 40       |
| peak                                     | ALL                                      | 20.0-40.0                         | 20.0-40.0                       | micro gram/ml | 20.0-40.0       | 20.0-40.0       |          | 80       |
| <b>URINES</b>                            |  |                                   |                                 |               |                 |                 |          |          |
| URINE AMYLASE                            | ALL                                      | -                                 | -                               | U/L           | -               | -               |          |          |
| URINE CALCIUM                            | ALL                                      | 50-150                            | 50-150                          | mg/24 hours   | 100 - 240       | 100 - 240       |          |          |
| URINE CHLORIDE                           | ALL                                      | 110 - 250                         | 110 - 250                       | mmol/24 hours | 110 - 250       | 110 - 250       |          |          |
| URINE CREATININE                         | ALL                                      | 1000-2000                         | 1000-2000                       | mg/24 hours   | 600 - 1600      | 800 - 1800      |          |          |
| URINE POTASSIUM                          | ALL                                      | 25 - 125                          | 25 - 125                        | mmol/24 hours | 25 - 125        | 25 - 125        |          |          |
| URINE SODIUM                             | ALL                                      | 40-200                            | 40-200                          | mmol/24 hours | 40 - 220        | 40 - 220        |          |          |
| URINE PHOSPHORUS                         | ALL                                      | ---                               | ---                             | mg/24 hours   | 400 - 1300      | 400 - 1300      |          |          |
| URINE TOTAL PROTEIN                      | ALL                                      | 0-114                             | 0-114                           | mg/24 hours   | 0 - 149         | 0 - 149         |          |          |
| URINE UREA NITROGEN                      | ALL                                      | -                                 | -                               | mg/24 hours   | 12,000 - 20,000 | 12,000 - 20,000 |          |          |
| URINE URATE                              | ALL                                      | 250-750                           | 250-750                         | mg/24hr       | 250 - 750       | 250 - 750       |          |          |
| CREATININE CLEARANCE                     | ALL                                      | 70-130                            | 70-130                          | mL/min        | 87 - 107        | 107 - 139       |          |          |

HIGHLAND HOSPITAL CHEMISTRY REFERENCE RANGES

| TEST | AGE<br>from → up to<br>but NOT including | CURRENT                           | CURRENT                         | UNITS | NEW 9.23.09  | NEW 9.23.09 | CRITICAL     | CRITICAL      |
|------|--|-----------------------------------|---------------------------------|-------|--------------|-------------|--------------|---------------|
|      |  | FEMALE RANGE<br>Highland Hospital | MALE RANGE<br>Highland Hospital |       | FEMALE RANGE | MALE RANGE  | VALUE<br>LOW | VALUE<br>HIGH |
|      |  |                                   |                                 |       |              |             |              |               |
|      |  |                                   |                                 |       |              |             |              |               |
|      |  |                                   |                                 |       |              |             |              |               |