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DHS Response Data Request from the Legislative Council Special Committee on Infant Mortality November 5, 2010

This document and the attached tables include responses from the Department to data requested on behalf of the Legislative Council Special Committee on Infant Mortality.

Explanatory Notes:

- Original data request items are in unbolded serif font; our responses are in bolded sans serif font. Notes regarding data we are unable to obtain at this time are *italicized*.
- **Data was obtained from the following original sources:**
 - 1) Linked Birth Events Files, Office of Health Informatics (OHI);
 - 2) Medicaid Paid Claims data, Division of Health Care Access and Accountability (DHCAA);
 - 3) Pregnancy Risk Assessment Monitoring System (PRAMS);
 - 4) Pregnancy Nutrition Surveillance System (PNSS), and the Wisconsin Interactive Statistics on Health (WISH)
- **Throughout the document, terms are defined as follows:**
 - Low birthweight (LBW): <2,500 grams
 - Very low birthweight (VLBW): <1,500 grams
 - Premature: <37 weeks gestation
 - Very premature: <32 weeks gestation
 - Race/ethnicity: Unless noted otherwise, race categories exclude Hispanic ethnicity (i.e. black = non-Hispanic black). Where 'Other' racial category is listed, it includes non-Hispanic American Indian, non-Hispanic Laotian/Hmong, non-Hispanic other (almost entirely Asian), and individuals with missing race.

- 1. Medicaid data: Statewide and for Kenosha, Racine, Milwaukee, Rock and Dane Counties, for most recent year available**
 - a. Estimated Medicaid savings resulting from lowering the rate of black very premature births (≤ 32 weeks gestation/1500 grams) to the levels experienced by the general population.**

A previous analysis of 2005 Medicaid births compared hospital charges (excluding health-care provider charges) during the first year of life by birthweight in Dane, Kenosha, Milwaukee, Racine, Rock counties. The average Medicaid hospital charges for a baby weighing <1000 grams during the first year of life was \$164,257 compared to \$3,514 for a normal birthweight birth.

To approximate Medicaid savings whereby the birth weight distribution among black was equal to that of the 2005 general population in the five counties, the following assumptions were made:

1. 87.5% of black births in the five counties were funded by Medicaid (87.5% of blacks births statewide were Medicaid funded in 2005)
2. Babies born to black mothers on Medicaid had the same birthweight distribution as babies born to all black women in the five counties

Table 1.a. Data for the cost savings calculation (2005 Medicaid births in Dane, Kenosha, Milwaukee, Racine, and Rock counties)

| Birthweight (g) | Ave. Total Charges First Year of Life | All Medicaid Infants | | Est. Black Medicaid Infants* | | | General Population Distribution** | |
|-----------------|---------------------------------------|----------------------|------|------------------------------|------|---------------------|-----------------------------------|---------------------|
| | | N | % | N | % | Cost | % | Cost |
| >2,500 | \$3,514 | 12,718 | 89.7 | 4819 | 86.1 | \$16,933,966 | 91.7 | \$18,035,425 |
| 1,500-2,499 | \$18,557 | 1116 | 7.8 | 574 | 10.3 | \$10,651,718 | 6.6 | \$6,854,992 |
| 1,000-1,499 | \$98,505 | 141 | 1.0 | 81 | 1.4 | \$7,978,905 | 0.7 | \$3,859,327 |
| <1000 | \$164,257 | 204 | 1.4 | 123 | 2.2 | \$20,203,611 | 1.0 | \$9,193,464 |
| Total | | 14,179 | | 5597 | | \$55,768,200 | | \$37,943,208 |

Source: 2005, Linked Birth Events File, OHI

* Sample calculation for the Medicaid costs associated with Black Medicaid births: $(.875)(5507 \text{ black births } >2,500 \text{ grams in the five counties in 2005, per Wisconsin Interactive Statistics on Health}) = 4819$; $(4819)(\$3,514) = \$16,933,966$ in Medicaid hospital costs for black births >2,500 grams

** Sample calculation for the Medicaid costs associated with black Medicaid births whereby the birthweight distribution is equal to that of the general population (i.e. all races combined in the five counties in 2005, per Wisconsin Interactive Statistics on Health): $(.917)(5597)(\$3,514) = \$18,035,425$ in adjusted Medicaid hospital costs for black births >2,500 grams

Finding: Across the five counties, approximately \$17.8 millions dollars (\$55,768,200 - \$37,943,208) would be saved in annual Medicaid hospital costs.

Note: We do not have data that reflects complete Medicaid savings (i.e. including non-hospital costs), nor do we have linked statewide data. Medicaid data does not include complete information on race, necessitating a data linkage with vital statistics to conduct more accurate analyses by race.

b. Total number of babies born into each birth weight category

Table 1.b. (1) 2005 Medicaid births in Dane, Kenosha, Racine, Milwaukee, and Rock counties combined, all races

| Birth weight (grams) | Medicaid Infants | |
|----------------------|------------------|------------|
| | N | % |
| 2,500+ (Normal) | 12,718 | 89.7 |
| 2,000-2,499 | 849 | 6.0 |
| 1,500-1,999 | 267 | 1.9 |
| 1,000-1,499 | 141 | 1.0 |
| 750-999 | 87 | 0.6 |
| <750 | 117 | 0.8 |
| Total | 14,179 | 100 |

Source: 2005 Linked Birth Events File, OHI

Table 1.b. (2) Percent low birthweight by race and payer type, 2008 Wisconsin births to Wisconsin residents

| Race* | Medicaid | Non-Medicaid | All Payer Types | Total Births in Wisconsin |
|---------------------|---------------|---------------|-----------------|---------------------------|
| White | 8.1** | 5.1 | 6.3 | 60,339 |
| Black | 13.2 | 12.3 | 13.0 | 7,350 |
| All Races | 9.0 | 5.3 | 7.0 | 72,002 |
| Total Births | 32,801 | 39,201 | 72,002 | |

Source: 2008 Linked Birth Events File, OHI

* All ethnicities included

** Data interpreted as, "8.1% of Medicaid-funded births to white mothers were low birthweight"

- c. Total number of Medicaid funded births and total number and type of providers providing prenatal care to Medicaid funded births, plus range, mean and median of number of Medicaid patients for providers.**

Table 1.c. (1) Number and percent of 2008 Medicaid eligible births, all races

| County of Residence | Total Births | Medicaid Births | |
|---------------------|---------------|-----------------|-------------|
| | | N | % |
| Dane | 6,223 | 1,976 | 31.8 |
| Kenosha | 2,305 | 1,164 | 50.5 |
| Milwaukee | 15,353 | 9,170 | 59.7 |
| Racine | 2,673 | 1,380 | 51.6 |
| Rock | 2,076 | 1,091 | 52.6 |
| Statewide | 71,977 | 32,792 | 45.6 |

Source: 2008 Linked Birth Events File, OHI

Note: Prenatal care provider information for Medicaid funded births is not readily accessible. However, the following two tables provide information on birth attendant type.

Table 1.c. (2) 2006 Births in the cities of Beloit, Kenosha, Milwaukee, and Racine by payer and birth attendant type

| Birth Attendant Type | Total | Medicaid | Private Insur. | Self pay, Other |
|-------------------------|----------------|----------------|----------------|-----------------|
| | % | % | % | % |
| City of Beloit | | | | |
| Medical Doctor | 99 | 99 | 99 | 90 |
| Doctor of Osteopathy | <1 | <1 | <1 | 0 |
| Certified Nurse Midwife | <1 | <1 | 0 | 0 |
| Other Midwife | <1 | <1 | 0 | 7 |
| Other | <1 | 0 | 0 | 2 |
| Unknown | 0 | 0 | 0 | 0 |
| All Providers | N = 696 | N = 489 | N = 165 | N = 42 |
| City of Kenosha | | | | |
| Medical Doctor | 86 | 80 | 90 | 98 |
| Doctor of Osteopathy | 14 | 20 | 10 | 1 |
| Certified Nurse Midwife | <1 | <1 | <1 | <1 |
| Other Midwife | <1 | 0 | 0 | <1 |
| Other | <1 | <1 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 |

| All Providers | N = 1,704 | N = 891 | N = 574 | N = 239 |
|--------------------------|-------------------|------------------|------------------|----------------|
| City of Milwaukee | | | | |
| Medical Doctor | 83 | 78 | 94 | 74 |
| Doctor of Osteopathy | 3 | 3 | 2 | <1 |
| Certified Nurse Midwife | 14 | 18 | 4 | 14 |
| Other Midwife | <1 | <1 | 0 | 11 |
| Other | <1 | <1 | <1 | <1 |
| Unknown | <1 | <1 | 0 | 0 |
| All Providers | N = 11,504 | N = 8,225 | N = 3,068 | N = 211 |
| City of Racine | | | | |
| Medical Doctor | 99 | 99 | 99 | 96 |
| Doctor of Osteopathy | <1 | <1 | 1 | 1 |
| Certified Nurse Midwife | <1 | <1 | <1 | 0 |
| Other Midwife | <1 | <1 | 0 | 3 |
| Other | <1 | <1 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 |
| All Providers | N = 1,821 | N = 1,077 | N = 667 | N = 77 |

Source: Preliminary 2006 Linked Birth Events File, OHI

2. Vital statistics data:

- a. **By race, statewide and for Kenosha, Racine, Milwaukee, Rock and Dane Counties for years 1990-2008**
 - i. **Infant mortality rates**
 - ii. **Premature (<37 wks gest) and very premature (<32 wks gest) birth rates**
 - iii. **Proportion receiving inadequate* prenatal care**
 - iv. **Proportion receiving adequate* prenatal care**
 - v. **Proportion receiving adequate plus* prenatal care**
 - vi. **Prenatal Care Effectiveness (adequate/inadequate prenatal care very premature birth rate risk ratio)**

*Kotelchuck Index

Items i.-iv. have been extracted from the publicly available Wisconsin Interactive Statistics on Health (<http://www.dhs.wisconsin.gov/wish/>) and are included in the attached tables. Cells with fewer than 5 cases are noted as 'X' and with zero cases as '.'

Items v.-vi. require information regarding 'adequate plus' prenatal care, a category not available from existing data sets; however, to approximate the prenatal care effectiveness ratio as requested in item vi., we compared the proportion of very premature infants who received inadequate prenatal care to those who received adequate prenatal care.

Table 2.a.vi. Risk of prematurity by level of prenatal care, statewide births 2004-2008

| Level of Prenatal Care* | Total | Total Very Premature | % Very Premature | Risk Ratio |
|-------------------------|---------|----------------------|------------------|------------|
| All races | | | | |
| Inadequate | 33,113 | 1,008 | 3.0 | 1.8 |
| Adequate | 302,000 | 5,260 | 1.7 | |
| White | | | | |
| Inadequate | 18,238 | 485 | 2.7 | 1.8 |
| Adequate | 237,591 | 3,542 | 1.5 | |
| Black | | | | |
| Inadequate | 6,059 | 314 | 5.2 | 1.3 |
| Adequate | 25,470 | 993 | 3.9 | |
| Hispanic | | | | |
| Inadequate | 5,511 | 128 | 2.3 | 1.2 |
| Adequate | 24,667 | 457 | 1.9 | |
| Other | | | | |
| Inadequate | 3,305 | 81 | 2.5 | 1.3 |
| Adequate | 14,272 | 268 | 1.9 | |

Source: Wisconsin Interactive Statistics on Health (WISH)

* Adequacy of prenatal care is measured by the Kotelchuck Index, which takes into account the month that prenatal care began and the number of prenatal visits, and adjusts for gestational age.

3. Linked data:

- a. By race, statewide and for Kenosha, Racine, Milwaukee, Rock and Dane Counties, for 2006 and 2008, for all infant deaths, for all very premature births, and for all births
 - i. Proportion Medicaid funded

Table 3.a.i. (1) Percentage of statewide 2005 births, infant deaths, and low birthweight on Medicaid, by race

| Race / Ethnicity | <u>All Births</u> | | | <u>Infant Deaths</u> | | | <u>Low Birth Weight</u> | | |
|------------------|-------------------|---------------|-------------|----------------------|------------|-------------|-------------------------|--------------|-------------|
| | Total | Medicaid | | Total | Medicaid | | Total | Medicaid | |
| | N | N | % | N | N | % | N | N | % |
| White | 52,118 | 17,601 | 33.8 | 244 | 114 | 46.7 | 3,197 | 1,486 | 46.5 |
| Black | 6,674 | 5,842 | 87.5 | 100 | 82 | 82.0 | 909 | 824 | 90.6 |
| Hispanic | 6,187 | 4,925 | 79.6 | 40 | 28 | 70.0 | 395 | 320 | 81.0 |
| Other | 3,604 | 2,031 | 56.4 | 24 | 14 | 58.3 | 243 | 127 | 52.3 |
| All races | 68,583 | 30,399 | 44.3 | 408 | 238 | 58.3 | 4,744 | 2,757 | 58.1 |

Source: 2005 Linked Birth Events File, OHI

Table 3.a.i. (2) 2006 Births on Medicaid in the cities of Beloit, Kenosha, Milwaukee, and Racine, by race

| Race / Ethnicity | <u>Beloit</u> | | | <u>Kenosha</u> | | | <u>Milwaukee</u> | | | <u>Racine</u> | | |
|------------------|---------------|------------|-------------|----------------|------------|-------------|------------------|--------------|-------------|---------------|--------------|-------------|
| | Total | Medicaid | | Total | Medicaid | | Total | Medicaid | | Total | Medicaid | |
| | N | N | % | N | N | % | N | N | % | N | N | % |
| White | 413 | 248 | 60.0 | 1,122 | 430 | 38.3 | 3,182 | 1,205 | 37.9 | 942 | 405 | 43.0 |
| Black | 119 | 107 | 89.9 | 204 | 175 | 85.8 | 5,266 | 4,607 | 87.5 | 417 | 367 | 88.0 |
| Hispanic | 153 | 127 | 83.0 | 326 | 269 | 82.5 | 2,453 | 2,042 | 83.2 | 427 | 291 | 68.1 |
| Other | 11 | 7 | 63.6 | 52 | 17 | 32.7 | 603 | 371 | 61.5 | 35 | 14 | 40.0 |
| All races | 696 | 489 | 70.3 | 1,704 | 891 | 52.3 | 11,504 | 8,225 | 71.5 | 1,821 | 1,077 | 59.1 |

Source: Preliminary 2006 Linked Birth Events File, OHI

Note: We do not have linked data for the years requested, nor do we have data on very premature births readily available.

ii. Range, mean and median length of time enrolled in Medicaid

This information is not readily available.

iii. Proportion WIC enrolled

The Pregnancy Risk Assessment Monitoring System (PRAMS) collects state-specific, population-based data on maternal attitudes and experiences before, during, and shortly after pregnancy. The following table contains results from a PRAMS question that asks whether the respondent was on the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) during her most recent pregnancy.

Table 3.a.iii (1) 2007-2008 PRAMS Data, Wisconsin*

| Race / Ethnicity | <u>On WIC During Most Recent Pregnancy?</u> | |
|------------------|---|-----------|
| | % No | % Yes |
| White | 73 | 26 |
| Black | 22 | 78 |
| Hispanic | 24 | 74 |
| Other | 43 | 56 |
| All races | 61 | 38 |

Source: The 2007-2008 combined PRAMS data file includes responses from 2,059 mothers who recently had a live birth in Wisconsin. This included 915 White non-Hispanic mothers, 461 Black non-Hispanic mothers, 431 Hispanic/Latina mothers, and 252 non-Hispanic mothers of other races.

* Percentages may not add to 100 due to missing data

Table 3.a.iii (2) Infant Health Indicators among 2008 births, by race

| Race / Ethnicity | <u>Births to WIC Enrollees*</u> | | | <u>All Statewide Births</u> | | |
|------------------|---------------------------------|-------------------|-------------|-----------------------------|-------------------|-------------|
| | Total** | % Low Birthweight | % Premature | Total | % Low Birthweight | % Premature |
| White | 16,874 | 7.3 | 9.7 | 53,561 | 6.3 | 10.2 |
| Black | 5,863 | 11.5 | 12.4 | 7,236 | 13.0 | 16.8 |
| Hispanic | 6,066 | 5.5 | 8.7 | 7,025 | 6.3 | 11.4 |
| Other | 2,541 | 7.0 | 11.3 | 4,180 | 7.3 | 11.6 |
| All races | 31,344 | 7.7 | 10.2 | 72,002 | 7.0 | 11.1 |

Source: 2008 Wisconsin Pregnancy Nutrition Surveillance System (PNSS) Report and Wisconsin Interactive Statistics on Health (WISH)

* Includes women enrolled in WIC both pre- and postpartum

** Excludes records with unknown data for health indicators

Table 3.a.iii (3) Percentage of statewide 2008 births, low birthweight, and premature enrolled in WIC (pre- and postpartum), by race

| Race / Ethnicity | All Births | | | Low Birthweight | | | Premature | | |
|------------------|---------------|----------------|-------------|-----------------|---------------|-------------|--------------|---------------|-------------|
| | Total | WIC Enrollees* | | Total | WIC Enrollees | | Total | WIC Enrollees | |
| | N | N | % | N | N | % | N | N | % |
| White | 53,561 | 16,874 | 31.5 | 3,366 | 1,216 | 36.1 | 5,456 | 1,637 | 30.0 |
| Black | 7,236 | 5,863 | 81.0 | 941 | 670 | 71.2 | 1,218 | 727 | 59.7 |
| Hispanic | 7,025 | 6,066 | 86.3 | 440 | 331 | 75.2 | 800 | 528 | 66.0 |
| Other | 4,180 | 2,541 | 60.8 | 304 | 177 | 58.2 | 496 | 287 | 57.9 |
| All races | 72,002 | 31,344 | 43.5 | 5,051 | 2,394 | 47.4 | 7,970 | 3,179 | 39.9 |

Source: 2008 Wisconsin Pregnancy Nutrition Surveillance System (PNSS) Report and Wisconsin Interactive Statistics on Health (WISH)

* Excludes records with unknown data for health indicators

Note: We do not currently have a linked dataset that allows us to evaluate the proportion of women enrolled in WIC at birth across the requested birth outcomes.

iv. Range, mean and median length of time enrolled in WIC

This information is not readily available.

v. Proportion receiving PNCC

We do not currently have the linked dataset required to calculate the proportion of Medicaid funded births in a calendar year who received PNCC services. The table below presents the number of Medicaid births in 2008 and the number of women who received ongoing PNCC services in that same year, by county.

Table 3.a.v. Medicaid funded births and pregnant women receiving ongoing PNCC services in 2008, by county

| Location* | # Medicaid Births | # Served** |
|-----------|-------------------|------------|
| Dane | 1,976 | 365 |
| Kenosha | 1,164 | 172 |
| Milwaukee | 9,170 | 2791 |
| Racine | 1,380 | 423 |
| Rock | 1,091 | 545 |

Source: 2008 Linked Birth Events File, OHI; 2008 Medicaid Paid Claims data, DHCAA

* Location of birth and PNCC service delivery

** Number served excludes those mothers who received only a PNCC assessment and no care plan or additional services

vi. Range, mean and median of PNCC charges

Table 3.a.vi. Mothers who received ongoing PNCC services in 2009, by county

| Location of PNCC Service | # Served* | Total Paid | Mean Paid |
|--------------------------|-----------|------------|-----------|
| Dane | 404 | \$84,721 | \$210 |
| Kenosha | 185 | \$45,958 | \$248 |
| Milwaukee | 2724 | \$562,032 | \$206 |
| Racine | 309 | \$78,299 | \$253 |
| Rock | 564 | \$165,966 | \$294 |

Source: 2009 Medicaid Paid Claims data, DHCAA

* Number served excludes those mothers who received only a PNCC assessment and no care plan or additional services

Note: We do not currently have data for the years requested or by race, nor do we have statewide data or data on infant deaths or very premature births. Also, median and range PNCC charge data is not readily available.

- vii. Proportion receiving prenatal 17-OH progesterone**
- viii. Range, mean and median of 17-OH progesterone doses**

This information is not readily available because Medicaid recently changed claim submission procedures for 17-OH progesterone in July, 2010.

- 4. Full Cost/Benefit Analysis of lowering in Wisconsin the black very premature birth rate to that of general population by increasing PNCC and WIC coverage to 100% of those at-risk/eligible.....This could perhaps be done very well and at no cost by a graduate student taking Dr. David Weimer's (UW LaFollette Institute) course this semester on cost-benefit analysis.**

We were informed by the UWSMPH that information on the effectiveness of PNCC and WIC in reducing the rate of very premature black births must be identified prior to conducting a cost-benefit analysis.

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