# VERY LOW BIRTH WEIGHT BABIES DELIVERED AT FACILITIES FOR HIGH-RISK NEONATES: A REVIEW OF TITLE V NATIONAL PERFORMANCE MEASURE 17

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## EXECUTIVE SUMMARY

State Maternal and Child Health (MCH) Title V Grantees are required to report on 18 National Performance Measures (NPMs), developed to assess each State's response to and success in meeting the needs of the populations they serve. Care for pregnant women has been a traditional focus of State MCH programs, and several NPMs address the needs of pregnant women and those of their infants. National Performance Measure #17 – the percent of very low birth weight (VLBW) infants delivered at facilities for high-risk neonates – specifically addresses the needs of the premature infant in an effort to reduce morbidity and mortality.

In order to ensure that high-risk infants are delivered at the most appropriate facility, a comprehensive prenatal and perinatal care system must be in place. Functional components of such a system include programs, providers, and facilities to ensure early and comprehensive prenatal care; provider education to use screening tools to identify women at risk; education for pregnant women; availability of appropriate facilities for delivery; availability of transport services; and agreements and relationships between care providers. Many of these components are part of regionalized perinatal care systems implemented by many States in the years following publication of the 1976 March of Dimes landmark document *Toward Improving the Outcome of Pregnancy*.

Concern has been raised that the percent of VLBW babies, i.e. babies born weighing less than 1500 grams, born in facilities for high-risk neonates is declining. This study examined the trends for NPM #17 and explored reasons that States report for change in this marker. First, eight years of data were examined to look at trends in the rate of VLBW deliveries in the appropriate hospital calculating the change in rate over the 8-year period. Part II of the report examines in some detail information obtained from a review of State Title V Application/Annual Reports and follow-up conversations with MCH staff in a sample of states. States with rates that have improved, worsened or remained the same are included.

*Changes in the Rate of VLBW Deliveries in Facilities for High-Risk Neonates*

Data for NPM #17 were examined for all States, the District of Columbia, and Puerto Rico, for the years 2000 through 2007 or 2008. For many States, there were not clear-cut trends of decreasing or improving rates, but instead rates fluctuated up and down over the years. The absolute percent change from 2000 to the most recent year available was calculated for each State or Jurisdiction and for all States combined.

The all-State rate changed very little from 2000 to 2007. The 2000 rate was 74.2% and the 2007 rate was 74.7% for an absolute change of 0.5%. The rate did increase by a little more than 1% during this seven-year period; the 2004 rate was 75.5%.

Of the 52 States and Jurisdictions reporting on this measure, 15 had rates that were essentially unchanged (≤2% difference) from 2000 to the most recent year.[1] Among the other 37 States or Jurisdictions, 23 had improved rates[2] and 14 had rates that were lower[3]. The average improvement was 8.1%; the average decline was 9.1%.

The majority of States whose rates improved had low baseline rates. Four States[4] with rates that improved more than 2% remained below the all-State rate of 74.7%.

[1] CA, DE, FL, HI, IL, IN, MA, ME, MN, MS, NC, NH, OH, UT, VA
[2] AK, AL, AZ, CO, CT, DC, IA, ID, KS, KY, LA, MD, NM, NV, NY, OK, OR, PA, VT, WA, WI, WV, WY
[3] AR, GA, MI, MO, MT, ND, NE, NJ, PR, RI, SC, SD, TN, TX
[4] ID, WY, NM, KY

Progress was also assessed by examining change relative to where States were in 2000 and change relative to where States were in the most recent year. For this assessment, all States, even those with only a modest change (≤2.0%), were considered.

Of the ten States with the highest baseline rates (range of 87.2% to 96.3%), eight had a decline in their rates.[5] The other two had rates that were unchanged or slightly improved.[6] When current rates are examined, nine States that are currently below the all-State rate had a decline in their rates.[7] Eleven States that were below the 2000 all-State rate remained there[8] in the most recent year although eight improved their rate.[9]

*Measuring Appropriate Perinatal Care for At-Risk Mothers and Their VLBW Infants*

Measurement is a significant consideration for this performance measure and has implications for both accurate reporting and effectiveness of interventions to improve the rate. Several measurement challenges were described in State Annual Reports and by State officials.

**Hospital Classification** - *Determining which hospitals are facilities for high-risk neonates* (assuming accuracy of the system that determines hospital levels) is a challenge. Hospitals add or discontinue Neonatal Intensive Care Unit (NICU) services requiring that MCH statisticians maintain an updated list each year to determine which VLBW births should be included in the numerator for this indicator.

This basic measurement limitation is further complicated by the need to capture *births to State residents that occur in other States*, a problem for many, if not most, States. This challenge may be especially important in States with few tertiary care resources where out-of-state births are those most likely to need advanced and technological neonatal care. Difficulty classifying hospitals in a home State is compounded when other State health care systems must be considered.

The *accuracy of the classification of the level of hospital care* is a related measurement challenge. At one end of the classification continuum, hospitals call themselves Level III hospitals with no documentation or certification that all the criteria for Level III designation have been met. At the other end, a certifying authority assigns the Level I, II and III designations based on accurate assessment by the authority of the services provided. Other classification systems that involve more or less rigor in determining level of care also exist, e.g., hospital designation of level of care with State certification based on information provided by the hospital without verification.

A change in the number of hospitals for high-risk neonates led to changes, positive and negative, in the NPM #17 rates in several States.

**Number of Births** - Examining the *change in the number of VLBW births* and the number of these births in appropriate facilities illustrates the volume of high-risk perinatal care in each State and the demands on the health care system. Across all States with data through at least 2007, the number of VLBW infants NOT born in a facility for high-risk care ranged from 3 to 3038 with a median of 174 births. As few as 174 or less births spread across several birthing hospitals may be more random than systematic and difficult to address with an appropriate intervention.

[5]FL, MA, MI, MT, NH, NJ, RI, SD
[6]NV, VT
[7]AR, GA, MT, ND, NE, PR, SC, TN, TX
[8]AR, CA, ID, IN, KY, MS, ND, NM, OH, TX, WY
[9]CA, ID, IN, KY, MS, NM, OH, WY

*Small numbers of births contribute to instability of NPM #17 rates.* The five States with the lowest number of VLBW births[10] average 90 VLBW births per year. A change of one or two births in the numerator or denominator each year makes a notable change in the rate over 8 years.

*States Are Using Detailed Data for Program Planning*

States with confidence in the validity of their data have used it to conduct in-depth analysis of birth data, particularly examining VLBW births not occurring in Level III hospitals. Analysis of where these births occur and characteristics of the mother and the infant can provide information to develop strategies to improve rates. In addition, many States are using detailed mortality data as part of Fetal and Infant Mortality Review programs to examine all contributors to fetal and infant mortality including the use of appropriate health care services. These review programs focus on mortality, however, and cannot assess the contribution of care in a high-risk facility to reduction of short- and long-term morbidity.

*Regionalization of Perinatal Care Varies from State to State*

The complexity of care needed for at-risk mothers and infants requires a systems approach that coordinates care among multiple providers. The States highlighted in this report illustrate that systems exist in many States, but the extent to which regionalized care is regulated and prescribed varies considerably. New York, New Jersey, Alabama and Florida are all examples of States with structured, regulated, long-standing regionalized perinatal care systems and all have NPM #17 rates that have improved or held steady and that are above the national average. Informal and less regulated regionalized systems of care also exist; Arizona, Maine, and Utah all have more informal systems of care but they, too, have good NPM #17 rates. A third model of perinatal care, i.e., health plan linkages among providers, such as in Minnesota and Wisconsin, may function as de facto regionalized care where relationships among Level II and Level III hospitals are prescribed by the health plan and providers operate within guidelines set forth by the plans. Both Minnesota and Wisconsin have NPM #17 rates that are above the US average. Two of the three States with NPM #17 rates below the national average profiled in this report, described a regionalized care system that was informal and provider-driven (NE) or was limited in the extent of relationships among providers (AR). There is insufficient information in this review to draw conclusions about changes in this indicator as they relate to changes in regionalized perinatal care.

*MCH Experts Identify Barriers to Improvement in the NPM #17 Rate*

MCH officials contributing to this report identified factors that challenge their ability to improve their NPM #17 rate. Factors they identified were related to characteristics of the mothers and/or infants; other factors identified relate to the health care system.

**Some mothers delivering VLBW infants should not be transported**. Some officials reported that some mothers not transported before delivery were carrying fetuses with known conditions incompatible with life. It may be in the best interest of families in these cases to deliver at facilities near their home to maximize the psychosocial support they receive.

**Some women will deliver prematurely and precipitously**. Transport of a woman in these situations is likely not in her best interest or in the best interest of the infant. Neonatal transport services are essential in these cases.

[10]AK, ND, NH, VT, WY

A high number of VLBW deliveries in a Level II hospital may reflect, in part, **community preference for that specific hospital**. It has been suggested that helping upgrade the services at preferred hospitals honors community choice and may be a better way to improve perinatal care.

Some **VLBW infants at the high end of the VLBW weight range** are being delivered and cared for in hospitals other than Level III because providers feel confident that the infant will not need aggressive care and can be managed locally. Data on health outcomes for these "feeders and growers" could inform a discussion of change in the birth weight criterion for this indicator.

**Competition among hospitals** has led to establishment of neonatal intensive care services that do not meet all the criteria for Level III designation for perinatal care.

Hospitals do not transport the mother when **newborn transport is available and efficient**. This may be a primarily urban phenomenon in highly competitive hospital markets.

Barriers to transport may originate with the Level III hospital. **A lack of available obstetric or NICU beds and/or communication barriers** may prevent the transfer of a mother before delivery.

**Providers at some Level II hospitals believe they can provide appropriate care** for pregnant women and their VLBW infants. These providers need outreach and education regarding the availability of consultative services and current standards for high-risk care.

*State MCH and Partner Agencies Are Involved in Many Aspects of High-Risk Perinatal Care*

Many activities to promote perinatal health and positive birth outcomes are evident in review of State Title V Annual Reports and were also reported in follow-up conversations with State officials. Activities ranged from provision of early and comprehensive prenatal care, including screening for risk for premature delivery, to education for consumers and health care practitioners provided by MCH, their partners in academic centers and in perinatal education and advocacy organizations. Appropriate facilities for care of high-risk neonates exist in most but not all States. Interfacility and interprovider agreements exist and transport services are available.

## SUMMARY

Monitoring the NPM #17 rate and addressing barriers to high-risk care is a small part of the perinatal health picture, but, nonetheless, an important one. The all-State rate and most individual State rates have not reached the Healthy People 2010 goal of 90% and some have changed little since 2000. True improvement is hard to assess, though, when there are many challenges to accurate measurement.

States are improving their data and using it to drill down and better target interventions. They are exploring where VLBW births occur and why some do not occur in facilities for high-risk deliveries. Further, they are looking more broadly at fetal and infant mortality through FIMRs. These comprehensive review processes are important because they involve community leaders and explore all contributors to mortality to identify the most appropriate interventions. In the case of VLBW infants, understanding if health care system factors have played a role in a poor outcome and which factors can be modified can be an important contribution to improving this indicator. Surveillance of VLBW births is necessary for the quality improvement initiatives that were frequently mentioned by State officials as processes by which they hoped to improve neonatal health and health care.

Many activities to promote perinatal health and positive birth outcomes were evident in State Title V Annual Reports and also reported by State officials. All States promote and most provide early and comprehensive prenatal care that includes screening for risk for premature delivery. Education for consumers, obstetricians, family physicians, nurse midwives, maternity care nurses and others is provided by Title V agencies and by their partners in academic centers and in work groups, task forces, and other organizations devoted to perinatal health. Formal and informal regionalized perinatal care has ensured the availability of facilities for care of high-risk mothers and infants, consultative services to assess the need and co-manage care, and agreements for transfer of care and transport services to ensure a smooth transition of care.

The value of this National Performance Measure to States ranges from a perception of NPM #17 as a valuable marker of performance and useful tool for program evaluation to a less valuable but necessary monitoring requirement.

## INTRODUCTION

State Maternal and Child Health (MCH) Title V Grantees are required to report on 18 National Performance Measures (NPMs), developed to assess each State's response to and success in meeting the needs of the populations served by State MCH agencies and their partners. The 18 NPMs represent the various MCH populations, including children with special health care needs, as well as representative health and health care concerns that include, for example, injury prevention, prenatal care, and dental care.

Care for pregnant women has been a focus of State MCH programs since the inception of the Title V program, and several NPMs address the needs of pregnant women and their infants. National Performance Measure #17 – the percent of very low birth weight infants delivered at facilities for high-risk neonates – specifically addresses the needs of the premature infant in an effort to reduce infant morbidity and mortality.

Babies born at very low birth weight (VLBW), defined as less than 1500 grams, may face numerous health problems at birth and are at risk for premature mortality as well as short-term and long-term morbidity. VLBW births as a percent of all US live births have remained constant at 1.4% to 1.5% for the last ten years. Survival of VLBW babies without long-term complications is enhanced if they are delivered in a hospital that is prepared to provide the specialized services they need.

In order to assure that high-risk infants are delivered at the most appropriate facility, a comprehensive prenatal and perinatal care system must be in place. Functional components of such a system include programs, providers and facilities to ensure:

- early and comprehensive prenatal care for women including screening for risk for premature delivery;
- screening tools to identify women at risk for delivery of a low birth weight infant and education for providers to use these tools;
- education for pregnant women to not only decrease their chances of delivering preterm but also to help them recognize the signs of early labor and know what to do if it occurs;
- appropriate facilities and providers for delivery of high-risk neonates;
- transport services to ensure that women arrive at the appropriate facility before they deliver; and
- agreements and relationships between primary obstetric providers and tertiary care centers to ensure a smooth transition of care.

Many of these components are part of regionalized perinatal care systems implemented by many States in the years following publication of the 1976 March of Dimes landmark document *Toward Improving the Outcome of Pregnancy*.[11]

Concern has been raised that the percent of VLBW babies born in facilities for high-risk neonates is declining. There has been speculation that a decline may be due, in part, to the discontinuance or weakening of the regional perinatal care system. In a 2001 retrospective look at regionalized perinatal care demonstration projects funded by the Robert Wood Johnson Foundation in the 1970s and 1980s, Holloway concludes that these networks are "crumbling", and two factors explain the decline. Managed care has encouraged the transfer of high-risk mothers to network

[11]Committee on Perinatal Health. *Toward Improving the Outcome of Pregnancy. Recommendations for the Regional Development of Maternal and Perinatal Health Services.* White Plains NY: March of Dimes National Foundation, 1976.

hospitals that may or may not be the most appropriate facility. Second, the proliferation of Level II hospitals encouraged, in part, by an increasing number of perinatal specialists, has led to competition rather than collaboration between Level II and Level III hospitals.[12]

This study was designed to examine the trends for NPM #17 for each State and for all States combined and to explore reasons that States report for change in this marker. In the first part of this report, nine years of NPM #17 data are examined to look at trends in the rate of VLBW deliveries in the appropriate hospital on a State-by-State basis and for all States, calculating the change in rate over the nine-year period. Part II describes in some detail on information obtained from both a review of State Title V Application/Annual Reports and from follow-up conversations with MCH staff in a sample of states. States with rates that have improved, worsened or remained the same are included.

## I. MEASURING THE RATE OF VLBW DELIVERIES IN FACILITIES FOR HIGH-RISK NEONATES

Guidelines for classification of hospital neonatal care have been recommended by the American Academy of Pediatrics.[13] In their most recent policy statement, the AAP defines Level III units (subspecialty neonatal intensive care units [NICUs]) as having "continuously available personnel…and equipment to provide life support for as long as needed." Further, Level III NICUs can provide care to "newborn infants with differing degrees of complexity and risk." These 2004 guidelines are only the most recent in a series of guidelines that have been promulgated since the March of Dimes first articulated a plan for regionalized perinatal care in 1976. Classification of hospitals by the level of neonatal care available lies primarily with State licensing boards with definitions that vary from State to State and sometimes from year to year within a State. In some areas, hospitals determine their own designation. Changes in definitions of neonatal care make comparability of perinatal care data, including NPM #17, across States very difficult and can even be problematic for assessment of trends within a State as classification of individual facilities may change.

Data for NPM #17 were examined for all States, the District of Columbia, and Puerto Rico, for the years 2000 through 2007 or 2008.[14] For many States, there were not clear-cut trends of decreasing or improving rates, but instead rates fluctuated up and down over the years. In order to determine progress made on this indicator, the absolute percent change from 2000 to the most recent year for which data are available was calculated for each State or Jurisdiction and for all States combined. All rates were calculated using numerator and denominator data provided by the States. Provisional data, usually just for the most recent year, was included in the calculation if the provisional numerator and denominator were not identical to the previous year, a convention used by some States as a placeholder when final data are not available. It must be emphasized that there are significant measurement problems associated with NPM #17 (discussed later) and comparison of one State to another is likely misleading.

The percent change for each State and for all States combined is displayed graphically in Figure 1. States are presented in descending order with those with the biggest positive change at the top and those with the biggest negative change at the bottom. The percent change for all States combined appears near the middle of the figure.

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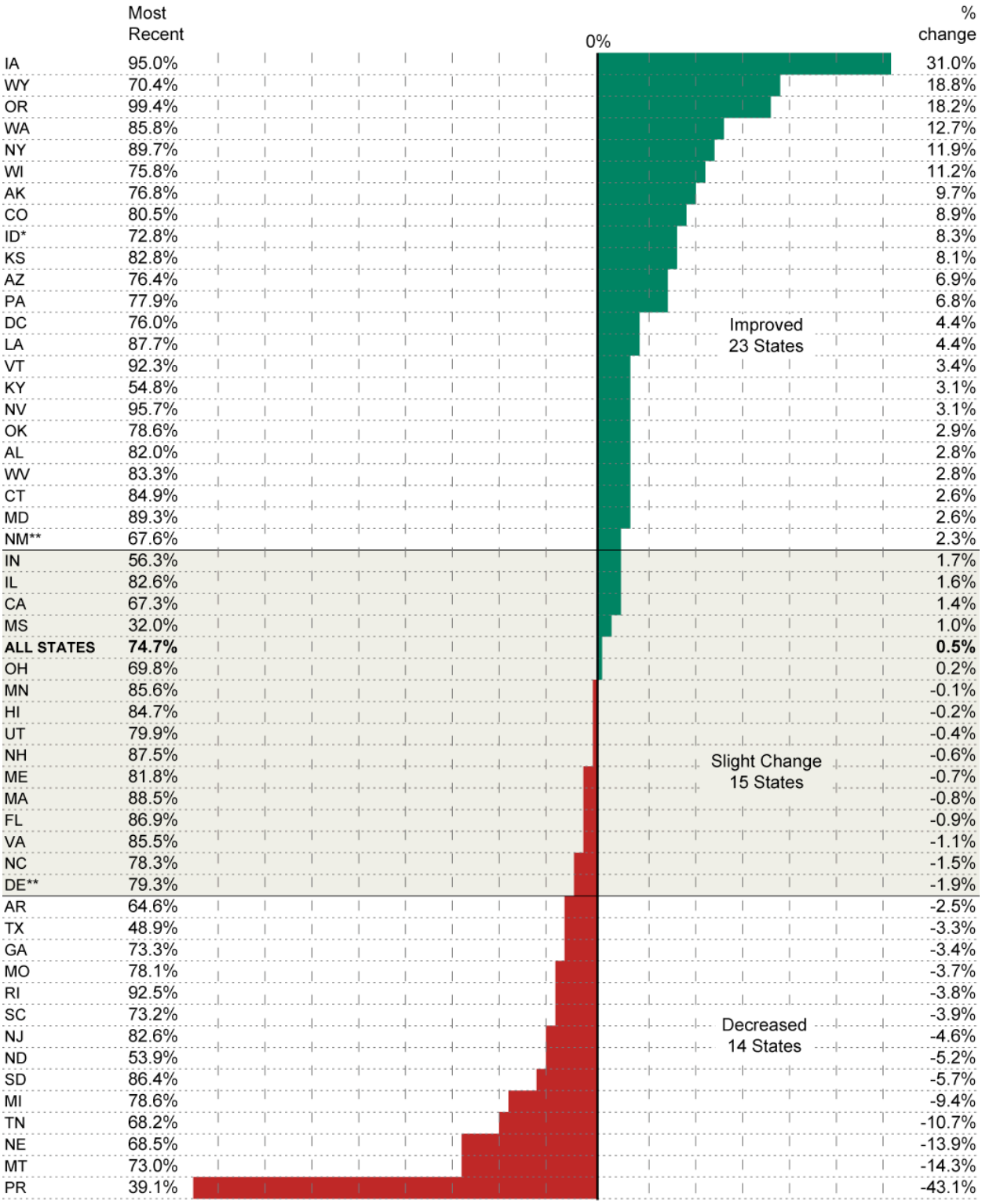
[12] Holloway MY. Chapter 8: The regionalized perinatal care program. In Isaacs SL and Knickman JR, eds. *To Improve Health and Health Care, 2001*. Robert Wood Johnson Foundation: San Francisco, 2001.
[13] American Academy of Pediatrics. Levels of neonatal care. (Policy Statement). *Pediatrics* 2004;114:1341-8.
[14] Data for 2008 were available for 26 States, 23 States reported data only through 2007, two States through 2006, and one State only through 2003.

The all-State rate changed very little from 2000 to 2007. The 2000 rate was 74.2% and the 2007 rate was 74.7% for an absolute change of 0.5%. The rate did increase by a little more than 1% during this eight-year period; the 2004 rate was 75.5%.

Data to calculate the most recent all-State rate (2008) were available for only 23 States. If data from that limited set of States is used to calculate a 2008 rate, the rate decreases by 3.3%, from 74.7% to 71.4%. However, if 2007 numerators and denominators are used for States without 2008 data (assuming no change in their rates), the all-State rate improves to 74.5%.

Fifteen States had only a slight change (+/- 2% or less) in their NPM #17 rate from 2000 to the most recent year. Five of these States with only minimal change showed slight improvement and ten showed a slight decline. Among the other 37 States or Jurisdictions, 23 had improved rates and 14 had rates that were lower. The average improvement for the 23 States was 8.1% (7.1% without Iowa). For the 14 States with a declining rate, the average decline was 9.1% (6.5% without Puerto Rico). One State and one Jurisdiction (Iowa and Puerto Rico) were notable for their levels of change that greatly exceeded the change in other States.

**Figure 1: Percent Absolute Change in NPM #17 in Order of Change (Positive to Negative)**




*2000-2003 only
**2000-2006 only

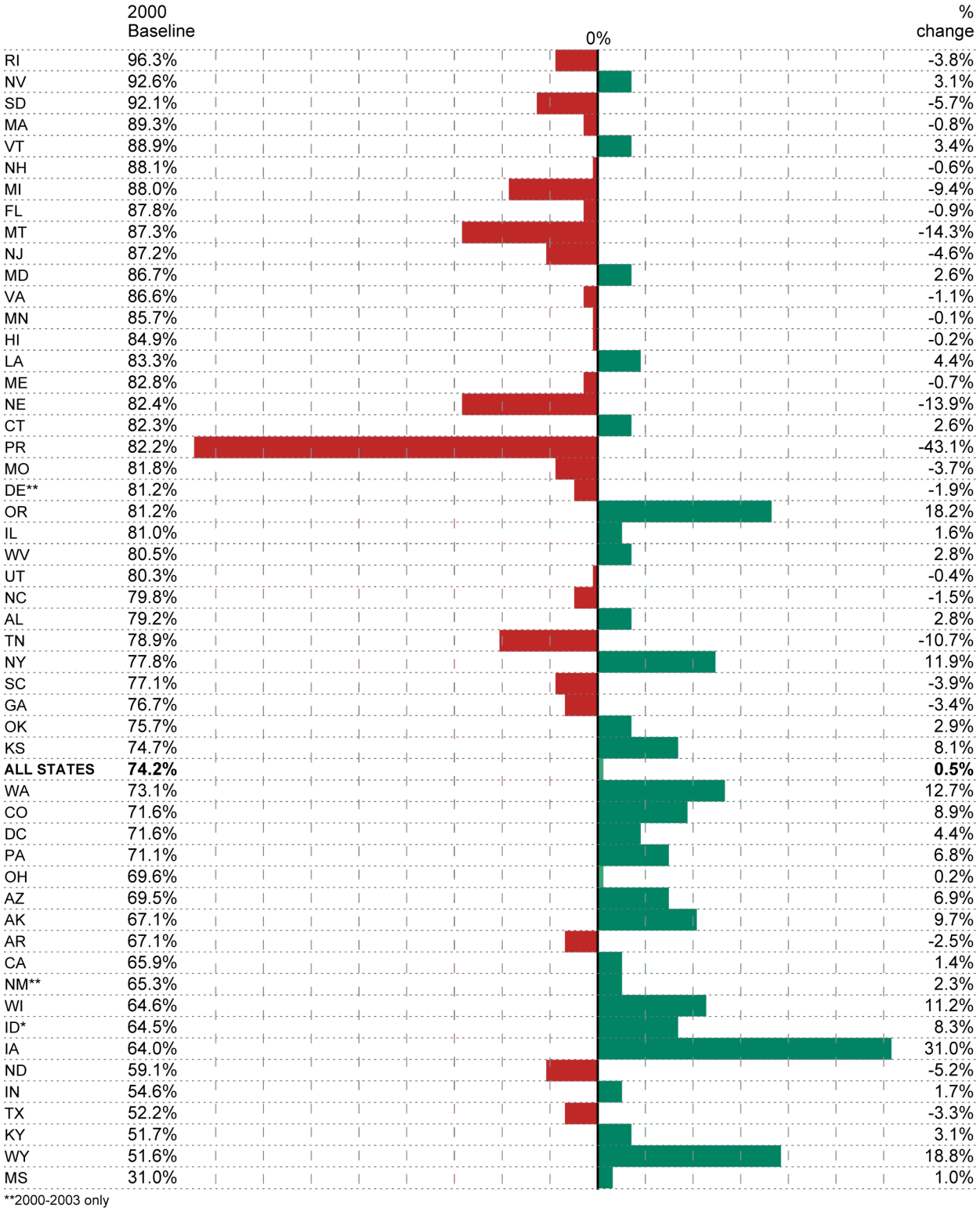
It is also informative to look at progress by examining change relative to where States ranked in 2000. Figure 2 shows individual States and all States combined displayed in order of their 2000 rate. The State with the highest 2000 rate is at the top and the State with the lowest 2000 rate is at the bottom. Considering all States, even those with a slight change, the majority of States whose rates have improved are at the bottom of the graph indicating that many States with low baseline rates are making progress. Four States[15] with rates that improved more than 2% remained below the all-State rate of 74.7% (Figures 2 and 3).

Looking again at the baseline data in Figure 2, the majority of States whose rates declined since 2000 are at the top of the graph, i.e., States with the higher baseline rates. Of the ten States with the highest baseline rates (range of 87.2% to 96.3%), eight had a decline while two improved slightly. The other five had rates that were unchanged or slightly improved.

Figure 3 presents data similar to the second figure but uses the most current rate to rank order the States. Again, considering all States regardless of magnitude of change, nine States that are currently below the US rate have had a decline in their rates over the years examined. Eleven States that were already below the 2000 US rate remained there in the most recent year[16] although eight[17] improved their rates (Figures 2 and 3).

[15] ID, KY, NM, WY
[16] AR, CA, ID, IN, KY, MS, ND, NM, OH, TX, WY
[17] CA, ID, IN, KY, MS, NM, OH, WY

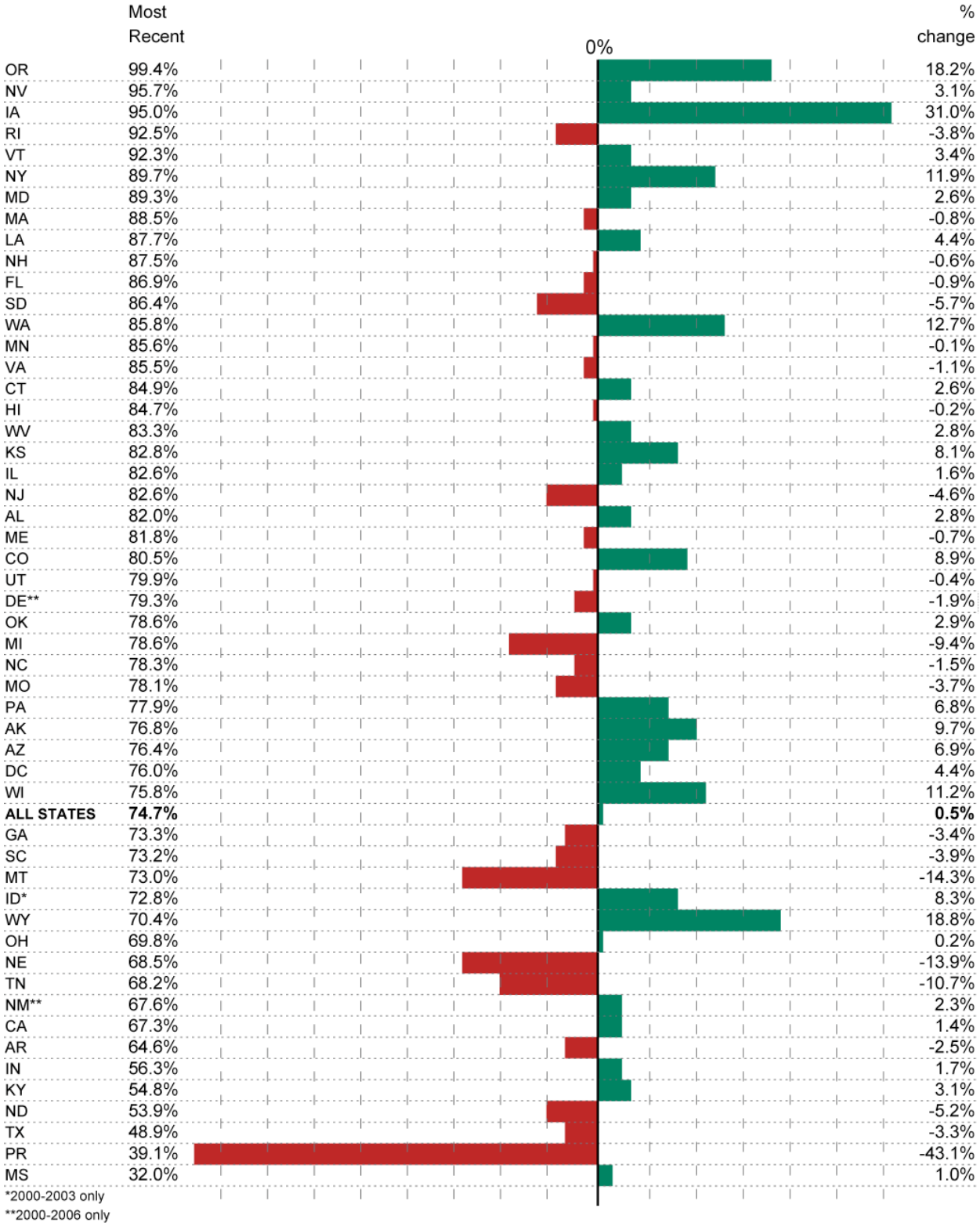
**Figure 2: Percent Absolute Change in NPM #17 in Order by 2000 Baseline %**




| | 2000 Baseline | % change |
|---|---|---|
| RI | 96.3% | -3.8% |
| NV | 92.6% | 3.1% |
| SD | 92.1% | -5.7% |
| MA | 89.3% | -0.8% |
| VT | 88.9% | 3.4% |
| NH | 88.1% | -0.6% |
| MI | 88.0% | -9.4% |
| FL | 87.8% | -0.9% |
| MT | 87.3% | -14.3% |
| NJ | 87.2% | -4.6% |
| MD | 86.7% | 2.6% |
| VA | 86.6% | -1.1% |
| MN | 85.7% | -0.1% |
| HI | 84.9% | -0.2% |
| LA | 83.3% | 4.4% |
| ME | 82.8% | -0.7% |
| NE | 82.4% | -13.9% |
| CT | 82.3% | 2.6% |
| PR | 82.2% | -43.1% |
| MO | 81.8% | -3.7% |
| DE** | 81.2% | -1.9% |
| OR | 81.2% | 18.2% |
| IL | 81.0% | 1.6% |
| WV | 80.5% | 2.8% |
| UT | 80.3% | -0.4% |
| NC | 79.8% | -1.5% |
| AL | 79.2% | 2.8% |
| TN | 78.9% | -10.7% |
| NY | 77.8% | 11.9% |
| SC | 77.1% | -3.9% |
| GA | 76.7% | -3.4% |
| OK | 75.7% | 2.9% |
| KS | 74.7% | 8.1% |
| **ALL STATES** | **74.2%** | **0.5%** |
| WA | 73.1% | 12.7% |
| CO | 71.6% | 8.9% |
| DC | 71.6% | 4.4% |
| PA | 71.1% | 6.8% |
| OH | 69.6% | 0.2% |
| AZ | 69.5% | 6.9% |
| AK | 67.1% | 9.7% |
| AR | 67.1% | -2.5% |
| CA | 65.9% | 1.4% |
| NM** | 65.3% | 2.3% |
| WI | 64.6% | 11.2% |
| ID* | 64.5% | 8.3% |
| IA | 64.0% | 31.0% |
| ND | 59.1% | -5.2% |
| IN | 54.6% | 1.7% |
| TX | 52.2% | -3.3% |
| KY | 51.7% | 3.1% |
| WY | 51.6% | 18.8% |
| MS | 31.0% | 1.0% |

**2000-2003 only
**2000-2006 only

**Figure 3: Percent Absolute Change in NPM #17 in Order by Most Recent % (2007 or 2008)**



## II. STATE ACTIVITIES TO IMPROVE NATIONAL PERFORMANCE MEASURE 17

The ability of State and local MCH agencies to intervene at any point in the prenatal or perinatal period varies greatly from State to State and depends, in part, on the mission and focus of their public health care system. Public health units may be direct care providers for pregnant women and screen them for risk, provide education, and refer to high-risk care. Other public health agencies may serve as coordinators of comprehensive services by promoting and enabling working agreements between community and tertiary care providers. Education of providers and women, including development of educational materials, is a strategy State and local MCH agencies use to address the needs of women with high-risk pregnancies. Finally, surveillance of both process and outcomes is a role played by Title V agencies in measuring performance and determining unmet needs.

In their 2010 Block Grant Application/2008 Annual Report, States report not only their NPM #17 rate but also activities to improve this rate. These comprehensive documents were reviewed to compile profiles for a subset of States for this perinatal indicator. State officials were provided an opportunity to comment on their progress in follow-up discussions that focused on three primary questions:

1. Why do they think their state's NPM#17 rate is going up, going down, or staying the same?

2. Do data measurement issues (e.g., classification of hospitals, ability to drill down in the data to see where other VLBW births are occurring) contribute to instability in their State's rate or to their ability to address it?

3. What is the status of regionalized perinatal care in their State?

States that are profiled in this report included States with improving rates, declining rates, and unchanged rates:

| State | Change in Rate (2000 to most recent yr) | State | Change in Rate (2000 to most recent yr) |
|---|---|---|---|
| Alabama | ↑ | Nebraska | ↓ |
| Alaska | ↑ | New Jersey | ↓ |
| Arizona | ↑ | New York | ↑ |
| Arkansas | ↓ | Oklahoma | ↑ |
| Colorado | ↑ | Oregon | ↑ |
| Florida | → | Texas | ↓ |
| Kansas | ↑ | Utah | → |
| Louisiana | ↑ | Virginia | → |
| Maine | → | Wisconsin | ↑ |
| Minnesota | → | | |

Profiles for the highlighted States were developed by the author using the information obtained from review of State reports and augmented by follow-up discussion with State officials. Information obtained from the various sources was summarized and interpreted by the author. Profiles were reviewed and edited by States, if they requested to do so[18].

Each State profile is presented as illustrated below. State profiles appear in alphabetical order.

**NAME OF STATE**

*Change in NPM #17 rate from 2000 to the most recent year and relative to the rate for all States combined.*

| | |
|---|---|
| **Most recent rate (year):** | Rate |
| **Change from 2000** | Increase or decrease and brief description of trend. |
| **# of VLBW births in appropriate facility** | *Number of VLBW births in an appropriate high-risk facility* for the most recent year with the percent change since 2000. The *numerator* for this indicator. |
| **# of VLBW births** | *Total number of VLBW births* for the most recent year with the percent change since 2000. The *denominator* for this indicator. |

**Information Sources:** Describes sources of information including review of most recent State Application/Annual Report and follow-up discussions with State officials.

**Data/Definition Concerns:** Describes measurement issues that may be affecting the rate.

**Discussion:** Describes activities and barriers reported in State Annual Reports or by State officials, with particular attention to the presence or absence of a regionalized perinatal care system. Also includes concerns/needs identified by State officials.

[18]Final State profiles were reviewed by MCH officials in Arizona, Minnesota, Nebraska and New York.

## ALABAMA

*Rate has improved and is above the rate for all States combined.*

| | |
|---|---|
| **Most recent rate (2007):** | 82.0% |
| **Change from 2000** | 2.8% increase - Rate has varied no more than 4% over the eight-year period. |
| **# of VLBW births in appropriate facility** | 1105 (up 9%) |
| **# of VLBW births** | 1348 (up 5%) |

**Information Sources:** Janice Smiley, Director of the State Perinatal Program. Review of Alabama's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Alabama's NPM #17 rate has not changed appreciably since 2000**.** Hospital perinatal care level designation is assigned by the State based on specific criteria. Classification of hospitals is not a barrier to calculation of this rate.

**Discussion:**

- Alabama has a well-established long-term system of regionalized perinatal care. The Perinatal Health Act was passed in 1980 in response to concerns about Alabama's high infant mortality rate. The State Perinatal Program resides in Public Health under Family Health Services. There are five Perinatal Regions each staffed by a Regional Nurse Perinatal Coordinator (RNPC). Each RNPC monitors care and outcomes in her region and bring concerns to the attention of the Regional Perinatal Advisory Council that, in turn, communicates with the State Perinatal Advisory Council where state policy is developed. Their current focus is on infant mortality as Alabama has seen a recent increase in this marker.

- Alabama recently established a statewide Fetal and Infant Mortality Review (FIMR) program to better understand the causes for their infant mortality rate. Due to limited staffing, they cannot review all deaths each year and focused their efforts in year one on neonatal deaths. The focus this year will be postneonatal deaths. Analysis of FIMR data has already confirmed anecdotal reports regarding education in one region. FIMR has also underscored the need for preconception health care.

- Alabama Title V works hand-in-hand with Alabama March of Dimes not just for perinatal health but other public health efforts such as tobacco cessation.

## ALASKA

*Rate has improved and is above the rate for all States combined.*

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| **Most recent rate (2007):** | 76.8% |
| **Change from 2000** | 9.7% increase - Rate has increased steadily since 2000 with small declines in some years. |
| **# of VLBW births in appropriate facility** | 76 (up 38%) |
| **# of VLBW births** | 99 (up 21%) |

**Information Sources:** Debra Golden, Perinatal Nurse Consultant. Review of Alaska's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** There is only one Level III hospital in Alaska so measurement is not an issue. The small number of VLBW births does contribute to unstable rates.

**Discussion:**

- The Perinatal Nurse Consultant position was created three years ago. She addresses all perinatal health care needs of Alaskans not just mothers at risk for delivery of a VLBW infant. In regard to this indicator, she provides information and education to providers outside of the Level III hospital including Physician Assistants, Family Physicians, and both direct entry Midwives and Nurse Midwives working in birth centers. She provides education regarding appropriate transfer of at-risk mothers and encourages communication between local hospitals and the midwife community. The Perinatal Advisory Committee serves as a forum to address all perinatal issues and the participation of all providers is encouraged. Incremental change is being made but it remains important to keep communication open and build relationships among providers.

- Alaska MCH epidemiologists looked at low birth weight (LBW) and VLBW births from 1993 to 1997 and found that VLBW infants born in the Level III hospital had a lower mortality rate (10%) than VLBW infants born in other hospitals (16%).[19]

- The Neonatology Group that is associated with Alaska's only Level III hospital, travels to hospitals in outlying areas on a regular schedule to do case reviews and provide education.

[19]Gessner BD, Smith PT. Perinatal care regionalization and low birth weight infant mortality rates in Alaska. *Am J Obstet Gynecol 2001;185:623-8.*

## ARIZONA

*Rate has improved and is above the rate for all States combined.*

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|---|---|
| **Most recent rate (2008):** | 76.4% |
| **Change from 2000** | 6.9% increase - Rate reached a peak of 81.6% in 2004, has declined since, but is still higher than in 2000. |
| **# of VLBW births in appropriate facility** | 890 (up 15%) |
| **# of VLBW births** | 1165 (up 4.5%) |

**Information Sources:** Mary Ellen Cunningham, Acting Chief of the Office of Children's Health, Bureau of Women and Children's Health. Review of Arizona's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Hospitals considered in the numerator have not changed with the exception of one hospital added in 2002, but there was no appreciable change in rate for that year. Other data considerations are discussed below.

**Discussion:**

- Hospitals designate their level of care but are certified by the Arizona Perinatal Trust based on guidelines. Arizona has a unique hospital level called II-EQ (Enhanced Qualification). Level II-EQ is equivalent to Level III-A under the 2007 AAP/ACOG guidelines. If births in Level II-EQ hospitals are included in Arizona's numerator, their rate increases to 86.5%.

- The High Risk Perinatal Program (HRPP) is a long-standing program that is now administered through the Health Department with funding from the State. Services include 24/7 access by a toll-free phone line to board-certified Maternal-Fetal Medicine specialists who are compensated by the program. Transport of mothers or infants is coordinated by the program and based on need and availability of beds. Other components of the program include developmental follow-up for newborns by community-based nurses after discharge and up to three years and the recent addition of maternal screening for post-partum depression as well as a new focus on well-woman care. A financial safety net component covers the cost of transport for qualified newborns. Budget problems in Arizona threaten the HRPP and cuts have already been made. It is hoped that they can keep the transport/consult component at a minimum.

- The Newborn Individualized Developmental Care and Assessment Program (NIDCAP) is an in-hospital program supported by the HRPP until this year when budget constraints forced the elimination of the support. It is hoped that the Arizona Perinatal Trust will include this training in their guidelines so it will become the standard of care and hospitals will assume support for the training.

- The perinatal care system in Arizona, although called regional, is a statewide system. It is not regulated by the State but operates under rigid program guidelines. For example, there are guidelines for air transport and Arizona Medicaid pays an enhanced fee if the transport company has met the guidelines and contracted with the HRPP.

## ARKANSAS

*Rate has declined and is below the rate for all States combined.*

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| **Most recent rate (2008):** | 64.6% |
| **Change from 2000** | 2.5% decrease - Rate has decreased slowly since 2000 with a marked decrease in 2007 followed by recovery in 2008. |
| **# of VLBW births in appropriate facility** | 451 (up 7%) |
| **# of VLBW births** | 698 (up 11.5%) |

**Information Sources:** Dick Nugent, Chief, Family Health Branch. Review of Arkansas' Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Arkansas hospitals self-designate their level of perinatal care and changes in these designations lead to fluctuations in the NPM #17 rate.

**Discussion:**

- There is no formal system of regionalized perinatal care in Arkansas. Arkansas Title V does support and interact with the University of Arkansas Medical Sciences (UAMS) Antenatal and Neonatal Guidelines, Education and Learning System (ANGELS) program established in 2002. This program focuses on telemedicine to manage high-risk patients and promote appropriate delivery of high-risk infants. More one-on-one interaction between UAMS physicians and local physicians (similar to the process used in North Carolina) may be required to change behavior and improve outcomes.

- A change in this measure to a statistic more readily calculated for all hospitals, for example, percent of VLBW births at hospitals with specific birth volumes, may be more valuable. Improving the level of perinatal care at a Level II hospital that appears to have significant community support in terms of being the preferred provider, should be considered. Ultimately, improvement in infant mortality will come more from improvements in basic care for women and children than from changes in access to Level III care.

## COLORADO

*Rate has improved and is above the rate for all States combined.*

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| **Most recent rate (2008):** | 80.5% |
| **Change from 2000** | 8.9% increase - Rate declined until 2007 when it improved considerably. |
| **# of VLBW births in appropriate facility** | 749 (up 36%) |
| **# of VLBW births** | 930 (up 21%) |

**Information Sources:** Karen Trierweiler, Director, Center for Healthy Families and Communities . Review of Colorado's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Hospitals self-report their level of perinatal care and are certified by the Colorado Perinatal Care Council (CPCC). New designations based on the 2004 AAP/ACOG guidelines took effect in 2006 and increased the number of Level III hospitals from eight to seventeen (see explanation below).

**Discussion:**

- The CPCC certifies hospitals in regard to level of perinatal care in accordance with the AAP/ACOG guidelines and based on information provided by the hospital in a written application. CPCC reassesses levels every three years and has re-designated hospitals using the recent changes in the AAP/ACOG guidelines that added tiers to the Level III designation. This changed the number of births eligible for the numerator and increased their 2007 rate significantly. This voluntary system works well in a state that is averse to regulation.

  The CPCC includes representatives from all obstetric and neonatal providers in the State. Hospitals join the Council for a fee (determined as a percentage of births) and most, if not all, are represented. The Council's work centers around hospital designation although there have been other initiatives in the past. The Council is considering benchmarking but this has not yet been implemented. They are also looking at late premature births, e.g., planned inductions for presumed appropriate dates that are found to be inaccurate. There is a need for better assessment of gestational age prior to elective induction.

- Colorado has a long-standing Child Fatality Review Program that includes review of neonatal deaths. In addition, a few local health departments have FIMRs.

- VLBW babies not born in a facility for high-risk neonates are likely those born in urban areas where neonatal transport is readily available and there is competition among hospitals. It is difficult for MCH to address this disparity in transport as it is difficult to influence the behavior of hospitals. MCH has data regarding hospital performance but limits its use to data aggregated by hospital level.

## FLORIDA

*Rate is unchanged but above the rate for all States combined.*

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| **Most recent rate (2008):** | 86.9% - Provisional |
| **Change from 2000** | 0.9% decrease - Rate is essentially unchanged with the exception of a decrease to 79.1% in 2005. |
| **# of VLBW births in appropriate facility** | 3365 (up 23%) |
| **# of VLBW births** | 3874 (up 24%) |

**Information Sources:** Phyllis Sloyer, Division Director for Children's Medical Services, CSHCN Program. Review of Florida's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Hospital designation of perinatal care is prescribed through a Certificate of Need process. Hospitals meeting specific criteria for perinatal care are readily identified and measurement for this indicator is not a major concern. It is not clear what caused the drop in rate in 2005 but it may have been due to budget cuts.

**Discussion:**

- In Florida, through the Certificate of Need process, there are standards for Level II or III NICU care. Years ago, Florida's Title V CSHCN program was given statutory authority for the Regional Perinatal Intensive Care Center (RPICC) Program. At that time there were ten RPICCs and one more was added. Since then, more have been added (now 22 or 23), but the newer ones are not under the CSHCN's statutory authority for quality improvement activities and it would require legislative action to add them to the program's mandate. When RPICC started in 1975 there was a general revenue appropriation that paid for hospital days for labor and delivery and NICU care. Beginning in 1989, with the Omnibus Budget Reconciliation Act (OBRA), Florida has used that appropriation to expand Medicaid eligibility, but the CSHCN program retained its statutory authority and quality oversight. Medicaid pays physicians an enhanced fee based on their quality reviews. Direct care services are provided at the RPICCs and at high-risk obstetrical clinics. Transportation of eligible mothers and infants to an appropriate facility is covered. Education for providers and quality monitoring to ensure standards of care are met are also part of the program.

- Future plans include an increase in the number of high-risk RPICC outpatient clinics for women and an increase in telemedicine sites in underserved areas, both with the goal of identifying and serving women at risk for premature delivery before the onset of labor. They will continue to use their data to identify facilities that are not equipped to deliver VLBW babies but that do deliver them in order to assess barriers and facilitate linkages with appropriate hospitals and appropriate transfer of pregnant women.

- Florida is part of the Big 5 Initiative through the March of Dimes to explore strategies to reduce the number of preterm births in states with the highest number of births. In Florida, they are focusing on their high rate of c-section deliveries and on late preterm elective inductions.

## KANSAS

*Rate has improved and is above the rate for all States combined.*

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|---|---|
| **Most recent rate (2008):** | 82.8% |
| **Change from 2000** | 8.1% increase - Rate is up and down and has fluctuated between 78% and 82% since 2002. |
| **# of VLBW births in appropriate facility** | 434 (up 22%) |
| **# of VLBW births** | 524 (up 10%) |

**Information Sources:** Linda Kenney, Director of the Bureau of Family Health. Review of Kansas' Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Hospitals considered in the numerator have not changed with the exception of one hospital added in 2006. There are no data to determine if this addition had an effect on the rate. Hospitals designate their level of care.

**Discussion:**

- The perinatal referral system in Kansas is driven by providers of perinatal care and is not a state-organized formal system. Six hospitals provide services for high-risk mothers and infants and three of them have formalized perinatal transport systems. There is emphasis on transferring women before delivery.

- Kansas MCH works with Perinatal Association Kansas (PAK) and the March of Dimes to provide education to providers as well as a forum for discussion around perinatal health issues. The Kansas Perinatal Council (KPC) works in other areas to improve pregnancy outcomes including advocating for a birth spacing waiver, development of a substance abuse protocol for pregnant women, and support for breastfeeding.

- Health department staff provide care in subspecialty perinatal care facilities in some urban areas and also provide education to pregnant women regarding signs of early labor and what women should do in that event. MCH will develop a map of the Kansas perinatal health care system in order to provide information, on request, regarding level of care at specific facilities. MCH will use the Internet to disseminate education information for providers and pregnant women. In addition, they plan an in-depth analysis of VLBW data.

- The Secretary of the Kansas Department of Health and Environment has designated a Blue Ribbon Panel on infant mortality and the perinatal transport system is one topic on the Panel's agenda.

- The perinatalogists in Kansas believe that they have obtained all the benefits that can be obtained from maternal transport and future improvement in this marker will come from changes in the preconception or interconception period.

## LOUISIANA

*Rate has improved and is above the rate for all States combined.*

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| **Most recent rate (2007):** | 87.7% |
| **Change from 2000** | 4.4% increase - Rate has increased by a small amount (<1% to 1.5%) almost every year. |
| **# of VLBW births in appropriate facility** | 1243 (up 9%) |
| **# of VLBW births** | 1417 (up 4%) |

**Information Sources:** Lyn Kieltyka, MCH Epidemiologist. Review of Louisiana's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Uniform standards with detailed requirements that include congruence between obstetric and neonatal care levels determine hospital level of care. They are aware of annual changes in hospital designations and monitor changes in rates to assess the effect of hospital additions or closures. When the rate went down in 2005, they were able to determine that the drop was a true change and not due to changes in numerator hospitals.

**Discussion:**

- The statewide Louisiana Perinatal Commission is appointed by the governor and membership on the Commission is specified by law. They meet every other month and MCH brings issues to their attention. This long-standing Commission serves as advisors and has the expertise and authority to make recommendations. For example, the Commission supported development of FIMRs and wrote letters of support to address concerns about immunity.
- Regionalized perinatal care is working well in Louisiana. In each region there is a regionalized center that is recognized as the subspecialty care provider. Maternal-fetal medicine specialists provide statewide coverage.
- Louisiana began a FIMR program in 2002 starting with one region. Since then the program has expanded statewide and now is composed of nine teams, one for each region. The FIMR data is used to provide feedback to Community Action Teams for appropriate intervention. The FIMRs are a major component of the State's MCH infrastructure and were charged with their recent Needs Assessment. In addition to data provided by the FIMRs, Louisiana is addressing prematurity through the Screening, Brief Intervention, Referral and Treatment (SBIRT) program that screens and treats pregnant women for modifiable risk factors such as smoking.
- Louisiana has significant data analysis capacity and a great working relationship between MCH and vital records. They have identified the hospitals where VLBW births occur and Level II hospitals in need of follow-up. They will work with these hospitals beginning with the one with the highest number of VLBW births. They are contacting the hospital, providing data to them, and willing to work with them to ensure transport of at-risk mothers. No assumptions are made about the care at the Level II hospital, i.e., they will explore all barriers including those imposed by Level III hospitals not accepting transports. Improving the appropriate transport of at-risk mothers at just one Level II hospital will improve their NPM#17 rate.
- The Secretary of the Louisiana Department of Health and Hospitals has formed a special section called Birth Outcomes. The section is new and has not yet been staffed but is evidence of Louisiana's commitment to improving birth outcomes, and Louisiana MCH hopes to work with this new section when it is up and running.
- They find this performance measure to be valuable for program planning.

## MAINE

*Rate is unchanged but above the rate for all States combined.*

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| **Most recent rate (2008):** | 81.8% |
| **Change from 2000** | 1.0% decrease - Rate is essentially flat, varying no more than 2.7% over the nine years. |
| **# of VLBW births in appropriate facility** | 667 (up 10%) |
| **# of VLBW births** | 815 (up 11%) |

**Information Sources:** Valerie Ricker, Director of the Family Health Division. Review of Maine's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Maine uses a 5-year moving average for this indicator to adjust for wide variation due to small numbers. There are two Level III hospitals in Maine and one Level II hospital that would like to become a Level III. Level of hospital care is determined by hospital self-designation.

**Discussion:**

- The Family Health Division collaborates with the Perinatal Outreach Education and Consultation (POEC) program at Maine Medical Center (MMC). The POEC is supported, in part and by competitive bid, by MCH funds for maternal outreach. MMC has the resources and is well accepted by providers as a neutral entity, rather than the State imposing standards. MMC's relationship with providers enables them to review high-risk cases with poor outcomes with the provider. The POEC provides education using formal education programs and transport conferences. They were instrumental in establishing a Maternal and Infant Mortality Review (MIMR) process with funding from the March of Dimes. Most recently they have provided training for the Period of Purple Crying program to prevent abusive head trauma.

- As part of POEC, Eastern Maine Medical Center (EMMC) in Bangor and MMC have transport teams available to bring patients to their hospitals or to provide support to the local provider at the site. Health care providers around the state are well informed about these resources and do not hesitate to contact the tertiary centers; there is always someone available by phone during labor and delivery. This system functions as an informal regionalized care system. Given the geography of Maine and the distribution of the population, they do not expect that all VLBW babies will be delivered in Level III hospitals.

- Maine has data on transport in their 20-year-old birth certificate system. Analysis of recent data found that of the 16.3% VLBW babies not born at a Level III hospital, 7.3% were transferred to a Level III facility post-natally and 9% were not transferred. They will look at babies not born in Level III hospitals to explore factors associated with non-transfer including fetal conditions incompatible with life and maternal age, education and residence. Other analyses planned include examination of home births and their outcomes. They also believe that information from the MIMR will be important in making incremental change in this indicator.

- Maine Medicaid has contracted with a private group to reduce costs by providing early services to pregnant women to promote healthy pregnancies. The Family Health Division will be looking at this program to examine its potential impact on NPM #17.

## MINNESOTA

*Rate is unchanged but above the rate for all States combined.*

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| **Most recent rate (2007):** | 85.6% |
| **Change from 2000** | 0.1% decrease - Rate increased by 10% in 2001 but decreased by almost 20% in 2002. Since then it has improved to the current rate. |
| **# of VLBW births in appropriate facility** | 718 (up 22%) |
| **# of VLBW births** | 839 (up 22%) |

**Information Sources:** Cheryl Fogarty, Infant Mortality Consultant. Review of Minnesota's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** A change in designation for one hospital resulted in a drop in the NPM #17 rate. The rate has since improved possibly due, in part, to women and providers understanding that at-risk women should deliver at one of the Level III hospitals rather than at the one that changed its NICU to Level II. Hospitals report their level of care but the Title V agency maintains a list of hospitals that the agency considers to be Level III based on AAP/ACOG guidelines. The list has been stable following the change described above.

**Discussion:**

- There is no formal system of regionalized perinatal care in Minnesota. There are health plan-based networks of hospitals. Community hospitals in some counties are part of these networks and have a relationship with a hospital with a higher level of perinatal care. The availability of Level III hospitals is good in urban centers but limited in some rural areas, particularly in northwest Minnesota. Women in underserved areas of the State may deliver in North or South Dakota.
- The Minnesota Perinatal Organization (MPO) provides perinatal health education through an annual conference including specific topics such as fetal monitoring and broader concerns such as autism and maternal depression. MPO has taken on leadership of Minnesota's Premature Infant Health Network in partnership with the March of Dimes.
- The March of Dimes in Minnesota is a strong advocate for perinatal health and a collaborative partner with the Title V agency. They have active subcommittees on policy, best practices and other topics.
- The Title V agency is planning the fourth annual Preconception Care conference for fall 2010 in partnership with the March of Dimes, the University of Minnesota's School of Public Health's Maternal & Child Health Leadership program, health plans, and others.
- The Multi-Cultural Maternity Excellence group has bi-annual regional meetings in the metro area hosted by the Minneapolis Department of Health and Family Support with Twin Cities Healthy Start. The goal of this group is to address racial and ethnic disparities in birth outcomes by sharing information and resources about excellence in community-based services that others can adopt and build upon.
- Minnesota has a new requirement for trauma system development, which could serve as a model for a system of perinatal care and obstetrical emergency care. The trauma system was instituted by legislation. It is uncertain if similar legislation could be obtained for a perinatal care system.

- Multiple factors including precipitous deliveries are likely contributing to their inability to reach 90% for this indicator. Level III hospitals are available in urban areas and rural providers do a good job getting women transferred for care. They have a fairly high rate of late entry into prenatal care making risk more difficult to predict and underlining the need for education for women particularly those with a previous preterm birth.

## NEBRASKA

*Rate has declined and is below the rate for all States combined.*

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| **Most recent rate (2008):** | 68.5% - provisional |
| **Change from 2000** | 13.9% decrease – Rate declined until 2004 when it improved but not to 2000 levels. It has since declined further. |
| **# of VLBW births in appropriate facility** | 207 (down 20%) |
| **# of VLBW births** | 302 (down 3.5%) |

**Information Sources:** Paula Eurek, Administrator of Lifespan Health Services Unit; Jennifer Severe-Oforah, MCH Epidemiology Surveillance Coordinator; and Debora Barnes-Josiah, MCH Epidemiologist. Review of Nebraska's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** There are four birthing hospitals that are considered Level III for Medicaid reimbursement and it is births at those hospitals that are used in the numerator for this marker. They have not changed. A number of VLBW births occur out-of-state due to geography and network relationships.

**Discussion:**

- There is no statutory, regulatory or any other requirement for designation of levels of perinatal care in Nebraska. The perinatal care system is self-declared and self-managed by providers.

- They have been working with Capstone (UNMC/UNO College of Public Health) students to better understand how perinatal care is organized in Nebraska. The first student surveyed birthing and children's hospitals in 2007 asking hospitals to classify themselves according to ACOG guidelines and to complete a checklist of services. This study revealed the discrepancies between how hospitals self designate and how their services compare to those recommended by ACOG for different levels of care. Hospitals with limited services (Level I and II) were generally appropriately classified although some approached a higher level of care because of specific services provided. Only one Level III hospital met all the requirements for a Level III facility. A second Capstone student looked at birth outcomes, examining level of hospital for various newborn weight categories and infant mortality. Results of this analysis suggest a need for better systematic assessment of risk to determine the need for transfer of a pregnant woman.

- The focus and scope of their organization has changed over the last decade. Fifteen years ago there was an MCH unit that focused on labor, delivery, and newborn care issues. Now the focus is on community-based programs with an emphasis on enabling and population-based services. They developed perinatal guidelines 15 years ago and have attempted to update them but there is no regulatory authority to move forward with the guidelines. They do have a perinatal, child and adolescent cluster of programs but mostly involved with community-based systems. Three Community Health Nurses, located in field offices, work, time permitting, with hospitals to provide information and technical assistance. A perinatal health nurse specialist has been hired and will re-establish working relationships with birth hospitals. The Title V agency's primary role vis-à-vis this indicator is to monitor it and provide technical assistance as appropriate.

## NEW JERSEY

*Rate has declined but is above the rate for all States combined.*

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| **Most recent rate (2008):** | 82.6% - provisional |
| **Change from 2000** | 4.6% decrease - After a moderate increase in 2002, the rate declined steadily until 2008 when it improved. |
| **# of VLBW births in appropriate facility** | 1446 (down 4%) |
| **# of VLBW births** | 1751 (up 1%) |

**Information Sources:** Lakota Kruse, Medical Director, Division of Family Health Services. Review of New Jersey's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Classification of hospitals is systematic (5 levels), written into hospital regulations, and has not changed. Measurement issues are likely not affecting this measure to an appreciable degree.

**Discussion:**

- New Jersey regionalized perinatal care in the mid-1980s. The regional perinatal care regulations created consortia whose mandate includes reporting and investigating births that do not occur in the appropriate hospital. There are currently six Regional Maternal and Child Health Consortia (MCHC), and Family Health Services/Perinatal Services works with the MCHC to coordinate continuous quality improvement activities for each region that include monitoring statistics for perinatal care and other MCH indicators. Fetal-infant mortality and maternal mortality are reviewed and guidelines and activities such as referral agreements, transportation guidelines, and professional education to support the regional perinatal system are part of the mandate of the Consortia. Regionalization has been particularly beneficial in regard to maternal transport. They are considering consolidating and decreasing the number of Consortia to four which would be more logical given the location of services within the State.

- They convened a Task Force on Hospital-based Perinatal and Pediatric Services to determine if current regulations regarding hospital perinatal, neonatal and pediatric services are up-to-date. In follow-up, Directors of Neonatology at the Regional Perinatal Centers are developing the New Jersey Vermont Oxford Network (VON) Collaborative to enable reporting of NICU performance data that is part of the VON. These data will support the Collaborative's overall goals of a network of neonatal providers, benchmarking and quality improvement activities, and a statewide integrated perinatal data system.

- Some of the obstacle to improvement in this rate may be VLBW births at the higher end of the VLBW weight specification. Some hospitals keep the more stable, higher weight VLBW babies ("feeders and growers") because they can manage them. On a hospital-by-hospital basis, numbers are too small to indicate a trend. They have looked at the data by changing the weight criteria and it did make a difference.

## NEW YORK

*Rate has improved and is above the rate for all States combined.*

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| **Most recent rate (2007):** | 89.7% |
| **Change from 2000** | 11.9% increase - Rate has improved steadily since 2000. |
| **# of VLBW births in appropriate facility** | 3252 (up 5%) |
| **# of VLBW births** | 3627 (down 9%) |

**Information Sources:** Wendy Shaw, Associate Director, Division of Family Health; Eileen Shields, Research Scientist, Division of Family Health; Rudy Lewis, Assistant Director, Bureau of Women's Health; Barbara Frankel, Acting Director, Bureau of Women's Health; Marilyn Kacica MD, Medical Director, Division of Family Health. Review of New York's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns**: New York State's system of perinatal regionalization is codified in state regulation. All obstetrical hospitals have been designated by the New York State Department of Health (Department) as a Level I, II, III or Regional Perinatal Center (RPC) based on standard criteria. The Department reviewed data before and after perinatal redesignation and determined that although the number of VLBW births has remained constant, the number of VLBW neonates born at higher-level perinatal hospitals has increased since redesignation. New York has also developed a Statewide Perinatal Data System (SPDS) that includes the Core module, comprised of birth data, and quality improvement data, and also a NICU module, that captures information on every neonate in NICUs across the state. Both data systems are Web-based and provide RPCs and their affiliate hospitals with ready access to standardized statistical summary reports with which to monitor key indicators of the quality of their perinatal care. Both data systems also provide access to data files that can be used for more targeted analyses of issues and trends relevant to individual hospitals as well as the regional network as a whole. New York City is a separate vital records reporting district that has developed a perinatal data system similar to SPDS. Delays in submission of NYC data to the Department present challenges to the availability of timely statewide data.

**Discussion:**

- Having laid the foundation in the 1980's, New York strongly recommitted to Regionalized Perinatal Care in the 1990s. In collaboration with expert workgroups of clinicians and key stakeholders, the Department developed standards for perinatal levels of care for obstetrical hospitals in New York State based on AAP/ACOG guidelines. All of NY's obstetrical hospitals were formally redesignated to provide one of four increasingly specialized levels of perinatal care. Regional Perinatal Centers (RPCs) are the core component of the system, affiliating with a network of perinatal hospitals designated at lower levels. By regulation, all affiliated hospitals are required to have an affiliation agreement with their RPC that specifies the relationship between the RPC and affiliate, including criteria for consultation and transport of higher risk women and neonates. RPCs provide outreach and education, serve on the affiliate hospital's quality assurance committee, conduct quality assurance visits to affiliate hospitals, review their complex cases, and work with them to improve perinatal quality and outcomes. Each RPC coordinates transfers among its affiliates. If disagreements occur between the RPC and the affiliate, the case may be referred to the Department for review, and, as stated in regulation, the Department initiates compliance reviews at both hospitals, and the recommendations of the Department are implemented.

- The number and percent of VLBW babies born at Level I and II hospitals has decreased since hospital redesignation. Furthermore, the mortality rate among VLBW babies has also declined since the redesignation process in New York State. Reasons for delivering VLBW infants at lower level hospitals are captured in the SPDS, and are primarily due to the health status of the woman and inability to ensure a safe transport to a higher-level perinatal hospital. More than half of these are reportedly due to rapid or advanced labor; a fifth each are due to the fetus being at risk or maternal bleeding; and less than 1% are attributed to the mother's having refused transfer. The Department also commits extensive resources to increase access to, and utilization of, comprehensive, quality prenatal care and other services, and improve outcomes.

- In addition, Regional Perinatal Forums, involving hospital and community stakeholders, were established in most regions of New York State to identify and address perinatal health issues on the local level. Each forum is developing a regional action plan to address identified perinatal health issues. These forums are co-directed by RPCs and Comprehensive Prenatal-Perinatal Services Networks. The perinatal networks are community-based organizations funded by the Department that mobilize the service system at the local level to improve perinatal health. Each of the 16 perinatal networks targets a region, ranging in size from several health districts in New York City to large multi-county regions in rural upstate. The scope of service provided by these networks includes coalition building, conducting outreach and education to high-risk populations, and provider education on special topics, such as screening for substance abuse among pregnant women, or cultural sensitivity.

- New York believes that regionalization is not a finished product, but an evolving system with ongoing quality improvement initiatives being paramount for improving high-risk perinatal care. In the past, the Bureau of Women's Health and the Association of Regional Perinatal Programs and Networks collaborated on a quality improvement initiative to fund RPCs for specific initiatives to improve perinatal outcomes. In addition, New York is working with RPCs and the National Initiative for Children's Healthcare Quality (NICHQ), with input from an external expert clinical workgroup, to discuss the implementation of obstetric and neonatal interventions designed to improve birth outcomes and based on the quality improvement work done by the Centers for Medicaid and Medicare Services. The first meeting of the expert workgroup will occur in February 2010. RPCs will play a key role in the implementation of this initiative. With input from the expert workgroup, New York will decide on the focus for the initiative and is considering implementing 2 of the 9 NICHQ interventions that cross the continuum of care (respiratory support and nutrition support in the neonatal period in NICUs) and an additional intervention, i.e., scheduled near term delivery (36-38 wk) without medical indication.

## OKLAHOMA

*Rate is improved and above the rate for all States combined.*

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|---|---|
| **Most recent rate (2007):** | 78.6% |
| **Change from 2000** | 2.9% increase - Rate is up and down, reaching a high of 82.1% in 2006. |
| **# of VLBW births in appropriate facility** | 640 (up 31%) |
| **# of VLBW births** | 814 (up 27%) |

**Information Sources:** Suzanna Dooley, MCH Service Chief; Jill Nobles-Botkin, Director of Perinatal and Reproductive Health Division; Dana Coles, Epidemiologist; and Robert Fairharm, Senior Analyst. Review of Oklahoma's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Measurement is not a major problem in Oklahoma. Each year they review their hospitals with a neonatologist and determine which hospitals are facilities for high-risk neonates and which births to include in the numerator. One hospital hired a neonatologist and this is likely the cause of the large increase (8.7%) from 2005 to 2006.

**Discussion:**

- The Perinatal Continuing Education Program (PCEP) through the University of Oklahoma Health Sciences Center provides face-to-face education for hospital staff including what they must do to qualify for each level of perinatal care. Hospitals designate their level of care. Last year this state-supported program received Medicaid match funds to expand the program for quality initiatives. MCH is working with partners to consider how to change Board of Health rules to have a system of hospital designation that is more in line with AAP/ACOG guidelines.
- The Perinatal Advisory Task Force, a collaborative between the Health Care Authority and the Department of Health, first focused on changes in Medicaid regarding perinatal health and is now transitioning to a broader effort looking at statewide quality improvement projects. Nursery designation is one issue; currently they are taking the initial steps of talking with hospitals about preterm delivery, elective inductions, and other perinatal issues.
- There is no formal system of regionalized care in Oklahoma although it has been discussed. There are Turning Points coalitions in 64 counties that focus on health needs identified by the community and provide a forum for coming together as partners to address problems. EMS regional advisory committees include perinatal health and appropriate transport services in the issues they consider. State MCH focuses on what is already out there, how to use existing resources and avoid duplication. They have looked at the ANGELS program in Arkansas to explore which components might work in Oklahoma.
- Problems identified by providers prompted a Medicaid policy change last year. A tiered system was instituted where there are financial incentives for rural providers to partner with a tertiary center to treat pregnant women in the community and avoid overloading the tertiary center. Now both providers can be reimbursed for co-managing the care of a pregnant woman.
- Oklahoma is moving from funding for direct services to funding for infrastructure and support, e.g., FIMRs in Tulsa and Oklahoma City, and to building partnerships that can help them. Funding for quality improvement efforts would be particularly helpful.
- This performance measure is a struggle for them but they think it is valuable; it has made them step back and take a wider view.

## OREGON

*Rate has improved and is above the rate for all States combined.*

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|---|---|
| **Most recent rate (2008):** | 99.4% |
| **Change from 2000** | 18.2% increase – Rate was stable until 2007-08 when it increased markedly. |
| **# of VLBW births in appropriate facility** | 484 (up 32%) |
| **# of VLBW births** | 487 (up 8%) |

**Information Sources:** Len Rosenberg, Epidemiologist. Review of Oregon's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Oregon MCH believes that a woman in preterm labor should go to the nearest hospital to deliver and, based on analysis of data, that the level of the hospital from which a VLBW infant is discharged is a better marker of appropriate care. Prior to 2007, they included only those births in the six Oregon hospitals with NICUs in their numerator. Since then they have considered any birth in a hospital as meeting the numerator criterion and their rate has improved to near 100%.

**Discussion:**

- Regionalized Perinatal Care was started in Oregon in the 1980s but has never been formalized. There is less impulse and financial incentive to regulate health care in Oregon and regulatory processes that have been used in other states, e.g., New York, would not work in Oregon.

- The Office of Family Health (OFH) provides funding for the Oregon Health and Science University (OHSU) for consultation to providers of high-risk perinatal care.

- OFH is examining the feasibility of implementing a statewide FIMR, data from which would inform this performance measure.

- Joint Commission standards for neonatal care including transfer agreements and review of charts of VLBW births might be of more benefit in improving this measure.

## TEXAS

*Rate has declined and is below the rate for all States combined.*

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| **Most recent rate (2007):** | 48.9% - provisional |
| **Change from 2000** | 3.3% decrease |
| | Rate improved slightly in 2002 (53.5%) but declined after and has been flat since 2004. |
| **# of VLBW births in appropriate facility** | 2902 (up 21%) |
| **# of VLBW births** | 5940 (up 29%) |

**Information Sources:** Kim Roberts, Block Grant Administrator; Gita Mirchandani, Epidemiologist; and Jamie Clark, Head of Data Team. Review of Texas' Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Measurement is a major concern for Texas. Hospitals self-report their level of care and the State uses the American Hospital Association survey where hospitals indicate their level of obstetric care. They are looking at ways to better classify hospitals, e.g., presence of a NICU. They report only on births occurring in Texas. Lack of standardization of hospital perinatal care level is a challenge in Texas and limits their ability to obtain an accurate rate of appropriate deliveries of VLBW infants.

**Discussion:**

- There is no regionalized perinatal care in Texas.
- Texas has invested in data analysis activities to determine the level of hospital where women deliver and which socio-demographic factors predict delivery in each level of hospital. Research and epidemiology staff have geocoded all birthing hospitals in the state and linked these data to birth certificate data to determine not only where women deliver but also the distance to the nearest other possible birth hospital. They will also analyze the portion of women transferred before delivery and the portion of infants transferred after delivery. Results from these data analyses will be communicated to stakeholders including the Texas Pediatric Society, March of Dimes and Texas Healthy Start Alliance and health care providers to elicit their feedback to improve this indicator.
- They are partnering with the Texas Pediatric Society to develop a method to prospectively identify women with morbidities.
- Texas is applying to the CDC for a public health specialist who will focus on preconceptional health and high-risk perinatal care.

## UTAH

*Rate is unchanged but is above the rate for all States combined.*

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| **Most recent rate (2007):** | 79.9% |
| **Change from 2000** | 0.4% decrease - Rate declined markedly to 63.2% in 2003. Since then it has recovered to near the year 2000 rate. |
| **# of VLBW births in appropriate facility** | 460 (up 1%) |
| **# of VLBW births** | 576 (up 1%) |

**Information Sources:** Lois Bloebaum, Manager of Maternal and Infant Health Program. Review of Utah's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** Although level of care is not regulated in Utah, they have developed a list of hospitals with capacity to care for VLBW infants. The list occasionally changes as they become aware that a hospital has added a NICU and a neonatologist. The recent addition of a Level III hospital did not appreciably change their NPM #17 rate.

**Discussion:**

- Utah has an informal system of regionalized perinatal care. When regionalized systems were first being developed, Utah had a more formal system with close relationships among community hospitals, tertiary care centers and public health. Public health staff did a lot of outreach, but that component has decreased. Strong relationships between hospitals remain and that is what contributes to the informal regionalized care system. Intermountain Health Care oversees 50% of births in the State and determines care in their affiliate hospitals. The University of Utah is the other major provider of tertiary care and also has far-reaching relationships.

- In order to more accurately assign care levels to hospitals, they are surveying all birthing hospitals with questions based on AAP guidelines. In addition, they are querying barriers to transport. Previous data analyses looked specifically at births by facility and found that VLBW births in Level II hospitals were generally larger VLBW infants (1000-1500gm) and that care was appropriate. Precipitous deliveries and delivery of infants known to have conditions incompatible with life also contributed to the portion of VLBW infants not born in a Level III facility.

- New initiatives include establishing a Perinatal Quality Improvement Initiative (PQII). They work with the Utah Patient Safety Program that reports sentinel events at hospitals including infant deaths. Utah is applying for a grant to replicate and/or modify Ohio's PQII. This grant would include both a quality improvement component and a patient safety component that would consider medical liability reform. In addition to quality improvement activities, improved data would be available and key hospital players could participate in shared learning.

## VIRGINIA

*Rate is unchanged but is above the rate for all States combined.*

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|---|---|
| **Most recent rate (2008):** | 85.5% - provisional |
| **Change from 2000** | 1.1% decrease - Rate was improving until 2004 when it began a steady decline. 2008 provisional data shows an improvement. |
| **# of VLBW births in appropriate facility** | 1088 (down 22%) |
| **# of VLBW births** | 1273 (down 21%) |

**Information Sources:** Joan Corber-Mabe, Director of Division of Women's and Infants' Health (DWIH), Office of Family Health Services. Review of Virginia's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** In 2005, Virginia began to use a more strict definition for which hospitals were facilities for high-risk deliveries and neonates.

**Discussion:**

- Level of perinatal care is self-designated by hospitals in Virginia. DWIH continues to participate in review of hospitals levels vis-à-vis the 2007 AAP/ACOG Guidelines for possible revision of Virginia regulations. This process is ongoing. There is competition among hospitals and for-profit facilities care for most of the babies in Virginia. The goal of the DWIH is to work with providers in a collaborative model rather than an adversarial one, to do what they can do within this system.

- Five Regional Perinatal Councils (Councils) use information from their FIMR to monitor perinatal health care and identify areas for improvement. They have purchased and will implement the BASINET system, an operational and data system for analysis of FIMR data.

- Use of regionally based FIMRs by the Councils is the current focus of efforts to improve perinatal health. Outreach education was once thought to be panacea but they felt a need to go beyond outreach education and identified FIMR as a promising option, which has the added benefit of involving the community. The Councils and the FIMRs are the "boots on the ground." As a result of trends in post-discharge deaths observed by the FIMR process, they will take Sudden Infant Death Syndrome (SIDS) deaths out of FIMR over the next year and do extensive review of those deaths.

- Virginia MCH also believes in the value of home visiting programs to improve birth outcomes and cites Richmond City as an example of the ability of a home visiting program with good community support to reduce prematurity rates. They would like to duplicate the success in other areas of the State and hope that their academic partners can take advantage of stimulus dollars to evaluate these programs.

## WISCONSIN

*Rate is improved and above the rate for all States combined.*

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| **Most recent rate (2007):** | 75.8% |
| **Change from 2000** | 11.2% increase - Rate improved to a high of 83.2% in 2001 but has declined since although still better than the 2000 rate. |
| **# of VLBW births in appropriate facility** | 623 (up 13%) |
| **# of VLBW births** | 822 (down 4%) |

**Information Sources:** Terry Kruse, MCH Unit Supervisor; Katie Gillespie, Maternal Perinatal Nurse Consultant; Richard Miller, Epidemiologist; and Linda Hale, Section Chief. Review of Wisconsin's Title V Block Grant Application for 2010/Annual Report for 2008.

**Data/Definition Concerns:** There is no formal system of hospital level designation in Wisconsin although the MCH unit monitors hospitals each year for changes in their volume of births and is able to identify new birthing hospitals through this process. Hospitals add NICUs but it is not always clear what the hospital considers a NICU. Best they can determine, adding or losing hospitals each year is probably not a major contributor to changes in their rate.

**Discussion:**

- Wisconsin Association for Perinatal Care (WAPC) has taken a lead in this area and has hosted meetings on regionalization since 2003. In 2005, they met with the hospitals; they want to transition from two levels of care (community and perinatal centers) to a more AAP/ACOG-like definition. WAPC provides education to providers, encouraging hospitals to self-assess and self-designate using these guidelines in a voluntary process. About 16 hospitals have completed assessments on the website but there are many more to go.

- There is no formal structure for regionalized perinatal care in Wisconsin. The State does not embrace regulation. WAPC designated regions many years ago (before there was a proliferation of NICUs), but since then hospitals have been adding NICUs although it is not clear how they define one. The health plans are major players in the State. Some hospitals have neonatologists that come from other states and contracting for these providers is done by the health plans not by the hospitals. Some VLBW births to Wisconsin residents occur in Minnesota and in Illinois and they have to impute data for these births.

- They currently have a standardization of practice effort to influence care among obstetricians and family medicine physicians that do not refer patients for care. They would like to do a physician-by-physician analysis of those who do deliveries and also a regional analysis to target the standardization efforts. Support for additional data analysis would be valuable as would be standards of care set by outside organizations such as the Joint Commission or Medicaid.

## III. DISCUSSION

### *The Status of National Performance Measure #17*

The percent of all US births that are very low birth weight has not changed since 2000. Similarly, the percent of very low birth weight infants that are born in a facility for high-risk neonatal care has changed very little. At its highest point in 2004 the NPM #17 rate for all States combined was less than one percent higher than the 2007 rate. The 2007 rate of 74.7% is significantly below the Healthy People 2010 goal of 90%.

NPM #17 rates for individual States for the most recent year range from 32.0% to 99.4%. In the most recent year, only four[20] States met the 2010 Healthy People goal of 90%. More State rates have improved than have gotten worse. For all of the States considered (excluding Iowa, whose improvement of 31.0% was almost twice that of the next most improved State, and Puerto Rico, whose declining rate was three times that of the next State – both would be considered outliers), the average improvement since 2000 was 7.1% and the average decline was 6.5%, the gap between them reflecting the small change that has occurred for this indicator for the nation as a whole.

Information obtained from State documents augmented by information obtained in follow-up conversations with MCH Directors or their designees in 19 States (more than one-third of all States and Jurisdictions reporting on this measure), some with declining rates and some with improving rates, provides a picture of the issues facing States as they work to improve the health and health care of the smallest newborns. These profiles include information on measurement of this indicator, classification of hospitals for both measurement and program interventions, the state of regionalized perinatal care, and the factors that MCH perinatal programs identify as their biggest strengths and their biggest challenges.

### *Measuring Appropriate Perinatal Care for At-Risk Mothers and Their VLBW Infants*

Measurement is more of a consideration for this performance measure than it is for others. While a standardized system exists to capture information on births and birth weight is regularly and accurately reported, the level of hospital where births occur is not as readily captured. Because accuracy of measurement can be a barrier to appropriate interventions and to assessment of progress, the challenges in determining the numerator for this indicator, i.e., VLBW births occurring in a facility for high-risk neonates, bear an extended discussion.

*Hospital Classification* - Challenges to measurement of this indicator affect the NPM #17 rate in some states and there are two main concerns regarding the accuracy of hospital classification. The first is a basic measurement issue: **determining which hospitals are facilities for high-risk neonates,** assuming accuracy of the system that determines hospital levels. Hospitals add or discontinue NICU services (the most prominent marker of high-risk care) requiring that MCH statisticians maintain an updated list each year to determine which VLBW births should be included in the numerator for this indicator.

This basic measurement limitation is further complicated by the need to capture **births to State residents that occur in other States**, a problem for many, if not most, States. This challenge may be especially important in States with few tertiary care resources where out-of-state births are those most likely to need advanced and technological neonatal care. Omitting out-of-state births

[20] Oregon is not included due to the significant variation in definition that they use for this indicator.

and just reporting on occurrent births fails to address success in meeting the needs of all residents. Women with high-risk pregnancies most likely get preconception and prenatal care services that promote a healthy pregnancy in their own State. Omitting those who deliver out-of-state provides an incomplete picture of the ability of a State's public and private health care sector to meet their needs. Obtaining data for out-of-state births would delay but not change the calculation of the true resident rate if there had been no changes in classification of hospitals in the nearby States where VLBW deliveries occurred. Until all States use a common definition to classify birth hospitals, this contributor to a lack of precision in the rate of VLBW deliveries in appropriate facilities will remain a problem.

A measurement limitation with more widespread implications is the **accuracy of the classification of the level of hospital care** that underpins this measure. Standards for high-risk perinatal care have been promulgated by the AAP and ACOG with periodic updates that consider changes in the health care environment. Hospitals are typically classified as Level I, II or III with the most recent version including subsets of Level III. The rigor with which hospitals are classified as Level III has implications for not only measuring this indicator but for assessing the true level of care that is provided to VLBW infants and for planning and evaluating interventions to improve care. At one end of the classification continuum, hospitals call themselves Level III hospitals with no documentation or certification that all the criteria for Level III designation have been met. At the other end, a certifying authority assigns the Level I, II and III designations based on accurate assessment by the authority of the services provided. Other classification systems that involve more or less rigor in determining level of care also exist. The States profiled in this report reported examples of all of these scenarios. Several States (AL, AZ, LA, NJ, and NY) have highly regulated hospital care level designation systems. In some States (KS, ME, WI, and TX) hospitals can call themselves a Level III hospital without verification, while in others hospital self-designation is reviewed (VA) and/or certified (CO).

A change in the number of hospitals for high-risk neonates led to changes in the NPM #17 rates in several States (AR, CO, MN, NE, OK, and TX). Changes were both positive and negative. In Minnesota, one hospital closed its NICU but women continued to seek delivery services there, and the rate fell. In Oklahoma, the acquisition of a neonatologist by one hospital and the addition of this hospital as a facility for high-risk neonates raised Oklahoma's NPM #17 rate by almost 9%. In Colorado, reclassification of hospitals took effect in 2006, raising the number of Level III hospitals from eight to 17 and the NPM #17 rate by 9%.

*Number of Births* - Examining the **change in the number of VLBW births and the number of these births in appropriate facilities** considers the volume of high-risk perinatal care in each State and the demands on the health care system. For this group of States, nine of which did have improvement in their NPM #17 rate, most had an increase in both the number of VLBW infants and the number born in an appropriate facility, and the increase in the percentage of appropriate births was higher than the increase in the total number of births. Across all States with data through at least 2007, the number of VLBW infants NOT born in a facility for high-risk care ranged from 3 to 3038 with a median of 174 births. For States with 174 or fewer births spread across several birthing hospitals, the distribution of births may be more random than systematic and difficult to address with an appropriate intervention.

**Small numbers of births** contribute to instability of NPM #17 rates. The five States (of all reporting States and Jurisdictions) with the lowest number of VLBW births (AK, ND, NH, VT, and WY) average 90 VLBW births per year. Delivering one or two fewer babies in the appropriate hospital each year makes a notable change in the rate over 8 years. Conversely, one or two more appropriate deliveries make a notable positive change. Some states note that they use moving 5-

year averages to calculate this rate to adjust for the instability introduced by small numbers of events.

### *States Are Using Detailed Data for Program Planning*

Despite serious limitations in some data available for this measure, States with confidence in the validity of their data have used it to conduct **in-depth analysis of birth data**, particularly examining VLBW births not occurring in Level III hospitals. Analysis of where these births occur and characteristics of the mother and the infant can provide information to develop strategies to improve rates. Florida, Louisiana and Maine have or will identify non-Level III hospitals with VLBW births to determine what barriers to appropriate transport exist and how those barriers can be removed. In Utah, a more detailed look at specific non-Level III births determined that care provided at the local hospital was appropriate.

Many States are using detailed mortality data as part of Fetal and Infant Mortality Review programs to examine all contributors to fetal and infant mortality including the use of appropriate health care services. Because one goal of appropriate care of the high-risk neonate is decreased mortality, the comprehensive nature of these mortality review programs is especially important as they identify all causes of mortality as well as patterns of mortality. The contribution of inadequate perinatal care to the death of a VLBW infant not born at a Level III hospital can be examined in the context of all contributors to mortality to determine the role played by the health care system. These review programs focus on mortality, however, and cannot assess the contribution of care in a high-risk facility to reduction of short- and long-term morbidity.

### *Regionalization of Perinatal Care Varies from State to State*

The complexity of care needed for at-risk mothers and infants requires a systems approach that coordinates care among multiple providers. The States highlighted in this report illustrate that systems exist in many States, but the extent to which regionalized care is regulated and prescribed varies considerably. New York, New Jersey, Alabama and Florida are all examples of States with structured, regulated, long-standing regionalized perinatal care systems and all have NPM #17 rates that have improved or held steady and that are above the national average. It was clear from information obtained from State officials that formal and regulated regionalized care can and has been implemented successfully in many areas but may not be accepted by providers in other States where there is considerable resistance to regulation. Informal and less regulated regionalized systems of care also exist, however. For example, Arizona, Maine, and Utah all have more informal systems of care but they, too, have good NPM #17 rates. A third model of perinatal care, i.e., health plan linkages among providers, such as in Minnesota and Wisconsin, may function as de facto regionalized care where relationships among Level II and Level III hospitals are prescribed by the health plan and providers operate within guidelines set forth by the plans. Both Minnesota and Wisconsin have NPM #17 rates that are above the US average. Two of the three States with NPM #17 rates below the national average that are profiled in this report, described a regionalized care that was informal and provider-driven (NE) or was limited in the extent of relationships among providers (AR). There is insufficient information in this review to draw conclusions about changes in this indicator as they relate to changes in regionalized perinatal care.

### *MCH Experts Identify Barriers to Improvement in the NPM #17 Rate*

MCH officials contributing to this report were very aware of what was happening in their States and what factors challenge their ability to improve their NPM #17 rate. Some of the factors they

identified were related to characteristics of the mothers and/or infants; other factors relate to the health care system, particularly competition among hospitals for maternity patients. Barriers reported include:

Some mothers delivering VLBW infants should not be transported. Some officials reported that some mothers not transported before delivery were carrying fetuses with known conditions incompatible with life. It may be in the best interest of families in these cases to deliver at facilities near their home to maximize the psychosocial support they receive.

Even with the best prenatal care and screening, some women will deliver prematurely and precipitously. Transport of a woman in these situations is likely not in her best interest or in the best interest of the infant. Neonatal transport services are essential in these cases.

A high number of VLBW deliveries in a Level II hospital may reflect, in part, community preference for that hospital. It has been suggested that helping upgrade the services at those hospitals may be a better way to improve perinatal care.

Some VLBW infants at the high end of the VLBW weight range are being delivered and kept in hospitals other than Level III because providers feel confident that the infant will not need aggressive care and can be managed locally. Data on health outcomes for these "feeders and growers" could inform a discussion of change in the birth weight criterion for this indicator.

Competition among hospitals has led to establishment of neonatal intensive care services that do not meet all the criteria for Level III designation for perinatal care.

Hospitals do not transport the mother when newborn transport is available and efficient. This may be a primarily urban phenomenon in highly competitive hospital markets.

Barriers to transport may originate with the Level III hospital. A lack of available obstetric or NICU beds and/or communication barriers may prevent the transfer of a mother before delivery.

Providers at some Level II hospitals believe they can provide appropriate care for pregnant women and their VLBW infants and need outreach and education regarding the availability of consultative services and current standards for high-risk care.

***State MCH and Partner Agencies Are Involved in Many Aspects of High-Risk Perinatal Care***

Many activities to promote perinatal health and positive birth outcomes are evident in review of State Title V Annual Reports and also reported by State officials. All States promote and many provide early and comprehensive prenatal care including screening for risk for premature delivery. Education for consumers, obstetricians, family physicians, nurse midwives, maternity care nurses and others is provided by Title V agencies and by their partners in academic centers or through perinatal education and advocacy organizations. Appropriate facilities for care of high-risk neonates exist in most but not all States, interfacility and interprovider agreements exist and transport services are available. A few examples from the profiled States illustrate some of these programs. Florida provides direct care in outpatient high-risk Regional Perinatal Intensive Care Center program clinics and hopes to increase the number of these clinics. In Kansas, Health Department staff provide care in subspecialty perinatal care facilities in some urban areas. Louisiana has instituted the Screening, Referral and Treatment (SBIRT) program to screen and treat pregnant women for modifiable risk factors. In Maine, community providers have phone access to tertiary care providers, and the Perinatal Outreach Education and Consultation Program

staff and community providers review high-risk cases with poor outcomes. In Arizona, community physicians have 24/7 phone access to a Maternal-Fetal Medicine specialist for consultation. The Minnesota Perinatal Organization has an annual conference that includes both specific perinatal care topics such as fetal monitoring and broad health concerns such as maternal depression.

## IV. SUMMARY

Monitoring the NPM #17 rate and addressing barriers to high-risk care is a small part of the perinatal health picture, but, nonetheless, an important one. The rate for all States combined, as well as the rate for most individual States, has not reached the Healthy People 2010 goal of 90% and some rates have changed little since 2000. True improvement is hard to assess, though, when there are many challenges to accurate measurement.

States are making efforts to improve their data and are using data to drill down and better target interventions. They are exploring where VLBW births occur and why some do not occur in facilities for high-risk deliveries. Further, they are looking more broadly at fetal and infant mortality through FIMRs. These comprehensive review processes are important because they involve community leaders and explore all contributors to mortality to identify the most appropriate interventions. In the case of VLBW infants, understanding if health care system factors have played a role in a poor outcome and which factors can be modified can be an important contribution to improving this indicator. Surveillance of VLBW births is necessary for the quality improvement initiatives that were frequently mentioned by States as processes by which they hoped to improve neonatal health and health care.

Many activities to promote perinatal health and positive birth outcomes are evident in a review of State Title V Annual Reports and also reported by State officials. All States promote and most of them provide early and comprehensive prenatal care that includes screening for risk for premature delivery. Education for consumers, obstetricians, family physicians, nurse midwives, maternity care nurses and others is provided by Title V agencies and by their partners in academic centers and in work groups, task forces, and other organizations devoted to perinatal health. Formal and informal regionalized perinatal care has ensured the availability of facilities for care of high-risk mothers and infants, consultative services to assess the need and co-manage care, agreements for transfer of care and transport services to ensure a smooth transition of care.

The value of this National Performance Measure to States ranges from a perception of NPM #17 as a valuable marker of performance and useful tool for program evaluation to a less valuable but necessary monitoring requirement.