

**A**

**For Discussion Purposes Only**  
**Congenital Adrenal Hyperplasia and Congenital Hypothyroidism**  
**Results of Initial Newborn Screening 2005 and 2006**  
**From Michigan, Ohio, Minnesota, Indiana, and Wisconsin**

**Endocrine Project Report**  
**Region 4 Genetics Collaborative**  
**April 15, 2008**  
**Okemos, Michigan**

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**Preliminary Results**

## **17-OHP Initial Screening Results**

DRAFT

State "A" Initial CAH Screening  
For the Period 1-1/05-12/31/2006

Tests where age at collection between 0 and 14 days

|                               | N      | Mean 17-OHP            | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-------------------------------|--------|------------------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases                     | 249439 | 19.2150                | 0   | 236 | 15.7742 | 16     | 89      | 114       | 158       |
| <b>NICU</b>                   |        |                        |     |     |         |        |         |           |           |
| Yes                           | 26078  | 40.5745                | 2   | 236 | 35.6594 | 29     | 190     | 211       | 226       |
| Not Yes                       | 223361 | 16.7212                | 0   | 226 | 8.3627  | 15     | 44      | 51        | 67        |
| <b>Race</b>                   |        |                        |     |     |         |        |         |           |           |
| White                         | 162590 | 19.0691                | 0   | 236 | 14.7695 | 16     | 83      | 107       | 146       |
| Black                         | 42512  | 20.7737                | 2   | 236 | 19.7640 | 16     | 111     | 144       | 192       |
| <b>Gender</b>                 |        |                        |     |     |         |        |         |           |           |
| Female                        | 120759 | 17.6935                | 1   | 236 | 15.1219 | 14     | 84      | 111       | 157       |
| Male                          | 126285 | 20.6325                | 0   | 236 | 16.1714 | 17     | 93      | 117       | 157       |
| <b>Birth Weight</b>           |        |                        |     |     |         |        |         |           |           |
| <2500                         | 23099  | 37.3982                | 2   | 236 | 36.1512 | 24     | 194     | 213       | 226       |
| >=2500                        | 226340 | 17.3593                | 0   | 236 | 10.1815 | 15     | 56      | 71        | 92        |
| <b>Age at Collection</b>      |        |                        |     |     |         |        |         |           |           |
| 1-23                          | 3456   | 38.5301                | 2   | 236 | 37.8633 | 25     | 208     | 222       | 226       |
| 24-36                         | 212897 | 19.2376                | 0   | 236 | 14.6895 | 16     | 83      | 107       | 147       |
| > 36                          | 33086  | 17.0524                | 2   | 236 | 17.1491 | 13     | 98      | 121       | 166       |
| <b>Gestation Length</b>       |        |                        |     |     |         |        |         |           |           |
| < = 36 wks                    | 35182  | 33.8682                | 2   | 236 | 32.1828 | 23     | 172     | 211       | 222       |
| >=37 wks                      | 214257 | 16.8089                | 0   | 236 | 8.8639  | 15     | 47      | 58        | 75        |
| <b>TPN</b>                    |        |                        |     |     |         |        |         |           |           |
| Yes                           | 4786   | 55.0784                | 2   | 236 | 46.9751 | 39     | 221     | 226       | 235       |
| Not Yes                       | 244653 | 18.5134                | 0   | 236 | 13.5971 | 16     | 76      | 97        | 131       |
| <b>Transfused</b>             |        |                        |     |     |         |        |         |           |           |
| Yes                           | 373    | 58.6220                | 2   | 236 | 57.1464 | 36     | 236     | 236       | 236       |
| Not Yes                       | 249066 | 19.1560                | 0   | 236 | 15.5561 | 16     | 88      | 113       | 154       |
| <b>MultipleBirths</b>         |        |                        |     |     |         |        |         |           |           |
| Yes                           | 8813   | 36.3419                | 2   | 236 | 32.9053 | 25     | 172     | 211       | 222       |
| Not Yes                       | 240626 | 18.5877                | 0   | 236 | 14.3927 | 16     | 80      | 104       | 144       |
| <b>Test Interpretations</b>   |        |                        |     |     |         |        |         |           |           |
| Normal                        | 243367 | 18.4294                | 2   | 149 | 12.1763 | 16     | 72      | 87        | 107       |
| Inconclusive                  | 4549   | 21.8098                | 0   | 198 | 17.4209 | 17     | 96      | 112       | 130       |
| Abnormal                      | 1523   | 136.9961               | 60  | 236 | 46.5367 | 123    | 236     | 236       | 236       |
| <b>Mean age at collection</b> |        |                        |     |     |         |        |         |           |           |
|                               | N      | Mean age at collection | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
| All cases                     | 249441 | 29.4986                | 0   | 334 | 10.4966 | 26     | 59      | 73        | 112       |

State "B" Initial CAH Screening  
For the Period 1-1/05-12/31/2006

Tests where age at collection between 0 and 14 days

|                      | N      | Mean 17-OHP | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|----------------------|--------|-------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases            | 144457 | 17.7424     | 0   | 656 | 13.9959 | 15     | 72      | 95        | 129       |
| NICU                 |        |             |     |     |         |        |         |           |           |
| Yes                  | 1886   | 51.1898     | 0   | 563 | 48.5781 | 35     | 223     | 277       | 352       |
| Not Yes              | 142571 | 17.2999     | 0   | 656 | 12.3402 | 15     | 64      | 83        | 112       |
| Race                 |        |             |     |     |         |        |         |           |           |
| White                | 92739  | 17.5986     | 0   | 656 | 12.3790 | 15     | 64      | 83        | 114       |
| Black                | 9930   | 17.2585     | 0   | 570 | 15.6822 | 14     | 81      | 107       | 152       |
| Gender               |        |             |     |     |         |        |         |           |           |
| Female               | 70207  | 16.3048     | 0   | 570 | 13.1542 | 14     | 66      | 88        | 122       |
| Male                 | 73547  | 19.1152     | 0   | 656 | 14.6330 | 16     | 78      | 102       | 133       |
| Birth Weight         |        |             |     |     |         |        |         |           |           |
| <2500                | 12217  | 32.6222     | 0   | 570 | 33.1841 | 22     | 163     | 196       | 245       |
| >=2500               | 132240 | 16.3677     | 0   | 656 | 9.4822  | 15     | 48      | 60        | 79        |
| Age at Collection    |        |             |     |     |         |        |         |           |           |
| 1-23                 | 1087   | 49.0883     | 0   | 425 | 44.2374 | 36     | 211     | 233       | 342       |
| 24-36                | 97844  | 18.0688     | 0   | 656 | 12.1040 | 16     | 62      | 82        | 112       |
| > 36                 | 45526  | 16.2923     | 0   | 534 | 15.3041 | 13     | 79      | 102       | 139       |
| Gestation Length     |        |             |     |     |         |        |         |           |           |
| < 36 wks             | 26391  | 26.2314     | 0   | 656 | 25.9574 | 19     | 131     | 163       | 209       |
| >=37 wks             | 118066 | 15.8448     | 0   | 467 | 8.3281  | 15     | 43      | 51        | 63        |
| TPN                  |        |             |     |     |         |        |         |           |           |
| Yes                  | 2047   | 47.4397     | 0   | 570 | 45.1031 | 34     | 217     | 245       | 305       |
| Not Yes              | 142410 | 17.3155     | 0   | 656 | 12.5146 | 15     | 65      | 84        | 116       |
| Transfused           |        |             |     |     |         |        |         |           |           |
| Yes                  | 773    | 54.1061     | 0   | 570 | 59.8046 | 35     | 305     | 425       | 534       |
| Not Yes              | 143684 | 17.5467     | 0   | 656 | 13.0602 | 15     | 69      | 89        | 120       |
| MultipleBirths       |        |             |     |     |         |        |         |           |           |
| Yes                  | 2832   | 27.4075     | 2   | 246 | 24.1278 | 20     | 129     | 148       | 203       |
| Not Yes              | 141625 | 17.5491     | 0   | 656 | 13.6477 | 15     | 70      | 92        | 125       |
| Test Interpretations |        |             |     |     |         |        |         |           |           |
| Negative             | 143288 | 17.4302     | 0   | 570 | 12.6340 | 15     | 67      | 86        | 116       |
| Unsatisfactory       | 1079   | 48.5802     | 0   | 425 | 43.5039 | 36     | 208     | 231       | 342       |
| Positive             | 85     | 138.2941    | 51  | 656 | 89.2388 | 116    | 656     | 656       | 656       |

Age at Collection

|           | N      | Mean age at Collection | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------|--------|------------------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases | 144457 | 36.1719                | 0   | 336 | 27.9421 | 31     | 171     | 307       | 329       |

State "C" Initial CAH Screening  
For the Period 1-1/05-12/31/2006

Tests where age at collection between 0 and 14 days

|                      | N      | Mean 17-OHP | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|----------------------|--------|-------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases            | 298081 | 19.5485     | 0   | 632 | 15.5103 | 16     | 82      | 109       | 153       |
| NICU                 |        |             |     |     |         |        |         |           |           |
| Yes                  | 24386  | 39.6231     | 0   | 632 | 38.8020 | 28     | 194     | 233       | 273       |
| Not Yes              | 273695 | 17.7599     | 0   | 562 | 9.4211  | 16     | 48      | 54        | 75        |
| Race                 |        |             |     |     |         |        |         |           |           |
| White                | 215988 | 19.3993     | 0   | 632 | 14.7208 | 16     | 78      | 103       | 141       |
| Black                | 43881  | 20.5566     | 0   | 525 | 19.1839 | 16     | 105     | 143       | 189       |
| Gender               |        |             |     |     |         |        |         |           |           |
| Female               | 143284 | 17.9916     | 0   | 632 | 14.7089 | 15     | 76      | 104       | 148       |
| Male                 | 150081 | 21.0438     | 0   | 562 | 16.0813 | 18     | 87      | 114       | 160       |
| Birth Weight         |        |             |     |     |         |        |         |           |           |
| <2500                | 26256  | 36.3363     | 1   | 632 | 36.8299 | 24     | 189     | 225       | 268       |
| >=2500               | 271825 | 17.9270     | 0   | 562 | 10.1458 | 16     | 51      | 63        | 86        |
| Age at Collection    |        |             |     |     |         |        |         |           |           |
| 1-23                 | 1730   | 50.6503     | 4   | 525 | 48.0791 | 36     | 247     | 282       | 363       |
| 24-36                | 223501 | 19.6615     | 0   | 562 | 13.4896 | 17     | 67      | 94        | 133       |
| > 36                 | 72850  | 18.4633     | 0   | 632 | 18.6284 | 14     | 99      | 128       | 171       |
| Gestation Length     |        |             |     |     |         |        |         |           |           |
| < 36 wks             | 47986  | 30.3397     | 0   | 632 | 30.3792 | 21     | 163     | 197       | 252       |
| >=37 wks             | 250095 | 17.4780     | 0   | 562 | 9.1117  | 16     | 47      | 53        | 71        |
| TPN                  |        |             |     |     |         |        |         |           |           |
| Yes                  | 5619   | 55.1716     | 1   | 632 | 51.3256 | 38     | 253     | 277       | 328       |
| Not Yes              | 292462 | 18.8641     | 0   | 562 | 13.0284 | 16     | 67      | 90        | 122       |
| Transfused           |        |             |     |     |         |        |         |           |           |
| Yes                  | 260    | 63.9346     | 2   | 289 | 66.9544 | 38     | 265     | 285       | 289       |
| Not Yes              | 297821 | 19.5098     | 0   | 632 | 15.3349 | 16     | 81      | 108       | 150       |
| MultipleBirths       |        |             |     |     |         |        |         |           |           |
| Yes                  | 10520  | 32.5549     | 1   | 632 | 30.0263 | 24     | 158     | 188       | 224       |
| Not Yes              | 287561 | 19.0727     | 0   | 562 | 14.4905 | 16     | 74      | 101       | 143       |
| Test Interpretations |        |             |     |     |         |        |         |           |           |
| Low                  | 294337 | 18.7660     | 0   | 240 | 11.9987 | 16     | 62      | 79        | 111       |
| Inconclusive         | 1863   | 41.0097     | 2   | 243 | 33.9034 | 31     | 181     | 192       | 213       |
| High                 | 1880   | 120.7590    | 60  | 632 | 60.5576 | 102    | 354     | 382       | 525       |

Age at Collection

|           | N      | Mean age at Collection | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------|--------|------------------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases | 298288 | 33.2719                | 1   | 336 | 16.0397 | 28     | 93      | 117       | 165       |

State "D" Initial CAH Screening  
For the Period 1-1/05-12/31/2006

Tests where age at collection between 0 and 14 days

|                             | N      | Mean 17-OHP | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------------------------|--------|-------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases                   | 125508 | 16.1823     | 0   | 728 | 14.0621 | 13     | 69      | 93        | 133       |
| <b>NICU</b>                 |        |             |     |     |         |        |         |           |           |
| Yes                         | 6469   | 37.1465     | 0   | 426 | 38.9782 | 24     | 197     | 240       | 319       |
| Not Yes                     | 119039 | 15.0430     | 1   | 728 | 10.0376 | 13     | 48      | 61        | 83        |
| <b>Race</b>                 |        |             |     |     |         |        |         |           |           |
| White                       | 109721 | 16.1446     | 1   | 728 | 13.5690 | 13     | 66      | 87        | 127       |
| Black                       | 10379  | 17.0000     | 0   | 387 | 18.9450 | 13     | 101     | 130       | 180       |
| <b>Gender</b>               |        |             |     |     |         |        |         |           |           |
| Female                      | 59883  | 14.9954     | 0   | 728 | 13.5744 | 12     | 65      | 90        | 133       |
| Male                        | 63034  | 17.3259     | 1   | 585 | 14.4659 | 14     | 72      | 98        | 133       |
| <b>Age at Collection</b>    |        |             |     |     |         |        |         |           |           |
| 1-23                        | 5036   | 35.6265     | 0   | 365 | 32.0834 | 26     | 168     | 198       | 276       |
| 24-36                       | 10278  | 18.3151     | 1   | 728 | 15.8391 | 16     | 63      | 95        | 152       |
| > 36                        | 110194 | 15.0947     | 1   | 585 | 11.6579 | 13     | 55      | 75        | 107       |
| <b>Gestation Length</b>     |        |             |     |     |         |        |         |           |           |
| < 36 wks                    | 5399   | 35.4125     | 0   | 426 | 35.4943 | 24     | 180     | 221       | 295       |
| >=37 wks                    | 120109 | 15.3179     | 1   | 728 | 11.5169 | 13     | 54      | 72        | 101       |
| <b>Transfused</b>           |        |             |     |     |         |        |         |           |           |
| Yes                         | 137    | 53.5547     | 1   | 324 | 54.7767 | 37     | 303     | 324       | 324       |
| Not Yes                     | 125371 | 16.1414     | 0   | 728 | 13.8987 | 13     | 68      | 92        | 131       |
| <b>MultipleBirths</b>       |        |             |     |     |         |        |         |           |           |
| Yes                         | 3520   | 24.4011     | 2   | 363 | 24.5694 | 18     | 126     | 170       | 210       |
| Not Yes                     | 121988 | 15.9451     | 0   | 728 | 13.5657 | 13     | 66      | 88        | 128       |
| <b>Test Interpretations</b> |        |             |     |     |         |        |         |           |           |
| Normal                      | 124057 | 15.2443     | 1   | 135 | 9.2941  | 13     | 48      | 59        | 77        |
| Borderline                  | 1100   | 75.8736     | 38  | 159 | 24.6704 | 68     | 152     | 155       | 158       |
| Increased                   | 349    | 161.4699    | 0   | 728 | 76.5194 | 146    | 426     | 585       | 728       |

Age at Collection

|           | N      | Mean age at Collection | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------|--------|------------------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases | 125509 | 51.9375                | 0   | 336 | 22.5810 | 48     | 152     | 167       | 204       |

State "E" Initial CAH Screening  
For the Period 1-1/05-12/31/2006

Tests where age at collection between 1 and 14 days

|                             | N      | Mean 17-OHP | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------------------------|--------|-------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases                   | 138852 | 14.9969     | 0   | 399 | 12.8029 | 13     | 63      | 90        | 133       |
| <b>NICU</b>                 |        |             |     |     |         |        |         |           |           |
| Yes                         | 0      | 0           | 0   | 0   | 0       | 0      | 0       | 0         | 0         |
| Not Yes                     | 138852 | 14.9969     | 0   | 399 | 12.8029 | 13     | 63      | 90        | 133       |
| <b>Race</b>                 |        |             |     |     |         |        |         |           |           |
| White                       | 99971  | 14.9381     | 0   | 362 | 11.9067 | 13     | 58      | 81        | 121       |
| Black                       | 14591  | 16.1289     | 0   | 399 | 17.8224 | 12     | 96      | 140       | 191       |
| <b>Gender</b>               |        |             |     |     |         |        |         |           |           |
| Female                      | 66836  | 13.7291     | 0   | 254 | 11.8800 | 12     | 58      | 83        | 127       |
| Male                        | 70181  | 16.1868     | 0   | 399 | 13.4897 | 14     | 67      | 94        | 140       |
| <b>Birth Weight</b>         |        |             |     |     |         |        |         |           |           |
| <2500                       | 14770  | 25.9288     | 1   | 399 | 29.5393 | 17     | 163     | 207       | 223       |
| >=2500                      | 124082 | 13.6957     | 0   | 223 | 7.9780  | 12     | 40      | 47        | 64        |
| <b>Age at Collection</b>    |        |             |     |     |         |        |         |           |           |
| 1-23                        | 2394   | 31.5422     | 2   | 237 | 34.7435 | 14     | 207     | 223       | 236       |
| 24-36                       | 60792  | 15.9836     | 0   | 251 | 10.4968 | 11     | 47      | 64        | 100       |
| > 36                        | 75666  | 13.6807     | 0   | 399 | 12.7641 | 12     | 64      | 92        | 131       |
| <b>Gestation Length</b>     |        |             |     |     |         |        |         |           |           |
| < 36 wks                    | 15183  | 27.3262     | 1   | 399 | 29.3159 | 18     | 161     | 206       | 223       |
| >=37 wks                    | 123669 | 13.4833     | 0   | 223 | 7.5881  | 12     | 38      | 44        | 56        |
| <b>TPN</b>                  |        |             |     |     |         |        |         |           |           |
| Yes                         | 639    | 50.3067     | 1   | 399 | 49.9917 | 33     | 236     | 237       | 251       |
| Not Yes                     | 138213 | 14.8337     | 0   | 362 | 12.1386 | 13     | 58      | 82        | 125       |
| <b>Transfused</b>           |        |             |     |     |         |        |         |           |           |
| Yes                         | 233    | 46.9828     | 2   | 399 | 56.4058 | 25     | 223     | 236       | 399       |
| Not Yes                     | 138619 | 14.9432     | 0   | 362 | 12.5357 | 13     | 62      | 88        | 131       |
| <b>MultipleBirths</b>       |        |             |     |     |         |        |         |           |           |
| Yes                         | 1413   | 28.0389     | 2   | 223 | 27.7954 | 19     | 147     | 172       | 222       |
| Not Yes                     | 137439 | 14.8628     | 0   | 399 | 12.4859 | 13     | 60      | 87        | 131       |
| <b>Test Interpretations</b> |        |             |     |     |         |        |         |           |           |
| Normal                      | 138232 | 14.5570     | 0   | 188 | 10.3613 | 13     | 51      | 69        | 99        |
| Borderline                  | 515    | 108.0816    | 55  | 399 | 56.8031 | 87     | 237     | 254       | 285       |
| Positive                    | 105    | 137.6286    | 90  | 362 | 43.1010 | 133    | 224     | 362       | 362       |

Age at Collection

|           | N      | Mean Age at Collection | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------|--------|------------------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases | 138854 | 41.6973                | 0   | 336 | 22.0163 | 38     | 141     | 161       | 212       |

**Healthy White Females**  
**17-OHP Results For the Period 1-1/05-12/31/2006**  
**Tests where age at collection between 24 and 36 hours**

| State     | N     | % of Total | Mean 17-OHP | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------|-------|------------|-------------|-----|-----|---------|--------|---------|-----------|-----------|
| State "A" | 59786 | 24%        | 15.7750     | 1   | 214 | 7.3123  | 15     | 40      | 45        | 56        |
| State "B" | 29064 | 20%        | 15.9934     | 0   | 275 | 7.8992  | 15     | 41      | 48        | 61        |
| State "C" | 71748 | 24%        | 16.8694     | 1   | 382 | 7.9547  | 15     | 43      | 49        | 56        |

Record Selection Criteria

Race White  
 Gender Female  
 Birth wgt >=2500  
 Nicu not indicated as yes (non-NICU)

Total is all cases where age at collection is less than or equal to 14 days.

**17-OHP Results For the Period 1-1/05-12/31/2006**  
**Tests where age at collection between 24 and 36 hours**

| State     | N     | % of Total | Mean 17-OHP | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------|-------|------------|-------------|-----|-----|---------|--------|---------|-----------|-----------|
| State "A" | 53380 | 21%        | 15.4723     | 1   | 236 | 7.2765  | 14     | 39      | 46        | 59        |
| State "B" | 24124 | 17%        | 15.4062     | 0   | 275 | 7.1508  | 14     | 37      | 42        | 51        |
| State "C" | 60214 | 20%        | 16.4017     | 1   | 227 | 7.4031  | 15     | 41      | 46        | 53        |
| State "D" |       |            |             |     |     |         |        |         |           |           |
| State "E" | 16920 | 12%        | 13.8470     | 1   | 134 | 6.5720  | 13     | 34      | 39        | 47        |

Record Selection Criteria

Race White  
 Gender Female  
 Birth wgt >=2500  
 Gestational age over 37 weeks

Total is all cases where age at collection is less than or equal to 14 days.

**TSH Initial Screening Results**

DRAFT

State "A" Initial CH Screening  
For the Period 1-1/05-12/31/2006

Tests where age at collection between 0 and 14 days

|                               | N      | Mean TSH               | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-------------------------------|--------|------------------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases                     | 249437 | 11.8757                | 0   | 588 | 9.2283  | 11     | 31      | 36        | 44        |
| <b>NICU</b>                   |        |                        |     |     |         |        |         |           |           |
| Yes                           | 26076  | 10.6745                | 0   | 588 | 12.9832 | 9      | 41      | 50        | 76        |
| Not Yes                       | 223361 | 12.0159                | 1   | 588 | 8.6740  | 11     | 31      | 34        | 41        |
| <b>Race</b>                   |        |                        |     |     |         |        |         |           |           |
| White                         | 162589 | 11.9140                | 0   | 588 | 8.8855  | 11     | 31      | 36        | 43        |
| Black                         | 42511  | 12.2242                | 0   | 588 | 9.1073  | 11     | 33      | 40        | 47        |
| <b>Gender</b>                 |        |                        |     |     |         |        |         |           |           |
| Female                        | 120756 | 11.3580                | 0   | 588 | 10.1371 | 10     | 31      | 36        | 45        |
| Male                          | 126286 | 12.3533                | 0   | 588 | 8.0779  | 11     | 31      | 36        | 44        |
| <b>Birth Weight</b>           |        |                        |     |     |         |        |         |           |           |
| <2500                         | 23098  | 10.8678                | 0   | 573 | 12.0498 | 9      | 36      | 45        | 59        |
| >=2500                        | 226339 | 11.9785                | 1   | 588 | 8.8838  | 11     | 31      | 35        | 43        |
| <b>Age at Collection</b>      |        |                        |     |     |         |        |         |           |           |
| 1-23                          | 3455   | 16.0894                | 0   | 496 | 17.7167 | 12     | 83      | 100       | 138       |
| 24-36                         | 212896 | 12.2083                | 1   | 588 | 9.0188  | 11     | 31      | 35        | 42        |
| > 36                          | 33086  | 9.2954                 | 0   | 573 | 8.7557  | 8      | 27      | 31        | 38        |
| <b>Gestation Length</b>       |        |                        |     |     |         |        |         |           |           |
| < = 36 wks                    | 35181  | 10.9389                | 0   | 588 | 12.3385 | 9      | 34      | 42        | 57        |
| >=37 wks                      | 214256 | 12.0295                | 1   | 588 | 8.6012  | 11     | 31      | 35        | 43        |
| <b>TPN</b>                    |        |                        |     |     |         |        |         |           |           |
| Yes                           | 4785   | 7.7659                 | 0   | 573 | 14.9893 | 5      | 30      | 41        | 46        |
| Not Yes                       | 244652 | 11.9561                | 1   | 588 | 9.0608  | 11     | 31      | 36        | 44        |
| <b>Transfused</b>             |        |                        |     |     |         |        |         |           |           |
| Yes                           | 373    | 8.6434                 | 0   | 524 | 28.8273 | 4      | 55      | 107       | 524       |
| Not Yes                       | 249064 | 11.8805                | 0   | 588 | 9.1669  | 11     | 31      | 36        | 44        |
| <b>MultipleBirths</b>         |        |                        |     |     |         |        |         |           |           |
| Yes                           | 8812   | 10.6295                | 1   | 573 | 14.9192 | 9      | 32      | 38        | 54        |
| Not Yes                       | 240625 | 11.9213                | 0   | 588 | 8.9483  | 11     | 31      | 36        | 44        |
| <b>Test Interpretations</b>   |        |                        |     |     |         |        |         |           |           |
| Normal                        | 239437 | 11.5337                | 1   | 37  | 5.7058  | 11     | 28      | 30        | 31        |
| Inconclusive                  | 7732   | 12.4053                | 0   | 49  | 8.0540  | 11     | 41      | 45        | 47        |
| Abnormal                      | 1918   | 52.6731                | 14  | 588 | 71.1827 | 37     | 524     | 554       | 573       |
| <b>Mean age at collection</b> |        |                        |     |     |         |        |         |           |           |
|                               | N      | Mean age at collection | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
| All cases                     | 249441 | 29.4986                | 0   | 334 | 10.4966 | 26     | 59      | 73        | 112       |

State "B" Initial CH Screening  
For the Period 1-1/05-12/31/2006

Tests where age at collection between 0 and 14 days

|                             | N      | Mean TSH | Min | Max | Std Dev  | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------------------------|--------|----------|-----|-----|----------|--------|---------|-----------|-----------|
| All cases                   | 144457 | 9.7692   | 0   | 919 | 9.4224   | 9      | 27      | 31        | 37        |
| <b>NICU</b>                 |        |          |     |     |          |        |         |           |           |
| Yes                         | 1885   | 5.0053   | 0   | 43  | 5.0404   | 4      | 25      | 28        | 35        |
| Not Yes                     | 142572 | 9.8322   | 0   | 919 | 9.4507   | 9      | 28      | 31        | 37        |
| <b>Race</b>                 |        |          |     |     |          |        |         |           |           |
| White                       | 92739  | 9.8703   | 0   | 651 | 8.9005   | 9      | 28      | 31        | 36        |
| Black                       | 9930   | 9.7065   | 0   | 358 | 6.7288   | 9      | 27      | 31        | 37        |
| <b>Gender</b>               |        |          |     |     |          |        |         |           |           |
| Female                      | 70207  | 9.1868   | 0   | 919 | 10.9098  | 8      | 27      | 30        | 37        |
| Male                        | 73547  | 10.3243  | 0   | 801 | 7.7251   | 9      | 28      | 31        | 37        |
| <b>Birth Weight</b>         |        |          |     |     |          |        |         |           |           |
| <2500                       | 12217  | 8.4054   | 0   | 538 | 11.0279  | 7      | 28      | 34        | 47        |
| >=2500                      | 132240 | 9.8952   | 0   | 919 | 9.2500   | 9      | 27      | 30        | 36        |
| <b>Age at Collection</b>    |        |          |     |     |          |        |         |           |           |
| 1-23                        | 1087   | 13.4029  | 0   | 111 | 12.4822  | 10     | 67      | 85        | 99        |
| 24-36                       | 97844  | 10.8482  | 0   | 919 | 10.0894  | 10     | 28      | 32        | 37        |
| > 36                        | 45526  | 7.3636   | 0   | 651 | 7.1142   | 6      | 23      | 26        | 30        |
| <b>Gestation Length</b>     |        |          |     |     |          |        |         |           |           |
| < 36 wks                    | 26391  | 9.0296   | 0   | 801 | 10.5018  | 8      | 27      | 31        | 43        |
| >=37 wks                    | 118066 | 9.9345   | 0   | 919 | 9.1557   | 9      | 28      | 31        | 36        |
| <b>TPN</b>                  |        |          |     |     |          |        |         |           |           |
| Yes                         | 2047   | 6.0562   | 0   | 65  | 5.6236   | 5      | 27      | 32        | 40        |
| Not Yes                     | 142410 | 9.8226   | 0   | 919 | 9.4553   | 9      | 28      | 31        | 37        |
| <b>Transfused</b>           |        |          |     |     |          |        |         |           |           |
| Yes                         | 773    | 6.1449   | 0   | 99  | 8.3559   | 4      | 46      | 64        | 87        |
| Not Yes                     | 143684 | 9.7887   | 0   | 919 | 9.4241   | 9      | 27      | 31        | 37        |
| <b>MultipleBirths</b>       |        |          |     |     |          |        |         |           |           |
| Yes                         | 2832   | 8.5625   | 0   | 358 | 10.7306  | 7      | 27      | 33        | 56        |
| Not Yes                     | 141625 | 9.7933   | 0   | 919 | 9.3929   | 9      | 28      | 31        | 37        |
| <b>Test Interpretations</b> |        |          |     |     |          |        |         |           |           |
| Negative                    | 142983 | 9.5514   | 0   | 538 | 5.5339   | 9      | 26      | 28        | 31        |
| Borderline                  | 340    | 38.9676  | 24  | 64  | 7.1628   | 38     | 58      | 59        | 64        |
| Positive                    | 85     | 235.0941 | 13  | 919 | 210.9432 | 131    | 919     | 919       | 919       |

Age at Collection

|           | N      | Mean age at Collection | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------|--------|------------------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases | 144457 | 36.1719                | 0   | 336 | 27.9421 | 31     | 171     | 307       | 329       |

State "C" Initial CH Screening  
For the Period 1-1/05-12/31/2006

Tests where age at collection between 0 and 14 days

|                             | N      | Mean TSH | Min | Max  | Std Dev  | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------------------------|--------|----------|-----|------|----------|--------|---------|-----------|-----------|
| All cases                   | 298081 | 11.0120  | 0   | 1220 | 10.2783  | 10     | 29      | 34        | 41        |
| <b>NICU</b>                 |        |          |     |      |          |        |         |           |           |
| Yes                         | 24386  | 8.2962   | 0   | 860  | 14.7876  | 6      | 35      | 46        | 67        |
| Not Yes                     | 273695 | 11.2540  | 0   | 1220 | 9.7394   | 10     | 29      | 33        | 39        |
| <b>Race</b>                 |        |          |     |      |          |        |         |           |           |
| White                       | 215988 | 10.8730  | 0   | 1220 | 10.2006  | 10     | 29      | 33        | 40        |
| Black                       | 43881  | 11.3249  | 0   | 484  | 6.9671   | 10     | 32      | 37        | 43        |
| <b>Gender</b>               |        |          |     |      |          |        |         |           |           |
| Female                      | 143284 | 10.5558  | 0   | 1220 | 12.0227  | 9      | 29      | 34        | 42        |
| Male                        | 150081 | 11.4543  | 0   | 807  | 8.2886   | 11     | 30      | 34        | 40        |
| <b>Birth Weight</b>         |        |          |     |      |          |        |         |           |           |
| <2500                       | 26256  | 9.2423   | 0   | 974  | 11.7281  | 8      | 32      | 40        | 56        |
| >=2500                      | 271825 | 11.1829  | 0   | 1220 | 10.1109  | 10     | 29      | 34        | 40        |
| <b>Age at Collection</b>    |        |          |     |      |          |        |         |           |           |
| 1-23                        | 1730   | 17.1983  | 0   | 111  | 14.9932  | 13     | 75      | 82        | 99        |
| 24-36                       | 223501 | 11.9718  | 0   | 1220 | 10.4014  | 11     | 30      | 34        | 40        |
| > 36                        | 72850  | 7.9205   | 0   | 860  | 9.0395   | 7      | 24      | 28        | 34        |
| <b>Gestation Length</b>     |        |          |     |      |          |        |         |           |           |
| < 36 wks                    | 47986  | 9.6236   | 0   | 807  | 10.3948  | 8      | 30      | 37        | 48        |
| >=37 wks                    | 250095 | 11.2784  | 0   | 1220 | 10.2343  | 10     | 29      | 34        | 40        |
| <b>TPN</b>                  |        |          |     |      |          |        |         |           |           |
| Yes                         | 5619   | 6.1538   | 0   | 666  | 13.4433  | 4      | 25      | 32        | 40        |
| Not Yes                     | 292462 | 11.1053  | 0   | 1220 | 10.1852  | 10     | 30      | 34        | 41        |
| <b>Transfused</b>           |        |          |     |      |          |        |         |           |           |
| Yes                         | 260    | 7.1423   | 0   | 68   | 9.5221   | 4      | 50      | 59        | 68        |
| Not Yes                     | 297821 | 11.0154  | 0   | 1220 | 10.2783  | 10     | 29      | 34        | 41        |
| <b>MultipleBirths</b>       |        |          |     |      |          |        |         |           |           |
| Yes                         | 10520  | 9.1692   | 0   | 394  | 8.7017   | 8      | 29      | 36        | 46        |
| Not Yes                     | 287561 | 11.0794  | 0   | 1220 | 10.3252  | 10     | 30      | 34        | 41        |
| <b>Test Interpretations</b> |        |          |     |      |          |        |         |           |           |
| Low                         | 295996 | 10.7238  | 0   | 34   | 5.5628   | 10     | 27      | 29        | 31        |
| Moderate                    | 1716   | 30.7395  | 0   | 50   | 14.0814  | 36     | 49      | 49        | 50        |
| High                        | 368    | 150.8614 | 28  | 1220 | 196.0136 | 61     | 890     | 974       | 1220      |

Age at Collection

|           | N      | Mean age at Collection | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------|--------|------------------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases | 298288 | 33.2719                | 1   | 336 | 16.0397 | 28     | 93      | 117       | 165       |

State "D" Initial CH Screening  
For the Period 1-1/05-12/31/2006

Tests where age at collection between 0 and 14 days

|                          | N      | Mean TSH | Min | Max  | Std Dev  | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|--------------------------|--------|----------|-----|------|----------|--------|---------|-----------|-----------|
| All cases                | 125336 | 7.3438   | 0   | 1378 | 10.1283  | 6      | 27      | 36        | 54        |
| <b>NICU</b>              |        |          |     |      |          |        |         |           |           |
| Yes                      | 6393   | 7.3552   | 0   | 558  | 13.6636  | 4      | 61      | 84        | 112       |
| Not Yes                  | 118943 | 7.3432   | 0   | 1378 | 9.9027   | 6      | 26      | 32        | 46        |
| <b>Race</b>              |        |          |     |      |          |        |         |           |           |
| White                    | 109575 | 7.2145   | 0   | 997  | 9.2937   | 6      | 27      | 34        | 51        |
| Black                    | 10360  | 8.6715   | 0   | 273  | 8.5788   | 7      | 36      | 50        | 75        |
| <b>Gender</b>            |        |          |     |      |          |        |         |           |           |
| Female                   | 59807  | 6.7952   | 0   | 997  | 11.0263  | 5      | 27      | 36        | 58        |
| Male                     | 62940  | 7.8628   | 0   | 1378 | 8.7578   | 6      | 28      | 36        | 51        |
| <b>Age at Collection</b> |        |          |     |      |          |        |         |           |           |
| 1-23                     | 5036   | 19.6007  | 0   | 186  | 16.4630  | 15     | 87      | 107       | 125       |
| 24-36                    | 10276  | 9.9662   | 0   | 791  | 9.6665   | 9      | 27      | 31        | 35        |
| > 36                     | 110024 | 6.5379   | 0   | 1378 | 9.3574   | 5      | 22      | 24        | 29        |
| <b>Gestation Length</b>  |        |          |     |      |          |        |         |           |           |
| < 36 wks                 | 5351   | 7.1282   | 0   | 558  | 13.2940  | 4      | 60      | 75        | 100       |
| >=37 wks                 | 119985 | 7.3534   | 0   | 1378 | 9.9637   | 6      | 26      | 33        | 47        |
| <b>Transfused</b>        |        |          |     |      |          |        |         |           |           |
| Yes                      | 125    | 5.3520   | 0   | 112  | 10.9215  | 3      | 41      | 112       | 112       |
| Not Yes                  | 125211 | 7.3458   | 0   | 1378 | 10.1273  | 6      | 27      | 36        | 54        |
| <b>MultipleBirths</b>    |        |          |     |      |          |        |         |           |           |
| Yes                      | 3511   | 6.6454   | 0   | 144  | 8.5436   | 5      | 43      | 61        | 84        |
| Not Yes                  | 121825 | 7.3639   | 0   | 1378 | 10.1696  | 6      | 27      | 35        | 52        |
| <b>Risk</b>              |        |          |     |      |          |        |         |           |           |
| Normal                   | 123756 | 6.8361   | 0   | 142  | 4.6130   | 6      | 22      | 23        | 24        |
| Borderline               | 1413   | 34.7841  | 23  | 65   | 9.3499   | 32     | 63      | 64        | 65        |
| Increased                | 164    | 154.1463 | 52  | 1378 | 183.1892 | 94     | 997     | 1378      | 1378      |

Age at Collection

|           | N      | Mean age at Collection | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------|--------|------------------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases | 125506 | 51.9377                | 0   | 336 | 22.5812 | 48     | 152     | 167       | 204       |

State "E" Initial CH Screening  
For the Period 1-1/05-12/31/2006

Tests where age at collection between 1 and 14 days

|                             | N      | Mean TSH | Min | Max | Std Dev  | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------------------------|--------|----------|-----|-----|----------|--------|---------|-----------|-----------|
| All cases                   | 138849 | 8.4036   | 1   | 586 | 9.1357   | 7      | 27      | 31        | 38        |
| <b>NICU</b>                 |        |          |     |     |          |        |         |           |           |
| Yes                         | 0      | 0        | 0   | 0   | 0        | 0      | 0       | 0         | 0         |
| Not Yes                     | 138849 | 8.4036   | 1   | 586 | 9.1357   | 7      | 27      | 31        | 38        |
| <b>Race</b>                 |        |          |     |     |          |        |         |           |           |
| White                       | 99968  | 8.3317   | 1   | 586 | 9.0692   | 7      | 26      | 30        | 37        |
| Black                       | 14591  | 8.9920   | 2   | 329 | 6.6937   | 8      | 29      | 33        | 39        |
| <b>Gender</b>               |        |          |     |     |          |        |         |           |           |
| Female                      | 66834  | 7.8375   | 1   | 586 | 10.3490  | 6      | 26      | 30        | 38        |
| Male                        | 70181  | 8.9346   | 2   | 557 | 7.8487   | 8      | 27      | 31        | 37        |
| <b>Birth Weight</b>         |        |          |     |     |          |        |         |           |           |
| <2500                       | 14770  | 7.4969   | 2   | 364 | 7.4787   | 6      | 28      | 33        | 44        |
| >=2500                      | 124079 | 8.5116   | 1   | 586 | 9.3075   | 7      | 27      | 30        | 37        |
| <b>Age at Collection</b>    |        |          |     |     |          |        |         |           |           |
| 1-23                        | 2394   | 12.0096  | 2   | 129 | 10.4575  | 9      | 56      | 66        | 82        |
| 24-36                       | 60789  | 10.1695  | 2   | 557 | 8.9144   | 6      | 28      | 32        | 38        |
| > 36                        | 75666  | 6.8709   | 1   | 586 | 8.9771   | 6      | 23      | 26        | 31        |
| <b>Gestation Length</b>     |        |          |     |     |          |        |         |           |           |
| < 36 wks                    | 15183  | 7.0514   | 2   | 535 | 9.2644   | 5      | 27      | 32        | 45        |
| >=37 wks                    | 123666 | 8.5697   | 1   | 586 | 9.1060   | 7      | 27      | 30        | 37        |
| <b>TPN</b>                  |        |          |     |     |          |        |         |           |           |
| Yes                         | 639    | 4.9218   | 2   | 60  | 5.0060   | 3      | 23      | 25        | 31        |
| Not Yes                     | 138210 | 8.4197   | 1   | 586 | 9.1474   | 7      | 27      | 31        | 38        |
| <b>Transfused</b>           |        |          |     |     |          |        |         |           |           |
| Yes                         | 233    | 6.0300   | 2   | 66  | 6.7699   | 4      | 31      | 41        | 66        |
| Not Yes                     | 138616 | 8.4076   | 1   | 586 | 9.1387   | 7      | 27      | 31        | 37        |
| <b>MultipleBirths</b>       |        |          |     |     |          |        |         |           |           |
| Yes                         | 1413   | 7.0906   | 2   | 303 | 10.4888  | 5      | 27      | 30        | 55        |
| Not Yes                     | 137436 | 8.4171   | 1   | 586 | 9.1198   | 7      | 27      | 31        | 37        |
| <b>Test Interpretations</b> |        |          |     |     |          |        |         |           |           |
| Normal                      | 138184 | 8.1514   | 1   | 36  | 5.3352   | 7      | 25      | 27        | 29        |
| Borderline                  | 399    | 33.0476  | 30  | 43  | 3.3886   | 32     | 42      | 42        | 43        |
| Positive                    | 139    | 158.4101 | 20  | 586 | 173.0573 | 64     | 557     | 586       | 586       |
| Call                        | 127    | 41.2598  | 37  | 49  | 3.5994   | 41     | 49      | 49        | 49        |

Age at Collection

|           | N      | Mean Age at Collection | Min | Max | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
|-----------|--------|------------------------|-----|-----|---------|--------|---------|-----------|-----------|
| All cases | 138854 | 41.6973                | 0   | 336 | 22.0163 | 38     | 141     | 161       | 212       |

**Healthy White Females**  
**CH Results for the Period 1-1/05-12/31/2006**  
 Tests where age at collection between 24 and 36 hours

| State     | N     | % of  |          |     |      |         |        |         |           |           |
|-----------|-------|-------|----------|-----|------|---------|--------|---------|-----------|-----------|
|           |       | Total | Mean TSH | Min | Max  | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
| State "A" | 59785 | 24%   | 11.7433  | 2   | 588  | 8.7011  | 11     | 30      | 32        | 40        |
| State "B" | 29064 | 20%   | 10.3005  | 0   | 638  | 10.3922 | 9      | 27      | 30        | 36        |
| State "C" | 71748 | 24%   | 11.3123  | 0   | 1220 | 11.0196 | 10     | 29      | 32        | 38        |

Selection Criteria

Race White  
 Gender Female  
 Birth wgt >=2500  
 Nicu not indicated as yes (non-NICU)

Total is all cases where age at collection is less than or equal to 14 days.

**CH Results for the Period 1-1/05-12/31/2006**  
 Tests where age at collection between 24 and 36 hours

| State     | N     | % of  |          |     |      |         |        |         |           |           |
|-----------|-------|-------|----------|-----|------|---------|--------|---------|-----------|-----------|
|           |       | Total | Mean TSH | Min | Max  | Std Dev | Median | 99 Pctl | 99.5 Pctl | 99.8 Pctl |
| State "A" | 53379 | 21%   | 11.8043  | 2   | 588  | 8.2427  | 11     | 30      | 32        | 40        |
| State "B" | 24124 | 17%   | 10.3746  | 0   | 638  | 10.4971 | 9      | 27      | 30        | 36        |
| State "C" | 60214 | 20%   | 11.4201  | 0   | 1220 | 11.1769 | 10     | 29      | 32        | 39        |
| State "D" |       |       |          |     |      |         |        |         |           |           |
| State "E" | 16919 | 12%   | 9.5125   | 2   | 506  | 8.9980  | 8      | 27      | 31        | 37        |

Selection Criteria

Race White  
 Gender Female  
 Birth wgt >=2500  
 Gestational age over 37 weeks

Total is all cases where age at collection is less than or equal to 14 days.