

## MCHB Technical Assistance Report

### *Promising Practices to Improve Birth Outcomes: What Can We Learn from New York?*

Jeff Koshel

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## ***Promising Practices to Improve Birth Outcomes: What Can We Learn from New York?***

### Executive Summary

This paper has been commissioned by the Maternal & Child Health Bureau with the expectation that something can be learned about improving birth outcomes, particularly for African-Americans, by analyzing the relatively successful experiences of New York. ***Among states with more than 10 percent of births to African-American women,***

- ***New York had the lowest African-American infant mortality rate*** (11.7/1,000) during 2003-2005;
- ***New York had the lowest white infant mortality rate*** (4.65/1,000) during this same period; and
- ***New York had the lowest neonatal and post-neonatal infant mortality rates*** in 2007.

It appears that New York's success in improving birth outcomes is largely the result of involving community agencies and coalitions in its regionalized perinatal hospital system. New York's community based regionalization model goes beyond designating hospitals to provide specialty care to high risk patients to organizing regional perinatal partnerships that unite medical facilities and community service providers in a common purpose.

Under New York's community based regionalization model, community agencies and hospitals in New York are involved in providing a plethora of services to low income women of child bearing age with special emphasis on New York City, which accounts for 70 percent of the births to mothers on Medicaid. A partial listing of current state and city efforts includes: a newborn home visiting program that targets high-risk communities; state and city perinatal depression initiatives, several adolescent reproductive health programs that work with health care providers and school based health centers to deliver accessible, comprehensive sexual and reproductive health care; a nurse-family partnership which provides nurse home-visiting to more than 2,000 families in New York City plus additional families in Syracuse and Rochester, making it the largest such program in the United States; a "cribs for kids" program in NYC; a major breastfeeding initiative; a NYC infant mortality reduction initiative that supports community based organizations in the most affected neighborhoods to provide outreach, referral services, case management, and peer education; and a citywide Coalition to End Infant Mortality which supports case managers, outreach workers, breastfeeding specialists, as well as nurses and doctors.

## ***Promising Practices to Improve Birth Outcomes: What Can We Learn from New York?***

### Introduction

Infant mortality is a sentinel public health measure that has been used for the past 50 years to assess the adequacy of health care systems across the globe. Although progress has been made in reducing infant mortality in America, we still lag behind many developed countries (and some developing countries).<sup>1</sup> Of particular concern has been the growing racial disparity in birth outcomes in the United States. Babies born to African-American mothers have 2.3 times the mortality rate of babies born to white mothers.<sup>2</sup> Moreover, this disparity shows no signs of improving over time despite the concerted efforts of the medical, public health, and philanthropic communities and federal, state and local levels of government. It has left some observers feeling that nothing short of eliminating poverty and racism will enable the United States to resolve this problem.<sup>3</sup>

This paper has been commissioned by the Maternal and Child Health Bureau (MCHB) of the U.S. Department of Health & Human Services with the expectation that something can be learned about improving birth outcomes, particularly for African-Americans, by analyzing the relatively successful experiences of New York.<sup>4</sup> ***Among states with more than 10 percent of births to African-American women,***

- ***New York had the lowest African-American (non-Hispanic black) infant mortality rate*** (11.7/1,000 during 2003-2005);
- ***New York had the lowest non-Hispanic white infant mortality rate*** (4.65/1,000 during 2003-2005); and
- ***New York had the lowest neonatal and post-neonatal infant mortality rates*** in 2007.<sup>5</sup>

One of MCHB's major objectives in administering the Title V Block Grant is to identify states that appear to be doing better than average, or better than might be expected, in order to learn of possible "best practices" that can be shared with other states to improve their program performance. By making this information available through on-site technical assistance and conferences, MCHB hopes to stimulate discussion about what may be working to improve health outcomes for mothers, infants and children. By

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<sup>1</sup> See WHO statistics on infant mortality: [http://www.who.int/whosis/whostat2006\\_mortality.pdf](http://www.who.int/whosis/whostat2006_mortality.pdf)

<sup>2</sup> CDC 2008, Infant Mortality Statistics from the 2005 Period Linked Birth/Infant Death Data Set, *National Vital Statistics Reports* 57(2), Table 2.

<sup>3</sup> Lu, M and Halfon, N, *Racial and Ethnic Disparities in Birth Outcomes: A Life-Course Perspective*

<sup>4</sup> Several years ago, MCHB commissioned a report of Promising Practices to Prevent Adolescent Suicide based upon the experiences of the state of New Jersey. At the time of the report, New Jersey had the lowest teen suicide rate in the country. New York currently has the lowest teen suicide rate.

<sup>5</sup> Preliminary 2007 National Vital Statistics Report, Volume 57, Number 12, March 18, 2008.

using indicators to flag items for research investigation, it is hoped that that all states may be able to improve their program performance.

There are three goals of this paper. The first is to identify possible reasons why New York has been able to do significantly better regarding black infant mortality than other states with large numbers and percentages of African-American births. The second is to provide some specific information about the policies and programs implemented by New York that can be reviewed and perhaps adopted by other states who want to undertake new efforts to lower black infant mortality and improve racial disparities in birth outcomes. The third objective is to highlight some unanswered questions raised by this exploratory analysis that can be the focus of future studies, e.g., why do states with relatively small percentages of African-American infants generally have the lowest African-American infant mortality rates?

This paper is based on a review of readily available documents and data from the National Center of Health Statistics (NCHS), the Maternal & Child Health Bureau, the New York State Department of Health, the New York City Department of Health and Mental Hygiene and information provided by other governmental and non-governmental agencies and organizations. It is best characterized as an *exploratory study*, one that may provide insights about what appears to have worked for New York to reduce mortality among both black and white infants. Hopefully, the analysis presented below can also serve to stimulate additional research to find effective ways to reduce African-American infant mortality and racial disparities in birth outcomes.

## Overview of State Infant Mortality Data

In addition to their own data records, states rely upon data compiled by MCHB and NCHS to examine trends in infant health and infant mortality. Each data source has its attributes and limitations.<sup>6</sup>

**Title V Information System (TVIS)** – Each year, all states and territories submit plans for administering the MCH Block Grant authorized by Title V of the Social Security Act.<sup>7</sup> The state plans are required to include data on key health indicators which are reviewed with MCHB staff and consultants and posted on the MCHB web site. The infant mortality data submitted annually by the states to TVIS have the attributes of being reasonably current and easily accessible. However, some of the TVIS infant mortality data have the limitation of not always being comparable across states. The data on infant mortality data by race are likely to be inconsistent for two reasons. First, some states

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<sup>6</sup> The author is grateful to the research and evaluation staff of the New York City Department of Health and Mental Hygiene for insights regarding the birth/death data published by the National Center for Health Statistics and the data submitted by states to the Title V Information System. Aviva Schwarz of the Bureau of Maternal & Reproductive Health (NYCDOHMH) provided especially helpful suggestions and data tabulations.

<sup>7</sup> *Maternal and Child Health Services, Title V Block Grant Program – Guidance & Forms*

may choose to report infant mortality rates for *non-Hispanic whites* and *non-Hispanic blacks*, while other states, including New York, include *black Hispanics within the “black” race category* and *white Hispanics within the “white” race category*. Since Hispanics tend to have better birth outcomes than African-Americans, including *black Hispanics under the black race category* would tend (a) to lower the black rate and (b) lower the Black/White infant mortality ratio in a given state that uses that reporting convention.<sup>8</sup> The other reason that variations across states can occur is the method that a state chooses to report the data; i.e., whether it uses “linked” or “unlinked” birth and death files to report infant mortality.<sup>9</sup> Unlinked data can be reported more quickly but the data may be less accurate. For purposes of this report it is important to note that New York uses unlinked birth/death files to report its annual infant mortality statistics to MCHB which allows the state to provide the most recent data available.

**National Center for Health Statistics** – NCHS publishes comparable “non-Hispanic white” and “non-Hispanic black” infant mortality statistics, using linked (birth/death) files for all states for a three-year period.<sup>10</sup> The linked method requires matching each death certificate to a birth certificate before computing race-specific IM rates. The numerator is calculated as the number of deaths for each race based on “maternal race” as recorded on the decedent’s linked birth certificate and the denominator is calculated as the number of births for each race based on “maternal race” as recorded on the birth certificate. Because it takes time to tabulate linked birth and death records from all of the states, the NCHS data are several years old at the time of publication. At the time of this report in September of 2009, the most recent infant mortality data from NCHS were for 2003-2005.

Several key infant mortality indicators published by NCHS are shown in Table 1. The data in Table 1 show that New York has the second lowest mortality rates for both African-American and white infants among the 10 states with the largest number of African-American births. Somewhat surprisingly, the data also reveal that New York has a relatively high B/W infant mortality ratio among those same states. However, it should be recognized that states with low B/W infant mortality ratios (e.g., Louisiana, Georgia and Texas) have relatively high white and black infant mortality rates. While the B/W infant mortality ratio provides useful information on health disparity in birth outcomes, it does not appear to be an adequate tool, by itself, for identifying state that have improved birth outcomes for African-Americans. For purposes of this paper, it is probably most useful to look at the indicators presented in the last three columns of Table 1, paying special attention to the African-American (i.e., *non-Hispanic black*) infant mortality rate.

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<sup>8</sup> In 2005, the infant mortality rate for all Hispanics was 5.62 while it was 13.63 for non-Hispanic blacks. (CDC, National Vital Statistics Reports, Vol. 57, No. 2, July 30, 2008, p.4.

<sup>9</sup> National Vital Statistics Reports (NCHS) states in technical notes that linked method is more accurate for computing race-specific IM rates. Under the unlinked method, the numerator is based on the number of deaths per race as recorded on the death certificate’s race of the deceased; the denominator is based on the number of births per race based on birth certificate’s maternal race.

<sup>10</sup> Because infant mortality rate (IMR) is based on the number of death per thousand births, the rates for state with relatively few deaths per year can vary widely from year to year; therefore NCHS uses a three year average when computing state IMRs.

Table 1- Infant Mortality Rate and B/W IM Ratio  
(2003-05) for the 10 States with the Most African-American Births\*

States, ranked by African-American Infant Mortality Rate	African-American Births (2007)	Percent African-American Births**	African-American IM Rate	White IM Rate	B/W IM Ratio (2003-05)
California	31,777	5.6	11.40	4.63	2.46
New York	42,738	16.9	11.77	4.65	2.53
Texas	46,397	11.4	12.41	5.92	2.10
Florida	51,835	21.6	12.92	5.79	2.23
Georgia	49,278	32.4	13.27	6.13	2.16
Maryland	26,198	33.5	13.66	5.80	2.35
Louisiana	25,343	38.2	13.94	7.09	1.96
Illinois	31,655	17.5	15.27	5.95	2.57
N. Carolina	30,635	23.4	15.77	6.33	2.49
Michigan	22,343	17.8	16.38	6.15	2.66

\*Non-Hispanic white and non-Hispanic black IMR as reported by NCHS linked birth/death data, 2008

Although New York has the lowest African-American infant mortality rate among states with more than 10 percent of births to African-American women, it only ranks 10<sup>th</sup> among all states (see Table 2). However, it is important to note that the percentage of African-American babies born in New York (16.9%) was almost *three times* the average of the other nine states shown in Table 2. Moreover, the total number of babies born to African-American women in New York (42,738) almost equaled the combined number of births of the first eight top-ranked states (44,762) in 2007.

It could be argued that California might be a better case study for looking at possible best practices to reduce infant mortality since California had a slightly lower infant mortality rate for African-Americans and a slightly lower black/white infant mortality ratio than New York during 2003-2005. However, African-Americans accounted for less than 6 percent of the annual number of births in California compared to almost 17 percent in New York and more than 20 percent in half the states shown in Table 2. New York has been chosen for this review because it more closely resembles other states that have large percentages as well as large numbers of African-American births.

Table 2- States with the Lowest African-American Infant Mortality Rates, by Percent and Number of African-American Births

States, ranked by African-American Infant Mortality Rate	African-American Infant Mortality Rate (2003-2005)*	Percent of African-American Births** (2007)	Number of African-American Births** (2007)
1. Oregon	8.58	2.3%	1,145
2. Minnesota	8.86	8.9	6,615
3. Washington	8.96	4.2	3,812
4. Massachusetts	10.02	9.3	7,262
5. Rhode Island	10.80	8.4	1,045
6. Kentucky	10.92	9.1	5,418
7. Iowa	10.97	4.4	1,804
8. Arizona	11.22	3.8	6,700
9. California	11.40	5.6	31,777
10. <b>New York</b>	<b>11.77</b>	<b>16.9</b>	<b>42,738</b>

\* Source: Mathews TJ and Mac Dorman, MF, Infant Mortality statistics from the 2005 period linked birth/infant death dataset. National Vital Statistics Reports, Volume 57, Number 2, 2008

\*\* Source: Live births by race and Hispanic origin of mother, and birth and fertility rates: United States and each state and territory, preliminary 2007 National Vital Statistics Reports, Volume 57, Number 12, March 18, 2008

The remainder of this paper describes the programs and strategies used by New York to address the issue of infant mortality and presents statistical analysis of some potential measures of their effectiveness with the goal that other states with large percentages of African-American births will be able to implement what has worked in New York.<sup>11</sup>

### New York State's Efforts to Improve Birth Outcomes

New York has developed a multifaceted strategy to improve birth outcomes by implementing: (1) an aggressive program of providing outreach, comprehensive prenatal care and other support services to pregnant women and new mothers, (2) a closely monitored regionalized system of care that included redesignation of all obstetrical hospitals for level of perinatal care in accordance with current ACOG/AAP guidelines for perinatal services, (3) use of community based groups to improve perinatal care in their

<sup>11</sup> Although beyond the scope of this paper, MCHB may want to examine the factors that allow states on the West Coast (i.e., California, Oregon and Washington) with relatively small percentages of African-American births to have relatively good birth outcomes for African-Americans. (See last section of paper.)

catchment area, including collaborative relationships with hospitals and other medical providers in regional forums, (4) a statewide perinatal data system that is readily accessible to hospitals for quality improvement and to public health staff for monitoring purposes, and (5) extensive family planning and STD treatment and monitoring programs.

Over the past 25 years, the state of New York has vigorously monitored the quality of care and the performance of providers and emphasized the importance of perinatal regionalization.<sup>12</sup> New York has, far more than most states, developed a “reputation for using regulatory approaches in health care policy and for maintaining strong governmental involvement in shaping and reviewing perinatal services.”<sup>13</sup> The approaches discussed below are presented in the order that the information is provided by the New York State Department of Health in its summary document entitled: *Strategies to Improve Birth Outcomes*, cited hereafter in this section as *Strategies*.

## **Prenatal Care**

In 1985 New York created a comprehensive prenatal care program for low income women not otherwise eligible for Medicaid. Due in large part to the success of the program, in 1990 this program was established in law as the Prenatal Care Assistance Program (PCAP), a Medicaid reimbursement program for women with incomes at or below 185% of the federal poverty level (FPL), which was expanded to 200% of the FPL in 2000. PCAP serves approximately 80,000 women on an annual basis, approximately one-third of all births. Medicaid reimburses PCAP providers for a comprehensive service package that includes:

- Outreach
- Presumptive eligibility screening
- Risk assessment
- Care coordination
- Nutrition and psychosocial screening, and referral to WIC for women at nutritional risk
- Laboratory services
- Health education on a range of topics
- HIV counseling and testing
- Home visits, specialty medical care, pediatric care
- Follow-up on missed visits
- Postpartum care through 60-90 days postpartum, including family planning services

New York State is currently updating its program for prenatal care services for Medicaid eligible women. The Department’s Division of Family Health has worked in

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<sup>12</sup> Kay A. Johnson and George A. Little, State Health Agencies and Quality Improvement in Perinatal Care, *Pediatrics* 1999;103:e233, 243

<sup>13</sup> Ibid

conjunction with the Department's Office of Health Insurance Programs and expert stakeholders to update the standard of care for the program. Adherence to the new standard will be required of all prenatal providers participating in the Medicaid Program. In addition, in 2009 the Department implemented a new reimbursement system in order to keep reimbursement in line with current practice and technology in 2009. The Ambulatory Patient Groups method of reimbursement is procedurally based and will provide the flexibility to adjust rates as standards of care evolve.

For rural parts of New York, the Medicaid Obstetrical and Maternal Services (MOMS) Program has been established. The purpose of MOMS Program is to improve access to the comprehensive model of prenatal care by the provision of medical services through private practitioners, and the delivery of wrap around services through health supportive service providers who provide assistance with applying for Medicaid and screen and provide or refer for needed psychosocial services.

In addition to PCAP/MOMS, the state of New York has developed several specialized programs to support prenatal care services. Additionally, there are several programs that are sponsored by the New York City Department of Health, one supported by the New York State Office of Children and Family Services and another supported by a federal grant from the Health Services & Resources Administration (HRSA) that complement those developed and sponsored by the NYSDOH.

**Community Health Worker Program** - This program was developed by the New York State Department of Health in 1988 and is "designed to provide one-on-one outreach, education and home visiting services to pregnant women at highest risk for poor birth outcomes, particularly low-birth weight and infant mortality." New York provides support for 23 CHWP programs across the state at a level of over \$4.5 million annually. During a typical year, community health workers conduct over 12,000 home visits and make close to 20,000 referrals for health care, prenatal care and family and social services. The NYDOH reports that "more than 40 percent of CHWP clients are foreign born and about one-third speak a primary language other than English. The Department also reports the following performance statistics: "80% of CHWP clients were enrolled in prenatal care in the first trimester, 98% received HIV education and over 93% completed the postpartum visit and a family planning visit within 8 weeks." The CHWP serves over 3,000 families including over 2,000 infants a year. (*Strategies*)

**Healthy Families New York** – The home visiting program that is administered by the New York State Office of Children and Family Services works with approximately 5,000 persons each year in 39 sites around the state. The majority of families served by HFNY are pregnant women. It is supported by \$22 million of federal funds, \$3.6 million of state funds and a 10% local match. HFNY uses specially trained family support workers, who typically share the same language and cultural background as participating families. The Healthy Families model uses trained home visitors to conduct a 1.5-2 hour eligibility interview with prospective families, using the Kempe Assessment Tool, to assess the

likelihood of abuse of the young child.<sup>14</sup> A score of 25 or greater indicates a family that has enough risks to warrant the provision of intensive services that continue *until the child turns 5 years old*. Approximately 85 to 90 percent of persons screen score above the eligibility threshold; however, not all such persons elect to enroll in the HFNY program.<sup>15</sup> The home visits are made by trained Family Support Specialists. A recently published study of a random clinic trial of HFNY produced two noteworthy findings:

- Black mothers assigned to the HFNY group at 30 weeks gestation were significantly less likely than black mothers in the control group to deliver low birth weight babies (3.1% vs 10.2%, respectively).<sup>16</sup>
- Over all, home-visited mothers in HFNY were approximately half as likely as mothers assigned to the control group to deliver low birth weight babies.<sup>17</sup>

**Nurse Family Partnership Program** - This well known home visiting program for first time pregnant women operates in New York City and two other sites in New York (Rochester and Syracuse) under local administration. New York State has submitted a state plan amendment to obtain partial Medicaid funding support for Nurse Family Partnership programs for Monroe County and New York City. In 2008 almost 100 nurse home visitors working out of 9 sites across New York City served more than 1,800 clients citywide. For FY 2010, the state is appropriating \$5 million on a one-time basis to support the Nurse Family Partnerships. (See discussion of New York City initiatives below.)

**Healthy Mom-Healthy Baby Prenatal and Postpartum Home Visiting Program** - The State Department of Health has received \$1.9 million for development of a prenatal and postpartum home visitation program. The Department is currently finalizing development of this program which is designed to improve the health of mothers and infants through outreach and identification, contact and home visiting of high risk pregnant and postpartum women and access to and utilization of related health and human services for women and their newborns. It is anticipated that funding will support six local health departments in the highest need areas of the state in development of these services.

**Comprehensive Prenatal-Perinatal Services Network Program** - “The Perinatal Networks are community-based organizations sponsored by the NYSDOH to organize the service system at the local level to improve perinatal health. Funding for the networks is targeted to localities based on percent of low birth weight births, infant mortality rate, percent of women entering care in the third trimester or having no prenatal care, rate of teen pregnancies and teen births.” The networks collaborate with a

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<sup>14</sup> The Kempe Assessment is a 10-item tool used by Healthy Families America as a standard instrument to assess risk factors that may impact the family.

<sup>15</sup> Estimate provided by Bernadette Johnson, Coordinator, Healthy Families New York.

<sup>16</sup> Lee, E. et al, “Reducing Low Birth Weight through Home Visitation - A Randomized Controlled Trial”, *American Journal of Preventive Medicine*, 2009; 36(2), p. 157.

<sup>17</sup> Op. cit., p.158

consortium of local health and human services providers to identify and address gaps in local perinatal services. The networks also sponsor program targeted to specific at risk members of the community and provide education to providers as well. Over the past decade, the networks have become principal contractors for a range of initiatives, including Healthy Start and facilitating enrollment in the Child Health Plus and Medicaid Program. The networks are key partners in promoting department initiatives and recommendations in their local regions. (*Strategies*) The NYDOH currently provides \$3 million to 16 CPPSNs around the state.

**Healthy Start** – New York is the recipient of five federal Healthy Start Grants, three in New York City, one in Rochester and one in Syracuse. “To reduce the factors that contribute to the Nation’s high infant mortality rate, particularly in African-American and other disparate minority groups, Healthy Start provides intensive services. Services are tailored to the needs of high risk pregnant women, infants and mothers in geographically, racially, ethnically, and linguistically diverse communities with exceptionally high rates of infant mortality.” (*HRSA Healthy Start Program Description*)

The five Healthy Start projects in New York are fully integrated with the medical providers and community groups that make up the state’s comprehensive regional perinatal system. In preparing this paper, the author visited one of the best known Healthy Start grantees and NYS funded perinatal networks in New York located in Central Harlem – the Northern Manhattan Perinatal Partnership (NMPP). NMPP has received praise from numerous governmental and non-governmental organizations and its Chief Operating Officer, Mario Drummonds is a widely sought-after speaker and consultant. “Though its commitment to providing accessible family-centered, high-quality pre- and post-natal care that is unique to the Central Harlem community needs, Healthy Start continues to make significant contributions to improving birth outcomes and the health of our nation’s families. The infant mortality rate (IMR) has plummeted since the initiation of the Central Harlem Healthy Start project in 1990 when it was 27.7 infant deaths per 1,000 live births. By 2003, the IMR was 7.3, a drop of 273%, while the citywide rate had only declined by 48.2% to 6.0 infant deaths per 1,000 live births over the same period. The IMR for the United States was 7.0 in 2002. The New York City Department of Health and Mental Hygiene’s provisional IMR for Central Harlem for 2004 reflects a continued drop to 7.0 infant deaths per 1,000 live births. The past three years represent the first time since the Harlem Renaissance that the IMR for Central Harlem has been in the single digit range for three consecutive years.”<sup>18</sup>

**Growing Up Healthy Hotline** - The hotline has been operating continuously statewide since 1986 and receives approximately 60,000 calls annually. As required by Title V program regulations, the toll-free hotline operates 24 hours a day, seven days a week and provides multi-lingual information on a wide range of maternal and child health services. The hotline number is published in local telephone directories and used in public

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<sup>18</sup> Health Resources and Services Administration, *Justification of Estimates for Appropriations Committees*, Fiscal Year 2008

information campaigns directed at the maternal and child health population throughout New York State. (*Strategies*)

**Perinatal Depression Program** - The Bureau of Women’s Health developed outreach and education materials about perinatal depression with input from women who have experienced the condition. “Over 40 community stakeholders collaborated on development and implementation, including local health and mental health departments, Office of Mental Health, Office of Children and Family Services, American College of Obstetricians and Gynecologists, prenatal care programs and community-based organizations.”<sup>19</sup> (*Strategies*)

**Statewide Prenatal Media Campaigns** – New York runs periodic media campaigns to increase the use of prenatal care among low-income women by raising awareness of the availability of comprehensive care under PCAP. “The campaigns typically consist of television and radio spots, and print media including posters, bus sides, bus shelters and transit interiors. The last campaign ran during the spring of 2008 and was targeted on Albany, Binghamton, Buffalo, Plattsburgh, Elmira, Rochester, Utica, Watertown and New York City.” (*Strategies*)

### **Community Based Perinatal Regionalization**

Another major effort undertaken by the state of New York is to improve birth outcomes through a comprehensive program of regionalization of prenatal and perinatal services. “Perinatal regionalization represents the continuum of care that ensures that all pregnant women and newborns have timely access to the appropriate level of perinatal care. A system of regionalized perinatal services includes a hierarchy of three levels of perinatal care provided by the hospitals within a region and led by a regional perinatal center (a fourth level). Research strongly supports regionalization as a means of improving maternal and infant outcomes.” (*Strategies*)

New York is considered one of the most active states in terms of government involvement in quality monitoring and regionalization. Quality concerns were a prime motivating factor in the efforts to restructure the regional perinatal system.<sup>20</sup> That, coupled with advances in medical practices and changing technology, changes in hospital associations and mergers, an increase of neonatologists statewide and increases in managed care market share necessitated a review of hospital designations throughout New York State. Prior to this time, hospitals had been designated in the mid 1980s for level of neonatal care, rather than perinatal care. Virtually all states have a regionalization program for hospitals and medical facilities; however, the perinatal regionalization program in New York goes well beyond the typical state regionalization model by identifying and funding a clear role for the highest hospitals, regional perinatal centers, in

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<sup>19</sup> Materials developed through this grant are posted at the Department’s web site: <http://www.health.state.ny.us/nysdoh/perinatal/en/index.htm>.

<sup>20</sup> Johnson, p. 244.

improving the quality of their affiliates and incorporating community level groups as full partners in the planning and service delivery process.<sup>21</sup>

In New York these coordinated regional networks are referred to as *Regional Perinatal Forums* – groups consisting of hospital based and community based health and human services organizations co-chaired by a representative of the *Regional Perinatal Centers* and the *Comprehensive Prenatal-Perinatal Services Networks* to identify and strategize to improve maternal and neonatal outcomes. Based on the interviews and observations conducted for this paper, these partnerships seem real, i.e., they have an organizational reality and influence that is universally recognized by all of the partners. For this reason, New York’s program of regionalized prenatal and perinatal services can most appropriately be termed ***Community Based Perinatal Regionalization***.

***Regional Perinatal Centers*** - The New York regional system is led by a “Regional Perinatal Center”(RPC) that is either a tertiary care hospital or a combination of tertiary hospitals capable of providing all the services and expertise required by the most acutely sick or at-risk pregnant women, fetuses and newborns. There are currently 147 birthing hospitals, including 17 RPCs, 35 Level III, 25 Level II, and 68 Level I facilities across the state of New York.” (*Strategies*) Hospital regulations were updated in 2005 to reflect the perinatal regionalization structure and hospital level specific responsibilities, as well as to update current standards of care. New York’s updated regulations are attached as an appendix to this report.

In addition to providing the highest level of perinatal care to the highest risk women, fetuses and newborns, RPCs play a significant role in assessing and improving the quality of care delivered in their facility as well within their affiliated network. RPCs are required to assume many additional functions in support of their affiliated hospitals:

- *24-hour specialty and sub-specialty consultation services;*
- *transport coordination and services;*
- *outreach and education;*
- *implementation and ongoing support of the Statewide Perinatal Data System (SPDS);*
- *analysis and use of regional SPDS data and other information for identifying opportunities for improvements in the quality of care at the RPC and its affiliates;*
- *on-site quality of care visits, at least once annually, to each affiliate; and,*
- *co-host regional perinatal forums with a Comprehensive Prenatal-Perinatal Services Network. (Strategies)*

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<sup>21</sup> The structure and rationale for New York’s Regionalization System was presented in 1991 by a Blue Ribbon panel of experts and presented in a report entitled “Putting the Pieces Together: The Comprehensive Prenatal-Perinatal Services Network Public Health Model Plan.” The author is grateful to Sharon Chesna, Executive Director of the Healthy Mothers and Babies Perinatal Network of Binghamton, NY for providing a copy of the original concept paper and a detailed overview of the origins and current status of New York’s Regional Perinatal Network.

***Regional Perinatal Forums*** - In New York, regionalization goes beyond the roles and responsibilities of hospitals to include broad-based input and participation by the community. These collaborations at the regional level, involving hospitals and community health and human services providers, are called Meetings of these groups are co-chaired by a representative of the *Regional Perinatal Centers* and the *Comprehensive Prenatal-Perinatal Services Networks*, and their goal is to identify and strategize to improve maternal and neonatal outcomes. Based on the interviews and observations conducted for this paper, these partnerships seem real, i.e., they have an organizational reality and influence that is universally recognized by all of the partners.

There are 11 Regional Perinatal Forums (RPFs) in seven regions of the state (Western, Rochester, Central, Capital, lower Hudson Valley, New York City and Long Island). “The purpose of these forums is to improve perinatal outcomes by encompassing a broad community perspective and public health model and to develop a local plan to address regional perinatal needs. Each forum is in various stages of implementing their regional action plan and all have identified priority issues to address. They were initiated in 2003 as one component to the perinatal regionalization effort as a means of identifying and addressing perinatal health issues in each region. Since the majority of the infant and maternal deaths may have roots in the prenatal or even preconceptional period, it is essential that improvements in the perinatal system be examined from a community perspective that encompasses the full range of health and human services that contribute to prenatal and pre-pregnancy health. For this reason, RPFs are convened in each region, inclusive of a wide variety of prenatal and other health and human service providers, to attempt to identify and remedy potential problems that result in infant and/or maternal mortality and morbidity, and implement changes from a public health perspective. RPFs co-chair the regional forums with a perinatal network or other appropriate community-based representative.” (*Strategies*)

### **Statewide Perinatal Data System (SPDS)**

The availability of timely birth data across the state is one of the key elements of quality improvement efforts. Prior to implementation of the Statewide Perinatal Data System (SPDS), birth certificate data were only available to policy makers and planners significantly after the fact, and as such were of little use for making real time judgments about quality of care. In the late 1990s, therefore, the decision was made to invest resources in developing an on-line data system that would make data available in near real time to the Department and hospitals for monitoring and quality improvement purposes. The resulting system is Web-based and modular in design, with the core module built around the electronic birth certificate, and an additional module built to capture data on high risk newborns admitted to neonatal intensive care units (NICUs). The core module was made operational in the regions of the state exclusive of New York City as of January 1, 2004. The NICU module was implemented in hospitals statewide in January 2004. (*Strategies*)

Regulations governing the SPDS were approved and published in the State Register on October 11, 2006. The regulations require that all obstetric hospitals in the

state with a level 2 or higher perinatal designation utilize the NICU module and that the core module be utilized by all obstetric hospitals. Implementation of the core module of the system is mandated and was implemented outside of New York City on January 1, 2004. New York City, which is a separate Vital Record reporting district, was required in these regulations to implement a similar system in January 2008. New York City's web based system is generally compatible with the SPDS core module since it was designed to conform to National Center for Health Statistics (NCHS) standards and it captures additional New York State-mandated medical and quality improvement variables. (*Strategies*)

### **Family Planning /Reproductive Health Services**

Evidence suggests that unplanned/unwanted pregnancy may be an important antecedent of poor birth outcomes, such as low birth weight.<sup>22</sup> New York has a long tradition of supporting statewide comprehensive family planning services. It has a number of family planning programs and aggressively seeks federal waivers to expand and maximize family planning coverage. "The ability of women to plan their births has been a fundamental tenet of NYS health care policy. Evidence strongly supports that planned and wanted pregnancies lead to healthier mothers and babies, and fewer infant deaths. NYS has demonstrated a strong ongoing commitment to the provision of comprehensive reproductive health services through the provision of significant state funding and support for the expansion of family planning services on an ongoing basis." (*Strategies*) On an annual basis, family planning services are provided to more than 330,000 women and men; almost 45 percent of these clients are African-American or Hispanic, and approximately 25 percent of all clients are teens. The Family Planning Program awarded over \$53 million in funding annually, approximately \$10 million of which is awarded to NYS via Title X, through a competitive solicitation, to support Family Planning and Reproductive Health Cares services for the period January 1, 2005 to December 31, 2009. In 53 agencies at approximately 200 sites, family planning programs are providing services to low-income, uninsured or underinsured women.

**Family Planning Extension Program** - In 1996, Medicaid managed care legislation expanded Medicaid benefits for 26 months after the end of a pregnancy to women under 185 percent of the federal poverty level who had previously been on Medicaid while pregnant. Coverage was expanded in 2000 to women under 200 percent of the poverty level. The NYSDOH implemented the Family Planning Extension Program (FPEP) in 1998, and has provided access to family planning for an additional 80,000 women. (*Strategies*)

**Family Planning Benefit Program** - In 2002, the Family Planning Benefit Program (FPBP) was implemented, extending Medicaid coverage for family planning services for individuals up to 200 percent of the federal poverty level. Increases in access to family planning services enable the state to more successfully meet the goal of preventing

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<sup>22</sup> Crosby, R et al, Correlates of unplanned and unwanted pregnancy among African-American female teens, *American Journal of Preventive Medicine*, Volume 25, Issue 3, pp. 255-258.

unintended pregnancy in order to further reduce poverty and welfare dependency, and improve health outcomes. An extensive outreach and education effort to promote FPBP is an important part of the program in New York. This outreach effort ensures agencies, including family planning providers not funded by the NYSDOH or Title X, are maximizing reimbursement sources and enrollment of eligible patients into this Medicaid program. As of December 2008, well over 100,000 individuals had been served by FPBP. (*Strategies*)

**Emergency Contraception:** The Bureau received over \$2 million in the state budget for the past 3 state fiscal years to fund a series of initiatives and services related to emergency contraception (EC), including collaboration with the American College of Obstetricians and Gynecologists for educational efforts and media campaigns to reach OB/Gyns, supplemental funding to family planning providers to provide distribution of EC, support to School-Based Health Centers for EC initiatives and development of public awareness materials. A brochure for pharmacists was developed and distributed statewide. (*Strategies*)

**Rapid HIV Testing/HIV Integration Projects: Prenatal HIV Counseling and Testing:** Since 1990, there has been a 70% decline in HIV infected women giving birth in New York State. Specifically, the number of HIV infected women giving birth in the state went from 1,898 in 1990 to 567 in 2007. As of December 2006 women represented 34.0% of persons living with HIV in the State. The percent of all women presenting for delivery who were tested for HIV during pregnancy was 95% in 2007 up from 89% in 2000 and 46.7% in 1999. Prenatal care enrollment among HIV-positive women is high. The percent of HIV-infected women who gave birth that were known to have received some prenatal care was 93% in 2006. (*NY Needs Assessment*)

Currently in New York, perinatal HIV counseling and testing are a standard component of prenatal care. In 1996, the Department promulgated regulations requiring HIV testing with counseling for all women in prenatal care in regulated facilities (licensed clinics, hospitals, and managed care plans). The Department worked with the American College of Obstetricians and Gynecologists, the New York State Academy of Family Physicians and the American Academy of Pediatrics to establish HIV counseling and testing as the standard of care. The Community Action for Prenatal Care program in New York State managed by the AIDS Institute and funded by CDC is designed to further reduce the HIV transmission rates between mother and child.

Although HIV testing and treatment for pregnant women and their infants is a well known New York health initiative, the state is also very aggressive in testing and treating for all sexually transmitted infections. Recently, Koumans and her colleagues report some noteworthy findings from the Syracuse, New York Healthy Start Project. The chief medical officer for this project, Dr. Richard Aubry, encouraged medical providers to screen and treat pregnant women who resided in high-risk zip codes in the Syracuse area for bacterial vaginosis at their first prenatal care visit. He also encouraged them to perform follow-up testing and provide treatment, if necessary, after their first visit. The screened/treated group had 14 percent fewer premature deliveries ( $P = .2$ ), 25

percent less low birthweight deliveries ( $P = .02$ ), 52.2 percent lower incidence of delivery at < 32 weeks of gestation ( $P = .001$ ), and achieved a 50 percent reduction in the rate of very low birth weight births ( $P = .006$ ).<sup>23</sup>

**Expansion Projects:** Through the OPA, the Bureau of Women's Health receives funding for the expansion of family planning services to bring in additional clients and to serve the hard-to-reach populations that could benefit from these services. Expansion Projects conduct activities designed to engage historically underserved populations (which may include adolescents, substance abusers in and out of treatment facilities, the homeless, immigrants, migrants, individuals engaged in the criminal justice system, minorities, persons with disabilities, and males) in family planning services. (*Strategies*)

**Infertility Prevention Project:** Since 1995, the Bureau of Women's Health has participated in the CDC Infertility Prevention Project, which supports funding for Chlamydia testing in family planning clinics. Funds are awarded to the Bureau of STD Control with the stipulation that 50% of funds are provided to the Family Planning Program, which must follow the CDC Guidelines for Treatment of Sexually Transmitted Diseases, and submit quarterly data on the testing and positivity. Insurance requirements that agencies utilize participating laboratories for testing; increases in the cost of tests resulting in agencies changing laboratories frequently and using multiple laboratories to obtain the best price by test type; and the unavailability of test results by the time the clinic visit record was submitted, were some of the factors that contributed to the difficulty in obtaining accurate and complete Chlamydia data. As a result, a targeted Chlamydia Reporting Project was implemented on January 1, 2005 in 13 high volume agencies, which are reimbursed for complete laboratory records. A total of 103,720 Chlamydia tests with a 3.7 percent positivity rate were reported in 2006. (*Strategies*)

**HPV/Hepatitis B** - In addition, the Family Planning Program collaborated with the Cancer Services Program to implement the provision of HPV vaccine in family planning clinics. CSP allocated \$3 million to family planning providers for the purchase of vaccine. The Program also collaborated with the Bureau of Immunization on implementing a Hepatitis B Pilot in 3 family planning agencies. This project will provide free vaccine with the intent of increasing the number of family planning clients who receive the vaccine. (*Strategies*)

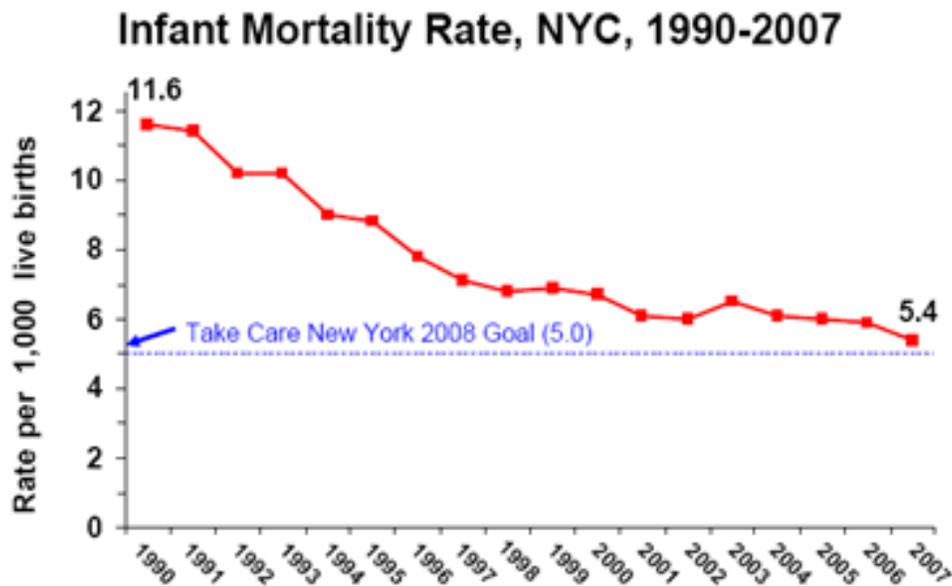
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<sup>23</sup> Koumans EH, Lane SD, Aubry R, DeMott K, Berman S, Webster NJ. *Evaluation of the BV component of Syracuse's Healthy Start Project*. Abstract presented at MCH Epidemiology Conference at Centers for Disease Control and Prevention. Atlanta, GA, Dec. 6, 2006. Cited in The clinical content of preconception care: infectious diseases in preconception care, American Journal of Obstetrics & Gynecology, Volume 199, Issue 6, Supplement B (December 2008), page S305.

## Key Role Played by New York City

In addition to the state initiatives listed above, any review of birth outcomes in New York State must pay special attention to the key role played by New York City (NYC) where approximately 40% of all the births take place, including over 70 percent of the births to African-American mothers.<sup>24</sup>

The New York City infant mortality rate decreased from 5.9 deaths per 1,000 live births in 2006 to a historic low of 5.4 in 2007. The biggest contribution to the decline of IMR was the rate of death in the early neonatal period after birth (under seven days), which decreased from 2.9 in 2006 to 2.4 per 1,000 live births in 2007. From 1990 to 2007, the rate of early neonatal deaths declined by more than half, the rate of post-neonatal deaths declined by 45 percent, and the rate of late neonatal deaths declined by about 31 percent.<sup>25</sup>



Source: NYC Department of Health and Mental Hygiene

The NYC birth population is racially and ethnically diverse due to immigration patterns: 52% of NYC births are to foreign-born mothers, including 44% by foreign-born non-Hispanic black mothers and 31% by foreign-born non-Hispanic white mothers.<sup>26</sup> On one hand, the large percentage of immigrant mothers should contribute to better birth outcomes in New York (for both whites and blacks) according to the “healthy immigrant”

<sup>24</sup> Data provided by the staff of the Bureau of Maternal, Infant & Reproductive Health of the NYC Department of Health & Mental Hygiene in a presentation on July 31, 2009

<sup>25</sup> NYCDHMH <http://www.nyc.gov/html/doh/html/pr2006/pr088-06.shtml>

<sup>26</sup> Ibid

hypothesis.<sup>27</sup> In 2006, for example, the mortality rate in New York City for infants to foreign born black mothers was 8.54/1,000 while it was 11.38/1,000 for babies born to mothers who were born in the US.<sup>28</sup> On the other hand, new immigrants tend to be poorer than native born New Yorkers and less familiar with the health care system; therefore, they often require greater support services after the birth of their babies.

In contrast to the steady decline in infant mortality rates, New York City has seen the same growth in plurality (multiple births) as other urban areas. Of the 128,961 births in New York City in 2007; 96.2% of all live births were singletons, 3.6% were twins, and 0.2% were triplets. The proportion of births that were multiples increased with age of the mother. In 2007, 8.2% of births to women 40 years of age or over were multiple, compared to 4.7% of births to women between the ages of 30-39, 2.9% to women between 20-29 and 1.7% to women under 20.<sup>29</sup>

In addition to conducting ongoing surveillance, research and evaluation of maternal, infant and reproductive health data and trends, the New York City Department of Health and Mental Hygiene supports and operates a variety of initiatives aimed at improving infant health, including,

**Newborn Home Visiting Program:** This program provided home visits to nearly 8,000 families with new babies in targeted communities in Brooklyn, Harlem and the Bronx. In these communities, a health worker visits with each new mother to help create a safe and nurturing home for her infant.

**Nurse-Family Partnership:** This evidence-based nurse home-visiting program served nearly 900 families in 2007 and now serves more than 2,000 families, making it the largest such program in the United States. *Home visits can continue until the child is two years old.*

**Cribs for Kids Program:** This program provides safe-sleep education for all families visited by the NHVP and has provided over 3,000 cribs for families who cannot afford a safe place for their babies to sleep since 2007. The Cribs program was recently expanded to include families served by NFP, foster care agencies, and some community-based organizations.

**Breastfeeding Initiative:** This program works to increase breastfeeding initiation, duration and exclusivity through a citywide, multi-level strategy including individual, community, institutional and policy level change.

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<sup>27</sup> Steven Kennedy & James Ted McDonald & Nicholas Biddle, "The Healthy Immigrant Effect and Immigrant Selection: Evidence from Four Countries," Social and Economic Dimensions of an Aging Population Research Papers 164, McMaster University (2006).

<sup>28</sup> Correspondence from Aviva G. Schwarz, BMIR, NYCDHMH

<sup>29</sup> Ibid

**Perinatal Depression Initiative:** The NYC DHMH worked with the NMPP and other providers on intensive social marketing campaign throughout NYC to create demand for maternal mental health services and trained over 1,500 clinicians to better screen, diagnose, and treat pregnant and parenting moms for depression. This program also includes group interventions (such as NMPP’s “Baby Mama Group”) to address the maternal mental health slot capacity shortage to treat depressed women throughout NYC.

**Adolescent Reproductive Health Programs:** Healthy Teens Initiative works to increase the capacity of health care providers to deliver accessible, comprehensive sexual and reproductive health care. The School-Based Health Center Reproductive Health Project (SBHC) is a collaboration between the State Health Department support school based health center program and the New York City Department of Health and Mental Hygiene which involves a three year privately funded project to increase access to high quality sexual and reproductive health care in NYC’s 41 high school SBHCs.

**Infant Mortality Reduction Initiative:** This New York City Council initiative works with community-based organizations in the most-affected neighborhoods, supporting outreach, referral services, case management, peer education and other activities.

**Citywide Coalition to End Infant Mortality:** For the last nine years, this coalition has been instrumental in securing almost seventy-five million tax-levy dollars from the City Council and the Mayor’s Office to reduce infant mortality in ten high-risk communities. These funds are used to support case managers, outreach workers, breastfeeding specialists, as well as nurses and doctors.

A good illustration of the efforts made by New York to reduce infant mortality among African-Americans is provided by **Harlem Hospital**. The Harlem Hospital Center has developed a number of special programs and initiatives designed to reduce infant mortality in the Harlem Community. The Hospital’s Department of OB-GYN offers a broad range of maternal and infant care health services for pregnant women and their newborns ranging from free pregnancy detection through post-partum and newborn care. The Hospital’s newly renovated obstetrics and neonatal units are equipped with state-of-the-art technology needed to provide comprehensive care high quality care. Special programs developed to address the needs of community include:

*Baby Friendly Status:* Harlem Hospital Center is the first Hospital in New York City to receive Baby Friendly designation by the World Health Organization and the United Nations Children’s Fund. This designation reflects the Hospital’s commitment to establishing the highest standard possible for the protection, promotion and support of breast-feeding.

*Birthing Suites:* The Birthing Suites provide family-centered, comprehensive care for women before, during and after normal pregnancy, labor and birth. The Suites provide a high touch, low-tech environment that is nurturing and family-centered. The large rooms have a living room styled area with sofa, comfortable chairs, TV/VCR and a play area. A home-like kitchen area with stove, refrigerator, rocking chair, table, chairs and computer with Internet access are all part of the Suite.<sup>30</sup>

*Family Care Center:* This program provides comprehensive medical and support services for children with HIV/AIDS and their families. The program also provides children access to clinical trials.

*Family Planning:* This state funded program provides comprehensive family planning services including a broad range of contraceptive methods and counseling, free pregnancy testing with options counseling, HIV counseling and rapid response testing, and information and testing for Sexually Transmitted Diseases. The program also has a community outreach and public information component to “promote our program and ensure that our services meet the needs of the community we serve”.

*Medina Clinic:* This new program is designed to provide culturally and linguistically appropriate services to Muslim patients. Service delivery for mothers and children is consistent with religious observances of Muslim residents. Mothers and children accessing services through this clinic receive a comprehensive, medical, social and financial assessment. These assessments ensure that patients are referred to and receive the appropriate complement maternal and infant care services and linkages to financial and social support services for which they are deemed eligible.

*Infant Car Seat Program:* All women who deliver at Harlem Hospital Center receive education and training classes on automobile safety and transporting the newborn. Those who participate and complete training receive a free car seat.

*Nurse Family Partnership Program:* Harlem Hospital has two grants from NYCDH to provide home visits to first time mothers to help families develop confidence and skills to improve the health and development of their children. Home visits continue through to the child’s second birthday.

*Parenting and Childbirth Classes:* The Department of Obstetrics and Gynecology offers parenting and childbirth classes to mothers and their partners. Classes led by a Nurse Mid-Wife, focus on childbirth methods including Lamaze; labor and

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<sup>30</sup> From 1999 to 2003, the Northern Manhattan Perinatal Partnership developed a strategic alliance with the management team at Harlem Hospital, along with staff from the Health & Hospital Corporation, to conceive, plan, fund raise and build these model birthing suites.

delivery; midwifery care; newborn care and postpartum care; breast-feeding; nutrition; and parenting.

*West African Outreach Initiative:* This new program is designed to provide outreach, health education, and primary care services to the new West African population in Harlem. The program provides health education outreach and screening on-site at selected businesses and religious organizations. Families referred to the Hospital for care are linked with Family Navigators to assist them in accessing the services they need and ensuring they are compliant with their appointments.

*Domestic Violence/Rape Crisis Program:* Funded through the New York State Crime Victims Board and New York State Department of Health, this program supports the department's therapeutic work with victims of domestic violence and rape.

*Patient Support Groups:* Support groups include an English speaking therapeutic group for women, a psycho-educational group for women receiving substance abuse treatment in the hospital's outpatient Department of Psychiatry and a support group for abused women who are being treated for depression in the hospital's outpatient department of Psychiatry.

## Reviewing the Evidence on New York's Strategies to Improve Birth Outcomes of African-American Infants

There is extensive literature on the causes of infant mortality and interventions that has been published by researchers, clinicians and public health administrators over the past several decades. There appears to be a general consensus that the key to reducing infant mortality in the United States is to find effective methods of reducing premature births. Unfortunately, few interventions have been demonstrated to consistently reduce prematurity and the problem has been getting worse.<sup>31</sup> As reported by the Institute of Medicine (IOM), in its recent major study of preterm birth, the rate of preterm birth has increased more than 30 percent since 1981.<sup>32</sup>

Although there is little in the literature that suggests that we know how to effectively and consistently reduce prematurity among high risk pregnant women, it would appear that actions taken by the state of New York and its partners at the local and federal levels have, nevertheless, managed to achieve significant improvements in birth outcomes for all racial and ethnic groups, although a very real racial disparity still remains.

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<sup>31</sup> Beherman, R, and Adrieen Stith Butler, (eds.) Preterm Birth, Causes, Consequences , and Prevention, Institute of Medicine, National Academies Press, 2007.

<sup>32</sup> Op.cit., p.3.

As indicated in the previous section of this paper, the state of New York has placed a good deal of emphasis on expanding access to prenatal care in order to improve birth outcomes. It may very well be that the expansion of prenatal care under Medicaid and SCHIP that took place after federal legislative changes in 1988 was at least partially responsible for the overall reduction in infant mortality and in reducing the IMR among African-Americans in New York. “Policy makers have focused on expansions of access to prenatal care since the 1980s in an effort to improve birth outcomes in general, including a reduction in preterm birth rates.... A direct link between the availability of increased insurance and the receipt of early prenatal care was demonstrated in study of Medicaid expansion in Florida.”<sup>33</sup> Although infant mortality rates have declined steadily throughout NYS, the infant mortality rate in New York City declined most dramatically going from 11.6 per 1,000 live births in 1990 to 6.0 in 2005.<sup>34</sup>

In the pages that follow some of the statistics that are used by the Maternal & Child Health Bureau and state and city agencies to monitor health outcomes and processes are examined for clues as to what might have worked to produce this hard to realize public health goal of reducing infant mortality among both black and whites. The analysis presented below is necessarily limited by the size of the study population (i.e., 50 states).<sup>35</sup>

## **Prenatal Care Measures**

MCHB has incorporated two prenatal care related measures in the TVIS: (1) the percent of infants born to pregnant women receiving prenatal care beginning in the first trimester, and (2) the percent of women (15-44) with a live birth during the reporting year whose observed-to-expected prenatal visits is greater than or equal to 80 percent on the Kotelchuck Index.

***Providing Prenatal Care in the First Trimester*** - Having a high percentage of pregnant women enter care during the first trimester does *not* seem directly related to reducing the African-American infant mortality rate, at least among the states with the largest number of births to African-American women. As can be seen in Table 3, Louisiana had a high percentage of women enrolled in care during their first trimester; however, it had a relatively high African-American infant mortality rates. Significantly for this report, New York was near the bottom of the rankings for the 10 states with the largest number of African-American births in 2007.<sup>36</sup>

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<sup>33</sup> Long and Marquis, 1998

<sup>34</sup> NYCDHMH <http://www.nyc.gov/html/doh/html/pr2006/pr088-06.shtml>

<sup>35</sup> Multivariate analysis is really not possible with only 50 observations; therefore, the analysis is presented in simple two-variable comparisons.

<sup>36</sup> Caution must be used in making comparisons across states as states use very different data sources to report the percentage of women on Medicaid who receive care in the first trimester of pregnancy; e.g., matched data files, birth certificates, and “other.” The NY State Department of Health reports that there have been significant improvements in first trimester entry for African-American women which increased from 59% in 1998 to 65.6% in 2007.

***Providing Recommended Number of Prenatal Care Visits*** – Another finding of this review is that states who have higher percentages of pregnant women receiving the recommended number of prenatal care visits do *not* seem to have lower rates of African-American infant mortality in the 10 states with the largest number of African-American births. For example, North Carolina has the highest percent of women receiving the recommended number of prenatal care visits, yet its African-American infant mortality rate is the highest of the states listed in Tables 3 and 4. Conversely, Texas has the third lowest percentages of women receiving the recommended number of prenatal care visits, and the third lowest African-American infant mortality rate of this group of states.

**Table 3- Percent of Low Income Women Receiving Care in 1<sup>st</sup> Trimester and African-American Infant Mortality, by State\***

<b>State, ranked by Percent Receiving Care in 1<sup>st</sup> Trimester</b>	<b>Percent Women on Medicaid Receiving Care 1<sup>st</sup> Trimester</b>	<b>African-American Infant Mortality Rate (2003–2005 Average)</b>
Louisiana	83.1	13.94
California	80.6	11.40
Georgia	76.7	13.27
Illinois	76.3	15.27
Michigan	75.9	16.38
N. Carolina	74.3	15.77
Maryland	66.6	13.66
Texas	63.6	12.41
New York	62.9	11.77
Florida	59.7	12.92

\* For the 10 states with largest number of African-American births in 2007- Vital Statistics.

It should be noted that for purposes of this report, New York ranks last among the 10 states with the largest number of African-American birth in seeing that women on Medicaid receive the recommended number of prenatal care visits. As mentioned above, many of New York City’s non-Hispanic black mothers served by Medicaid are immigrants, making it somewhat more difficult to enroll them in care early in their pregnancies. However, the same might also be said for other states listed in Tables 3 and 4. Again, caution must be used in making cross state comparisons with this measure, as different states use very different data sources, i.e., matched data files, birth certificates, and “other.”

It is also important to remember that the Kotelchuck Index does not measure the quality of prenatal care, which may be far more important than the number of visits. Nevertheless, it seems safe to conclude that New York's relatively low infant mortality rates *cannot* be attributed to providing low income women with the recommended number of prenatal care visits.

Table 4- Percent of Low Income Women\* Receiving Recommended Prenatal Care Visits in States with the Most African-American Births

States, ranked by percent Receiving Recommended Number of Prenatal Visits	Percent Receiving Recommended Number of Prenatal Visits (2007)	African-American Infant Mortality Rate (2003–2005 Average)
Louisiana	89.0	13.94
N. Carolina	82.7	15.77
California	75.4	11.40
Illinois	73.8	15.27
Michigan	68.7	16.38
Georgia	67.0	13.27
Maryland	60.0	13.66
Texas	59.9	12.41
Florida	56.1	12.92
<b>New York</b>	<b>53.9</b>	<b>11.77</b>

\*Percent of pregnant women on Medicaid receiving recommended number of visits- TVIS

### Prematurity Risk Measures

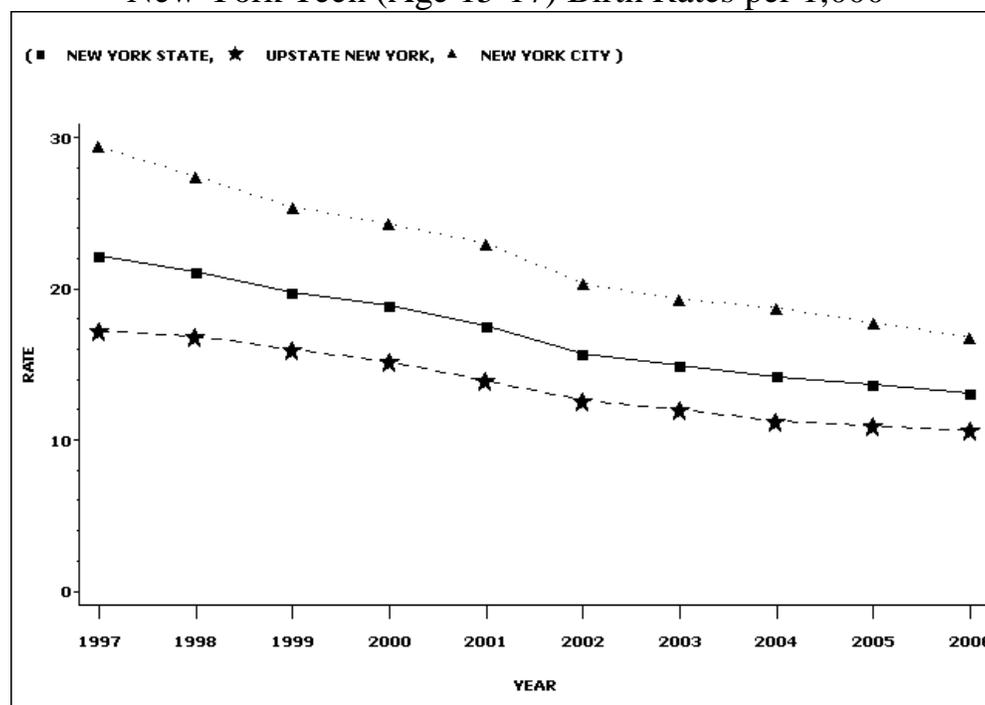
Providing adequate and timely prenatal care is an important MCH goal, as reflected by the first two measures listed above. There are many risk factors that have been identified as contributing to prematurity and low birth weight. These risk factors include stress related to living in poverty, experiencing racism, and suffering from domestic violence. Other risk factors are related to personal health behaviors such as drug, alcohol, and tobacco use, as well as medical conditions such as infections, diabetes and obesity. Additionally, extremes in maternal age (young teens or older women) have also been identified as risk factors.

Risk factors for prematurity and low birth weight are reflected in several additional measures used by MCHB and the states to monitor progress in reducing infant mortality - reducing the number of teens who become pregnant and reducing the number of pregnant women who smoke. The Title V information system also keeps track of the frequency of low birth weight in each state. Incorporating these risk factors in TVIS has

the advantage of using readily available state level data to monitor trends and extensive empirical studies of the effectiveness of interventions.

**Reducing Births to Teens** –The decline in teen births in New York, especially during the past 10-12 years, may have had a lot to do with bringing down the overall infant mortality rate, as well as the infant mortality rate among African-Americans. It is well established that teens have a higher incidence of low birth weight babies than other women.<sup>37</sup> The chart below shows the decrease in the New York teen birth rate from 1997 to 2006 for the state as a whole, for New York City and for “upstate New York” between 1997 and 2006. MCHB has included the rate of births to teen aged 15-17 as a performance measure since the inception of its performance management system over 10 years ago. By that measure, New York has made steady progress in reducing the number of births in this age cohort going from 14.9/1,000 in 2004 to 13.1/1,000 – the 2<sup>nd</sup> lowest rate of states with more than 1,000 teen births (15-17).<sup>38</sup> Table 5 ranks states by the rate (per 1000) of teens giving birth in 2007. It also shows how the states compare by the B/W infant mortality ratio and the percent of births to Hispanic women (of all ages).

New York Teen (Age 15-17) Birth Rates per 1,000



\* Source: NYS Dept of Health <http://www.health.state.ny.us/statistics/chac/birth/tb151765.htm>

<sup>37</sup> Teen mothers are more likely than mothers over age 20 to give birth *prematurely* (before 37 completed weeks of pregnancy). Between 2003 and 2005, preterm birth rates averaged 14.5 percent for women under age 20 compared to 11.9 percent for women ages 20 to 29). Babies born prematurely face an increased risk of newborn health problems, long-term disabilities and even death. (March of Dimes) [http://www.marchofdimes.com/professionals/14332\\_1159.asp](http://www.marchofdimes.com/professionals/14332_1159.asp)

<sup>38</sup> TVIS

Table 5 – Teen Birth Rate in States with more than 1,000 Teen Births

States with > 1,000 Births to Teens Aged 15-17, ranked by Teen Birth Rate (number)	Teen Birth Rate (2007)	African-American Infant Mortality Rate (2003–2005)	Percent Hispanic Births
1. New Jersey (2,233)	12.3	11.88	26.6
2. New York (5,214)	13.1	11.77	23.7
3. Minnesota (1,533)	13.8	8.86	8.0
4. Michigan (3,127)	14.0	16.38	6.7
5. Oregon (1,127)	15.2	8.58	20.5
6. Wisconsin (1,840)	15.6	16.42	9.5
7. Pennsylvania (4,313)	16.0	13.55	9.2
8. Virginia (2,566)	16.6	13.72	13.7
<i>Average of states ranked 1-8</i>	<i>14.8</i>	<i>11.40</i>	<i>14.7</i>
12. California (17,208)	20.0	11.40	52.4
26. Texas (17,757)	33.6	12.41	50.2

Sources: TVIS and Vital Statistics, 2007

As can be seen from Table 5, while NYS has the second lowest teen birth rate, states such as California and Texas that have much higher rates of teen births still compare very favorably on African-American infant mortality. It must be noted that those states have more than half of their births by Hispanic women who tend to have good birth outcomes. It would appear that in states with large Hispanic populations, whatever risk factor would normally be expected by having a large percentage of teen births is more than offset by other factors related to Hispanic culture and health status. The data in Table 5 also suggest that there is little, if any, relationship between the *overall* percentage of teen births (aged 15-17) and the African-American infant mortality rate; e.g., the African-American infant mortality rate for Texas is only slightly higher than the average of the eight states with the lowest teen birth rates, even though Texas has a teen birth rate that is more than twice the average of those states. It would be important to see if subsequent analysis reveals a relationship between the teen birth rate and infant mortality rate for *African-Americans* across states.

**Reducing Smoking** - African-American women of child bearing age tend to smoke less than their white counterparts.<sup>39</sup> Table 6 shows that the rate of smoking among pregnant women in New York is relatively high.<sup>40</sup> MCHB should consider revising its performance measure regarding smoking to be race specific in order to be able to analyze the likely impact of smoking cessation programs for pregnant African-American women.

Table 6- Percent of Pregnant Women who Smoke during the last 3 months in States with the Most African-American Births\*

States, ranked by percent who Smoke during last 3 months of Pregnancy	Percent Pregnant Women who Smoke during last 3 months of Pregnancy	African-American Infant Mortality Rate (2003–2005 Average)
California	3.0	11.40
Maryland	7.8	13.66
Texas	7.8	12.41
Florida	8.3	12.92
Georgia	10.3	13.27
Illinois	10.4	15.27
N. Carolina	11.5	15.77
<b>New York</b>	<b>12.2</b>	<b>11.77</b>
Michigan	13.6	16.38
Louisiana	17.7	13.94

\* TVIS – The data source for this measure varies across states; however, most state used 2004-2005 data from the Pregnancy Risk Assessment Monitoring System (PRAMS) .

<sup>39</sup> According to CDC, 13.9 percent of pregnant non-Hispanic white women were smokers compared with 8.5 percent pregnant non-Hispanic black women in 2005. (*Morbidity and Mortality Weekly Report*, 1/6/08)

<sup>40</sup> The NY State Department of Health reports that smoking among teens has shown significant improvement. According to results from the Youth Risk Behavior Survey,

- In 2007, 45.4% of youths going to school in New York reported smoking at some point in their lives. This is 33% lower than the 68.1% who reporting doing this in 1997.
- The percentage of high school students who reported smoking a whole cigarette before the age of 13 was about 11% 2007, half of the 22.7% reporting smoking by age 13 in 1997.
- The current smoking rate (smoking one or more cigarettes in the last 30 days) among NYS high school students in 2007 was 13.8%, 58% lower than the 1997 rate of 32.9%.
- In 2007, white students had the highest current smoking rate (16.1%), followed by Hispanic (15.7%) and Black students (5.8%).
- Both White and Black students have reduced their smoking rates by at least 50% since 1997. The rate among Hispanic students has been reduced by 37% since 1997.

**Reducing Low Birth Weight** - MCHB and State MCH officials monitor four health status measures involving low birth weight:

- Percent of live births weighing less than 2,500 grams.
- Percent of live singleton births weighing less than 2,500 grams.
- Percent of live births weighing less than 1,500 grams.
- Percent of live singleton births weighing less than 1,500 grams.

As might be expected from the data regarding the timeliness and adequacy of prenatal care and tobacco use, New York has not made progress in reducing low birthweight over the past several years.<sup>41</sup> The data in Table 7 suggest that New York’s relatively low rate of non-Hispanic black infant mortality has *not* been the result of achieving a significantly lower rate of low birthweight infants. The average percent of live births less than 2500 grams for all 10 states (8.5%) is approximately the same as the rate for New York. California’s low LBW percentage appears to be the result of a relatively low percentage of African-American births and a relatively high percentage of Asian-American births, although a healthy lifestyle (e.g., having a relatively low smoking rate by pregnant women – less than 30 percent of the average of the other 9 states listed in Table 8) may also contribute to its low rate of low birthweight.

Table 7- Percent of LBW Births in the 10 States with the Most African-American Births

States, ranked by percent of births < 2500 grams	Percent < 2500 grams *	Percent Asian-American Births **	Percent African-American Births**	African-American IM Rate
California	5.2	13.6	5.6	11.40
Michigan	8.2	3.5	17.8	16.38
New York	8.3	9.5	16.9	11.77
Texas	8.3	3.9	11.4	12.41
Illinois	8.6	5.1	17.5	15.27
Florida	8.7	3.3	21.6	12.92
N. Carolina	9.1	3.0	23.4	15.77
Maryland	9.4	7.0	33.5	13.66
Louisiana	9.5	1.8	38.2	13.94
Georgia	9.6	3.7	32.4	13.27

\* State Title V Block Grant Applications - FY 2007, Health Status Indicator 4. \*\*Source: Live births by race and Hispanic origin of mother, and birth and fertility rates: National Vital Statistics Reports

<sup>41</sup> The percent of live births weighing less than 2,500 grams in New York has not improved over time, remaining virtually unchanged over the past 4 years at 8.2-8.3 (TVIS)

Table 8 displays the variables reviewed thus far for the 10 states with the largest number of births to African-American women – getting women into care early in their pregnancy, providing women with the recommended number of perinatal care visits, reducing the number of births to teens aged 15-17 and reducing the rate of smoking by pregnant women in the last trimester. The correlation coefficients for these variables with the African-American infant mortality rate across the 10 states in Table 8 range from  $r = < .10$  to  $.52$ . However, none of these variables appear to be associated with New York’s relatively low mortality rate for African-Americans infants.

Table 8- Variables/Correlates of African-American Infant Mortality in the 10 States with the Most African-American Births\*

States, ranked by African- American Infant Mortality	African-American Infant Mortality Rate	Percent Care in 1 <sup>st</sup> Trimester (all races) $r < .10$	Percent Receiving Adequate PC Visits (Medicaid) $r = .32$	Teen Birth Rate 15-17 yrs (all races) $r = -.10$	Smoking Pregnant Women (all races) $r = .52$
California	(11.40)	85.8	78.7	20.0	(3.0)
New York	11.77	74.6	65.9	(13.1)	12.2
Texas	12.41	(72.2)	(62.4)	[33.6]	7.8
Florida	12.92	76.0	70.2	22.4	8.3
Georgia	13.27	79.2	66.0	29.9	10.3
Maryland	13.66	60.0	60.0	17.5	7.8
Louisiana	13.94	83.1	[89.0]	29.5	[17.7]
Illinois	15.27	[86.1]	80.0	22.1	10.4
N. Carolina	15.77	81.9	85.6	24.6	11.5
Michigan	[16.38]	68.7	68.7	14.0	13.6

\* Where ( ) represents the state with the lowest value of a given indicator  
[ ] represents the state with the highest value of a given indicator

### Prenatal/Perinatal Regionalization Measure

The last MCHB measure reviewed in this paper for possible insights as to what may have enabled New York to reduce its African-American infant mortality is the *percent of very low birth weight infants delivered at facilities for high-risk deliveries and neonates*. Getting mothers at risk of premature deliveries to hospitals that are equipped to provide specialized, intensive care has been a long established public health method of dealing with the consequences of prematurity and low birth weight.<sup>42</sup>

<sup>42</sup> Johnson & Little, 1999

As discussed above, New York State has a long-established system of regionalized perinatal care with highly specialized Regional Perinatal Centers in each region of the state. “These Centers provide tertiary level clinical care to high-risk mothers and newborns, and also serve as important contact points for the Department of Health in our interactions with the health care community. They help ensure that high-risk mothers and newborns receive appropriate levels of care by working with their affiliate hospitals to provide quality improvement oversight, including monitoring of perinatal morbidity and mortality and providing education and technical assistance to physicians and others.” (*NY Needs Assessment*) Outside of NYC, the single RPC in each region co-leads a perinatal forum with a NYSDOH-designated community perinatal network. NYC has a somewhat more complex system where there are forums in nearly every borough, and one of the borough’s several Regional Perinatal Centers takes a turn co-leading the forum with a NYSDOH-designated community perinatal network. For example, the Northern Manhattan Perinatal Partnership co-leads the forum with one of Manhattan’s, four Regional Perinatal Centers. In addition, there is a Citywide Regional Perinatal Forum that meets quarterly and is represented by staff from the RPCs, hospitals and CPPSNs from each borough.

MCHB is well aware that states differ in the reporting methodologies for regionalization and understands that there is not a uniform set of definitions for different levels of hospitals across states. “There is no national data source for this at present. Vital records and hospital discharge records would be sources.” Further, “states use different methodologies for data collection and analysis as well as multiple data sources, data reported [for] this table may include actual counts, estimates, or blank cells (if final data are not available at the time of reporting). The closest Level III facility may be outside the State of residence. Facility classification for resident births outside of the State may be difficult to track. Some States include nonresident births.” (*MCHB Title V reporting guidance.*)

Because there is no standard set of definitions that all states use to define facilities that provide different levels of care, it is very difficult to make comparisons across states. As mentioned above, New York undertook a significant upgrading of all of its obstetrical hospitals in 2005. It is safe to say that a New York hospital that is designated as a Level IV perinatal regional care facility provides a very specialized and highly competent level of care to very low birth weight infants and their mothers.<sup>43</sup> Other states may not have the same requirements for their highest level of care facilities.

As can be seen in Table 9, New York is the highest ranked state in the percentage of very low birth weight (VLBW) infants who are delivered at facilities for high-risk deliveries, among the states with the largest number of births to African-American women. Not surprisingly, New York also has the lowest neonatal and post-neonatal

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<sup>43</sup> The regulations for perinatal care facilities issued by New York in 2005 are very detailed and are attached as an appendix to this report.

mortality rates (except for California, which has a much smaller percentage of African-American births and a much larger percentage of Hispanic births).<sup>44</sup>

Table 9 - Percent of VLBW Infants Delivered at Facilities for High-Risk Deliveries in 10 States with the Most African-American Births

States, ranked by percent VLBW Delivered at Facilities for High Risk Deliveries (HRD)	Percent VLBW Delivered at Facilities for HRD	Neonatal Mortality Rate (<28 days) <i>r = .44</i>	Post-Neonatal Mortality Rate (28 -364 days) <i>r = .39</i>
<b>New York</b>	<b>88.6</b>	<b>3.8</b>	<b>1.8</b>
Florida	88.1	4.4	2.6
Louisiana	88.1	5.8	4.3
Michigan	87.8	6.8	3.0
Maryland	87.8	5.8	2.2
Illinois	83.1	4.8	2.4
N. Carolina	78.2	5.6	2.5
Georgia	73.3	5.2	2.9
<b>California</b>	<b>66.9</b>	<b>3.5</b>	<b>1.6</b>
Texas	49.7	4.2	2.1

Source: TVIS, reporting year 2008

For the 10 states with the largest number of African-American births, there is a modest correlation between the percent of VLBW infants delivered at high risk facilities (as defined by individual states) and the neonatal mortality rate ( $r = .44$ ) and the post-neo-natal mortality rate ( $r = .39$ ).<sup>45</sup>

A possible reason for the relatively low post-neonatal mortality rate in New York is the support provided to new mothers in New York after they leave the hospital. One indicator of such support is the percentage of women who are breastfeeding their infants at six months of age. As shown in Table 10, New York was second only to California on

<sup>44</sup> Given the discrepancy in the ratio of African-American to total births across states, MCHB may want to consider adding three measures to the Title V Information System – the **African-American** neonatal, perinatal and post-neonatal mortality rates.

<sup>45</sup> Although California and Texas have relatively low percentages of very low birthweight infants delivered at high risk facilities, those states also benefit from having relatively low percentages of births to African-American women and relatively high percentages of births to Hispanic women. It would be very interesting to compare VLBW **race-specific** statistics across states, especially those with many, e.g., more than 20,000, **African-American** births each year.

this performance measure in 2007, although cross state comparisons may be affected by the fact that different states use different data sources for this indicator. In any case, the correlation between the percent of mothers who breastfeed at 6 months and the post-neonatal mortality rate is fairly high ( $r = -.76$ ) among the 10 states with the largest number of African-American births.

Table 10- Percent of Mothers who Breastfeed at 6 months in 10 States with the Most African-American Births in 2007

States, ranked by percent who Breastfeed Infants at 6 Months	Percent who Breastfeed at 6 Months of Age*	Post-Neonatal Mortality Rate ( $r = -.76$ )
California	69	1.6
New York	50	1.8
Maryland	40	2.2
Florida	35	2.6
Texas	34	2.1
Georgia	30	2.9
Illinois	26	2.4
N. Carolina	16	2.5
Michigan	16	3.0
Louisiana	15	4.3

\* Source: TVIS, reporting year 2008

## Conclusions

While expanding access to health insurance via Medicaid, providing timely pre-natal care through presumptive eligibility, and reducing risk factors such as smoking among pregnant women may have had a lot to do with lowering infant mortality in New York (and the rest of the country) from the mid 1960s to the mid 1990s, it is not clear that these factors had much, if anything, to do with New York's *recent* success in this area. Many of New York's perinatal health administrators believe that their regionalization efforts have been the principal reason why New York has been able to achieve a relative degree of success in achieving good birth outcomes for all of its racial and ethnic groups. New York's neonatal and post-neonatal infant mortality data support the widely held view that New York's *community based regionalization* model deserves much of the credit for the state's relatively strong performance in reducing infant mortality, especially among African-Americans.

New York's community based regionalization model goes beyond designating hospitals to provide specialty care to high risk patients to organizing regional perinatal partnerships that unite medical facilities and community service providers in a common purpose.<sup>46</sup> According to a survey conducted by Sharon Chesna, Executive Director of the Mothers and Babies Perinatal Network of SCNY and Past President of the National Perinatal Association, New York is one of a small number of states (others include Illinois, New Jersey and Florida) that has enhanced the medical model in implementing a perinatal regionalization strategy. The New York regional networks, by uniting medical facilities with community agencies, are thought by many of New York's health professionals to have contributed to lower post-neonatal infant death rates, especially in New York City. As indicated above, the regional networks include Healthy Start projects and other community agencies involved in providing home visiting services, support services and inter-conceptual care for young mothers.

Since 2004, regional forums which are co-chaired by regional perinatal networks and regional perinatal centers in New York City have been actively involved in setting best practice standards for consumer education, outreach, and provider education and data management and promoting an ongoing dialogue between the medical facilities and community services agencies. It would appear that the regional perinatal centers and forums deserve some of the credit for improving birth outcomes in New York. In particular, New York's extensive network of home visiting and other support services for new mothers and babies may have at least partially responsible for the state's low post-neonatal mortality rate.

Another factor that may have had a positive impact on the health of New York's mothers and infants has been state and city efforts to aggressively treat and monitor infection resulting from sexually transmitted infections. For example, perinatal HIV transmission rates declined dramatically from 1997 through 2007, dropping from 10.9 percent to 1.4 percent, as a result of various State and NYC initiatives. The percent of HIV-infected mothers and/or HIV-exposed infants who received prenatal, intrapartum or neonatal anti-retroviral (ARV) immunization to reduce HIV transmission increased from 64% in 1997 to 99% in 2006.<sup>47</sup>

It appears possible for New York to make even further gains in reducing infant mortality by matching or exceeding what other large states have accomplished in increasing the percentage of women entering prenatal care early in their pregnancies, placing more emphasis on providing the adequate number prenatal care visits, and reducing smoking among pregnant women.<sup>48</sup>

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<sup>46</sup> A copy of a very informative 20 year report on New York's Perinatal Strategy can be downloaded from: <http://www.nysperinatal.org/index/pdf/cppsn-20year-report.pdf>

<sup>47</sup> *New York State Title V Needs Assessment, 2005.*

<sup>48</sup> As discussed in the section on Data Implications, The New York City Office of Vital Statistics is implementing a major quality improvement effort in prenatal care data reporting. At the current time, it appears that New York's reported rates of early entry into prenatal care and adequate prenatal care may be biased downward, i.e., the reported rates may understate the actual rates. If this turns out to be the case, New York's task in improving infant mortality may prove to be more difficult than simply matching what

## Data and Research Implications

The third objective of this paper is to highlight some unanswered questions raised by this exploratory analysis and suggest some data collection and research activities that can be the focus of future studies.

### *Data Implications –*

Part of the discrepancy between the NCHS and TVIS B/W infant mortality ratios shown in Table 11 (e.g., New York, Texas and Michigan) are a result of the different time periods used by the two data sources and three year averages for NCHS vs single year estimates for TVIS. However, in states such as New York more of the discrepancy appears to be related to how “race” is reported<sup>49</sup> and whether a state uses newer “unlinked” data files (vs older “linked” data files).

Table 11 - Comparison of B/W IMR reported by NCHS and TVIS

States, ranked by African-American Infant Mortality Rate*	African- American IM Rate (2003-2005)*	Black/White Infant Mortality Ratio <b>NCHS</b> (2003-2005)*	Black/White Infant Mortality Ratio <b>TVIS</b> (2005)**
California	11.40	2.5	2.7
New York	11.77	2.5	1.9
Texas	12.41	2.1	2.9
Florida	12.92	2.2	2.6
Georgia	13.27	2.2	2.2
Maryland	13.66	2.4	2.7
Louisiana	13.94	2.0	2.1
Illinois	15.27	2.6	2.7
N. Carolina	15.77	2.5	2.5
Michigan	16.38	2.7	3.3

\* Mathews and MacDorman, *Infant mortality statistics from the 2005 period linked birth/infant death data set.* (NCHS) 2008.

\*\* Title V Information System (MCHB) 2008.

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other states have been able to accomplish in getting women into care earlier in their pregnancies and providing them with the appropriate number of prenatal care visits.

<sup>49</sup> As discussed above, some states use the NCHS definition of “non-Hispanic white” and “non-Hispanic black” while other states include Hispanics + non-Hispanics for both races when reporting “black” and “white” infant mortality to TVIS.

Probably the most efficient way to eliminate the inconsistencies in published data on racial disparities in birth outcomes would be to post the NCHS B/W infant mortality on the TVIS web site as the 3 year NCHS data become available. That would allow for appropriate comparisons of non-Hispanic Black and non-Hispanic white infant mortality ratios across states. It would also seem appropriate to replace single year B/W infant mortality data for those time periods as the 3 year infant mortality data from NCHS are posted.

Another data issue for New York is the accuracy of its prenatal care reporting system. As noted by the New York City Office of Vital Statistics,<sup>50</sup> some of the current problems in data reporting include the following:

- The reported proportion of births with “no prenatal care” more than tripled between 2007 and 2008;
- Hospitals reported that 2,106 mothers did not receive prenatal care in 2008; however, for 781 of those records, the mother said she had prenatal care;
- A large number (7,869) of records were missing “First Prenatal Care Date”;
- An almost equal number (6,011) of records were missing “the Date of Last Prenatal Care Visit”. For more than half of these records (3,951), the hospital indicated that the mother had prenatal care visits, but still left the last date blank.

It appears that New York City’s reported rates of early entry into prenatal care and adequate prenatal care may be biased downward, i.e., the reported rates may understate the actual rates. Given all of the efforts that New York makes in outreach and providing home visiting services to pregnant women, the underreporting of prenatal care seems a distinct possibility. It will be interesting to see what prenatal care data trends emerge after the new efforts to improve hospital reporting are implemented.

Finally, as noted throughout this paper, MCHB should consider revising many of its *birth related* performance measures, outcome measures, and system capacity indicators to be *race specific*. See research questions 5 – 7 and 10 -12 below.

### ***Research/Evaluation Questions -***

1. Does the healthy lifestyle in California, Oregon and Washington (i.e., high rates of participation in outdoor activities, low rates of smoking, high rates of breastfeeding, and eating fresh fruits and vegetables) play an important role in yielding exceptionally good birth outcomes for all races and ethnic groups?
2. Are support services such as outreach, home visiting, and breastfeeding education more available to pregnant women in states on the West Coast?

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<sup>50</sup> *Data Quality Improvement Newsletter*, Office of Vital Statistics, Quality Improvement Unit, Issue # 1, October 2009.

3. Are medical personnel and facilities in California, Oregon and Washington better organized than in states in the rest of the country to deal with relatively few births to African-American women?
4. What socio-demographic, medical and other factors operate in states with relatively small numbers and percentages of African-American births to enable a greater percentage of African-American infants to survive than in states where they are more numerous and represent a larger share of the population?  
*Nine of the 10 states with the lowest infant mortality rates for African-Americans had less than 10 percent of births to African-American women in 2003-2005. (New York was the exception with almost 17 percent.)*
5. What are the factors that enable Hispanic women of child bearing age to have lower infant mortality rates than African-American women? For example, are Hispanic mothers more like to breastfeed at 6 months?  
*In virtually every state, the mortality rate for babies born to Hispanic women was lower than for non-Hispanic black women. In many states (16 out of 41) with sufficiently large numbers of births, the Hispanic IMR was lower than for non-Hispanic white women during the period of 2003- 2005. (NCHS, Vital Statistics)*
6. What are the factors that influence a higher percentage of pregnant Hispanic teens to give birth (rather than terminate the pregnancy) than either African-American or white teens in NYC? (45% vs 36% vs 29% - NYC Vital Statistics, 2007)
7. Does testing and treating sexually transmitted infections for pregnant women and their partners throughout the course of their pregnancies have a differential impact on birth outcomes for different racial and ethnic groups in New York?
8. Can the reductions in very low birthweight achieved by the central New York Healthy Start program through screening and treating bacterial vaginosis in pregnant women be replicated in other parts of New York State and elsewhere around the country?
9. How much of the decline in infant mortality in New York over the past decade can be attributed to state and city efforts to aggressively treat and monitor sexually transmitted infections?
10. How can New York and other states make further inroads in reducing infant mortality and the Black/White disparity in birth outcomes at a time when many believe that NICU technology has reached its limits in its ability to save very small babies and enable them to grow up without lifelong disability?<sup>51</sup>

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<sup>51</sup> For a succinct overview of the issues involved in saving very small babies through NICU intervention, go to <http://aboutkidshealth.com/PrematureBabies/Ethics-of-Intervention.aspx?articleID=7523&categoryID=PI-nh1-09b>

11. What is the correlation of very low birthweight non-Hispanic black infants delivered at high risk facilities with (a) non-Hispanic black neonatal mortality and (b) non-Hispanic black post-neonatal mortality rates?
12. Does (a) increasing the percentage of pregnant women entering into early prenatal care, and (b) providing them with the recommended number of prenatal care visits improve birth outcomes for each cohort of women (i.e., non-Hispanic black women, non-Hispanic white women, and Hispanic women)?
13. Does reducing the teen birth rate for non-Hispanic black teens, non-Hispanic white teens and Hispanic teens improve the birth outcomes for each cohort?  
*In order to have a better idea of whether reducing the rate of teen births has been a factor in New York's reduction in its African-American infant mortality rate, additional analysis will have to be conducted using race specific data.*
14. How much of the dramatic decline in infant mortality in Central Harlem from 1990 to 2004 was the result of the providers in Central Harlem coming together to deliver more intensive, high quality services to women of childbearing age in the area?
15. How much of the decline in infant mortality in New York City over the past 5 years was the result of placing greater emphasis on the interconceptional period of women's healthcare, which focused on case management and managing chronic illness?
16. How much of the decline in infant mortality in New York City over the past 5 years can be attributed to the expansion of affordable housing and improvements in environmental and economic conditions of poor and working class women?
17. How much of the decline in infant mortality in New York over the past 5 years can be attributed to systems integrations efforts (e.g., MCH-Child Welfare-Early Childhood), which provided various support services to women during their pregnancy and after the birth of their children?
18. Can the Healthy Families New York finding of improving low birthweight through home visiting (*Lee 2009*) be replicated by the Nurse Family Partnership and other home visiting projects operating in New York and elsewhere?

***Promising Practices to Improve Birth Outcomes:  
What Can We Learn from New York?***

***Appendix A***

***New York State's Perinatal Regionalization System Regulations  
(Effective Date: 09/14/2005)***

**Section**

721.1 Introduction

721.2 Definitions

721.3 Perinatal Designation of Hospitals

721.4 Patient Care and Patient Transfers

721.5 Responsibilities and Qualifications of Chiefs of Services at Each Designated Level

721.6 Qualification and Responsibilities of Physicians and Other Licensed Obstetrical Practitioners at Each Designated Level of Care

721.7 Nursing Care

721.8 Ancillary Personnel

721.9 Regional Quality Improvement Activities

721.10 Perinatal Affiliation Agreements and Transfer Agreements

## **Section 721.1 Introduction**

(a) All hospital-based perinatal care services shall participate in the statewide perinatal regionalization system. Such system shall coordinate perinatal care within particular geographic areas or among a group of perinatal affiliates.

(b) Each perinatal service within a hospital shall be designated by the Department as providing Level I perinatal care, Level II perinatal care, Level III perinatal care or, the hospital shall be designated as a Regional Perinatal Center (RPC).

## **Section 721.2 Definitions**

(a) Level I perinatal care service means a comprehensive maternal and newborn service provided by a hospital designated as such by the department for normal low-risk newborns and for women who have been assessed as having a normal, low-risk pregnancy and having a fetus which has been assessed as developing normally and without apparent complications.

(b) Level II perinatal care means a comprehensive maternal and newborn service provided by a hospital designated as such by the department which includes services for moderately high-risk newborns and for women who have been assessed as having the potential or likelihood for a moderately complicated or high-risk delivery and/or bearing a fetus exhibiting the potential for unusual or high-risk development. Such services may also provide services to women requiring care normally provided at Level I perinatal care services.

(c) Level III perinatal care means a comprehensive maternal and newborn service provided by a hospital designated as such by the department and which includes services for women and newborns who have been assessed as high-risk patients and/or are bearing high-risk fetuses, who will require a high level of specialized care. Such programs may also provide services to women and newborns requiring care normally provided at Level I and II perinatal care services.

(d) Regional Perinatal Center (RPC) means a hospital or hospitals housing a perinatal care service which meets the standards for a Level III perinatal care service but which also, includes highly specialized services that may not be available at all Level III hospitals, and designated as such by the department. An RPC serves a geographic area or a group of perinatal affiliates. It provides all aspects of comprehensive maternal and neonatal care, and its functions and responsibilities also include efforts to coordinate and improve quality of perinatal care among its affiliates, attending level consultation regarding patient transfer and clinical management, transport of high-risk patients, outreach to affiliates to determine educational needs, education and training of affiliate hospitals, data collection, evaluation and analysis within that region. If two or more hospitals jointly sponsor an RPC, they must define in a written agreement between or

among the hospitals comprising the RPC how the aforementioned functions and responsibilities will be carried out.

(e) Perinatal affiliation agreement shall mean a written fully executed agreement between a Level I, II or III perinatal care hospital, and that hospital's designated RPC. A perinatal affiliation agreement shall include provisions for, at a minimum:

- (1) criteria, policies and procedures for transfer of patients, with appropriate consent, to the RPC and from the RPC back to the sending hospital.
- (2) criteria and process for attending level subspecialty consultation on a 24-hour basis, including types of consultation processes (i.e., via telephone, telemedicine or in-house consults) acceptable for each subspecialty;
- (3) participation in the statewide perinatal data system (SPDS) including the provision of the confidentiality and protection of all data obtained through the SPDS;
- (4) cooperation in outreach, education, training and data collection activities; and
- (5) authority for one geographically accessible RPC representative or representatives to participate in the affiliate hospital's quality assurance committee and other reviews of the quality of perinatal care provided by the affiliate and to provide recommendations for quality improvement of perinatal services. Each RPC and each affiliate hospital shall take actions necessary, including but not limited to, entering into a perinatal affiliation agreement, to authorize such participation by the RPC's representatives in the affiliate hospital's quality assurance committee and for purposes of such participation, the RPC representative or representatives shall be deemed member(s) of the affiliate's quality assurance committee, shall maintain the confidentiality of all information obtained in such capacity and are subject to the confidentiality restrictions of Public Health Law Section 2805-m.
- (6) RPC involvement in the development of written agreements among perinatal affiliates including criteria regarding transport of women and newborns;
- (7) timely consultation on treatment plans for women and neonates who develop or exhibit unanticipated conditions which may require transfer to a higher level of care; and,
- (8) resolution of disputes or disagreements between the RPC and the perinatal affiliate, including disagreements regarding interpretation of affiliation agreement criteria for consultation and/or transfer. In cases of disputes or disagreement between an affiliate and its RPC, the affiliate and the RPC shall follow the dispute resolution process outlined in their perinatal affiliation agreement. If the dispute is not resolved within sixty days, the parties must request review by the department.

The department shall initiate compliance reviews at both sites, advise each facility of its findings, and require corrective action, as indicated, to resolve the dispute. This process shall not interfere with the timely and proper transfer of mothers and newborns.

(f) Transfer agreement shall mean a written agreement between a Level I or II perinatal service and a Level III hospital for the transfer of patients requiring Level III care. Perinatal transfer agreements shall address the provision and/or coordination of all high-risk maternal and newborn transports. The agreements shall reflect the following:

- (1) the maximum allowable surface travel time to reach a Level III or RPC hospital shall be two hours under usual weather and road conditions, and the receiving hospital shall be accessible and convenient to the mother's place of residence whenever possible;
- (2) mutually agreed criteria for determining when consultation and/or transfer is required;
- (3) procedures and responsibility for arranging transport;
- (4) requirement for 24-hour availability of appropriately qualified RPC medical staff to respond to calls from affiliates;
- (5) policies for obtaining patient or parent/guardian consent for patient transfer and to exchange medical information;
- (6) procedures for making arrangements for transfer to another hospital if the receiving hospital is unable to accept the transfer due to capacity/bed limitations;
- (7) a provision that an emergency transport shall depart within thirty minutes of the request for transfer;
- (8) provisions for the back transfer of newborns who no longer need Level III or RPC care but who need continuing care in a hospital located near their home communities shall be part of the perinatal affiliation and/or transfer agreements between two hospitals; and
- (9) higher level hospitals shall inform referring hospitals of major changes in status of transferred patients, with patient's consent or with parental or guardian consent in the case of newborn transfers.

(g) Definitions contained in section 405.21(b) of this Title shall apply to this Part.

### **Section 721.3 Perinatal designation of hospitals.**

(a) Perinatal services will be designated by the Commissioner based on the following:

(1) each hospital designated as a Level I, Level II or Level III hospital shall enter a written perinatal affiliation agreement with an RPC;

(2) the level of care currently provided by the hospital shall meet the definition, standards and criterion set forth in this Part for a Level I, Level II, Level III perinatal service or RPC;

(3) for level II, Level III and RPCs, the number of births and intensity of neonatal care at the hospital during the previous full calendar year must meet the following minimum volume standards.

(i) a Level II perinatal care hospital shall provide no fewer than 1,200 high-risk newborn patient days annually, and no fewer than 150 high-risk maternal patient days annually;

(ii) a Level III perinatal care hospital shall provide no fewer than 2,000 high-risk newborn patient days annually, and no fewer than 250 high-risk maternal patient days annually;

(iii) RPCs shall provide no fewer than 4,000 high-risk newborn patient days annually, and no fewer than 400 high-risk maternal patient days annually. An RPC shall provide quality improvement services to a group of perinatal affiliates with a minimum total of 8,000 births each year;

(4) the availability of appropriate medical, nursing, and other staffing as described in this Part supportive of the perinatal service at the hospital; and

(5) surface travel time for transfers. The surface travel time to reach a Level II hospital, a Level III hospital, or an RPC within the geographic area or affiliative perinatal network, under usual travel conditions shall be no more than two hours. Transfer decisions must be based on the appropriate level of perinatal care required, and care shall be provided at a hospital offering the appropriate level of care which is accessible and convenient to the mother's place of residence whenever feasible.

(6) the geographic distribution of designated hospitals throughout the state to ensure access to appropriate levels of care throughout the state; and,

(7) such other additional information as the Commissioner may require to make the designation.

(b) Designation process.

(1) Each hospital certified to provide perinatal services shall complete a designation survey by the department and verify specific data about its maternal and newborn discharges. The department shall assess the results of the survey and data in order to assign a designation. The department may require an on-site review of services at a hospital before making a designation, in which case the hospital shall participate and cooperate in the review and provide any additional information requested. A hospital shall receive its designation only after this process is complete and the department has obtained and considered all relevant information to its satisfaction.

(2) The perinatal designation of a hospital shall appear on the hospital's operating certificate.

(3) Perinatal designation on the maternity information leaflet. The hospital's perinatal designation and a brief definition of the Level shall be included in the maternity information leaflet distributed to each prospective maternity patient, pursuant to public health law section 2803-j (1).

(c) Redesignations.

(1) A hospital may apply to change its designation no sooner than one year following its most recent designation.

(2) The department may initiate a review and monitor compliance with the definitions, standards and criteria set forth in this Part by perinatal services and RPCs at any time.

(3) The department may change a designation if it finds that a hospital perinatal service or RPC no longer meets the definition, standards and criterion for its current designation.

(4) Maintenance of minimum volume standards. To ensure that service capability and staff competence are maintained for Level II, Level III, or an RPC, a hospital which fails to meet minimum volume standards and is seeking to maintain its designation, or applying for another designation, shall present evidence that the annual minimum volume standards will be achieved within one year following the decision to allow the hospital to remain at the present level of designation or the initiation of the new designation. Minimum volume standards may be waived by the department if the department determines that a waiver will improve access while maintaining high quality care.

## **Section 721.4 Patient care and patient transfers.**

(a) Each hospital providing perinatal care services shall provide patient care based on the individual needs of the patient and in accordance with the following criteria.

(1) A Level I perinatal care service hospital shall evaluate and stabilize all women and neonates.

(i) For patients needing a higher level of care, it shall consult with a higher level hospital and arrange for timely transfer to a Level III perinatal care service hospital or an RPC that provides the appropriate level of perinatal care.

(ii) For healthy women with an anticipated delivery at 36 weeks gestation or later and for healthy newborns with a birthweight of 2,500 grams or more, it shall provide continuing care until their discharge.

(iii) Except in unusual circumstances, smaller and more premature infants shall be delivered at higher level hospitals; if such an infant is born at a Level I perinatal care hospital, he/she shall be transferred promptly after birth.

(iv) Women and neonates who have relatively minor problems that do not require advanced laboratory, radiologic, or consultation services may remain in the Level I perinatal care hospital.

(v) When it is known that the newborn may require immediate complex care, it shall be delivered at a Level III perinatal care hospital or an RPC whenever possible.

(vi) Level I perinatal care hospitals shall also provide care for convalescing babies who have been transferred from Level II, Level III and RPC perinatal care hospitals.

(2) A Level II perinatal care services hospital shall:

(i) provide the Level I perinatal care services described in paragraph (1) above and be capable of providing care for moderately high-risk women, fetuses and newborns and moderately ill women and newborns who have problems that do not require highly specialized care; and

(ii) stabilize ill women and newborns and women whose fetuses are expected to need complex care, consult with a higher level hospital and arrange for timely transfer to a hospital that provides the appropriate level of perinatal care.

(iii) Level II perinatal care hospitals are qualified to deliver infants with an anticipated delivery at 30 weeks gestation or later and with an anticipated birthweight of 1,250 grams or more.

(iv) Except in unusual circumstances, infants smaller and more premature than is described at subparagraph (iii) of this paragraph shall be delivered at Level III hospitals or RPCs. If an infant who is smaller or a lower gestational age than described in subparagraph (iii) of this paragraph is born at the Level II hospital, he/she shall be transferred promptly after birth.

(3) A Level III perinatal care services hospital shall:

(i) provide Level I and Level II perinatal care services described in paragraphs (1) and (2) of this subdivision and shall care for women, fetuses, and newborns who may require complex care.

(ii) stabilize ill women and newborns prior to transfer, including women whose newborns are expected to need the most complex care, consult with its designated RPC, and transfer if appropriate.

(iii) Women in unstable medical and/or obstetric situations shall be cared for at a Level III hospital or an RPC.

(4) Regional Perinatal Care Centers (RPC) shall provide Level I, Level II and Level III perinatal care services described in paragraphs (1), (2), and (3) of this subdivision and shall also care for women, fetuses, and newborns who require highly specialized services not available at the Level III care hospital, such as sophisticated ventilation techniques (e.g., high-frequency ventilation and extracorporeal membrane oxygenation), cardiac surgery or neurosurgery.

(5) The transfer and consultation criterion included in the affiliation and transfer agreements can be customized to reflect the RPC's knowledge and the capabilities of each affiliate hospital. Any variation in transfer of patients to a higher level perinatal care service hospital as specified in this Section must be in accordance with generally accepted standards of professional practice and criteria established in the affiliation agreement with each hospital's respective RPC.

(b) Ventilation for distressed newborns. Resuscitation and ventilation of neonates who require cardio respiratory assistance shall be performed at each Level of perinatal care and in the following ways:

(1) at a Level I perinatal care services hospital the ventilation of distressed newborns shall be immediate resuscitation after birth as appropriate, stabilization, and assisted ventilation of newborns until timely transfer to a hospital that provides a higher level of perinatal care;

(2) at a Level II perinatal care hospital the ventilation of a distressed newborn shall be as described in paragraph (1) above and, in addition, standard short-term mechanical ventilation. A Level II perinatal care hospital may care for infants requiring mechanical ventilation and/or 50% or more oxygen for no more than four days. By the fourth day of a newborn's receipt of assisted ventilation or oxygen at 50% or more, the Level II hospital shall consult with its designated RPC regarding the status of the newborn and determine whether to transfer the newborn to a higher level hospital. If after such consultation the neonate stays at the Level II hospital, that hospital may retain the neonate for no more than a total of seven days on assisted ventilation or oxygen at 50% and must then transfer the neonate to a Level III hospital or to an RPC unless the hospital's RPC is consulted and agrees that the neonate's care is appropriate and in accordance with current standards of professional practice and remaining at the Level II hospital is in the best interests of the neonate.

(3) at Level III perinatal care services hospitals and RPCs the ventilation of a distressed newborn shall be as described in paragraphs (1) and (2) of this subdivision and, in addition, may also include long-term standard mechanical ventilation and complex ventilation techniques, such as high-frequency ventilation and extracorporeal membrane oxygenation (ECMO).

(c) Transfers.

(1) All patient care and transfers shall be in accordance with generally accepted professional standards and be consistent with section 405.21(g) and this Part. Requirements for consultation and for transfer to a higher level of perinatal care and transfer back to the referring hospital or other hospital providing a lower level of care, shall be described in any transfer agreement negotiated between Level I, II and III perinatal care hospitals, and in transfer provisions in the perinatal affiliation agreements between Level I, II and III perinatal care hospitals and their RPCs.

(2) When a newborn and/or mother requires transfer, care shall be provided at a hospital providing the appropriate level of perinatal care which is, whenever feasible, accessible and convenient to the mother's place of residence. When mothers and their infants need different levels of care, efforts shall be made to keep the mother-newborn dyad together. Level III hospitals and RPCs shall return a newborn to the sending hospital when the condition has been stabilized and return is medically appropriate.

**Section 721.5 Responsibilities and qualifications of chiefs of services at each designated level.**

The qualifications and responsibilities for each designated level shall be as follows:

(a) Level I perinatal care service. Care shall be coordinated jointly by the chiefs of obstetrics, pediatrics, family practice, nursing, anesthesia, and midwifery. For facilities that do not have chiefs of service in all such areas, each discipline shall have effective

input in care coordination. The coordinators of perinatal care at a Level I perinatal care services hospital shall be responsible for developing policy, maintaining standards of care, and collaborating and consulting with professional staff of hospitals providing Level II and Level III perinatal care services and RPC perinatal care in the region. In hospitals that do not separate maternity and newborn services, one person may be given the responsibility for coordinating perinatal care;

(b) Level II perinatal care service. A board-certified obstetrician with special interest, experience, and expertise in maternal-fetal medicine shall be the chief of the obstetric service at a Level II care hospital. A full-time board-certified pediatrician with subspecialty certification in neonatal medicine or at a minimum has successfully completed a fellowship in neonatal medicine shall be the chief of the neonatal care services. These physicians shall jointly coordinate the hospital's perinatal care services and, in conjunction with the chiefs of anesthesiology, nursing, midwifery, and family practice, and other patient care and administration staff, shall develop policies concerning staffing, procedures, equipment, and supplies; maintaining standards of care; and planning, developing, and coordinating in-hospital professional educational programs;

(c) Level III perinatal care services. The chief of the maternal-fetal medicine service at a hospital providing Level III perinatal care shall be a full-time, board-certified obstetrician with interest, experience and special competence in maternal-fetal medicine; subspecialty certification in maternal-fetal medicine is recommended. The director of a newborn intensive care service at a Level III hospital shall be a full-time, board-certified pediatrician with subspecialty certification in neonatal medicine. These physicians shall jointly coordinate the hospital's perinatal care services in order to ensure provision of a comprehensive continuum of high quality care to mothers and newborns. In conjunction with the chiefs of anesthesiology, nursing, midwifery, and family practice, and other patient care and administrative staff, these physicians shall be responsible for developing policies concerning staffing, procedures, equipment, and supplies; maintaining standards of care; and planning, developing, and coordinating in-hospital professional educational programs;

(d) RPC care. The chief of the maternal-fetal medicine service at an RPC shall be a full-time, board-certified obstetrician with subspecialty certification in maternal-fetal medicine. The chief of a newborn intensive care service at an RPC shall be a full-time, board-certified pediatrician with subspecialty certification in neonatal medicine. These physicians shall jointly coordinate perinatal care services in order to ensure provision of a comprehensive continuum of high quality care to mothers and newborns. In conjunction with the chiefs of anesthesiology, nursing, midwifery, and family practice, and other patient care and administration staff, these physicians shall be responsible for developing policies concerning staffing, procedures, equipment, and supplies; maintaining standards of care; and planning, developing, and coordinating in-hospital professional educational programs. The chiefs of maternal-fetal medicine and neonatology will also be responsible for providing outreach and professional education programs, participating in the evaluation and improvement of perinatal care in the region, and coordinating the services

provided at their hospital with those provided at Level I, Level II and Level III care hospitals in the region.

**Section 721.6 Qualifications and responsibilities of physicians and other licensed obstetrical practitioners at each designated level of care.**

The qualifications and responsibilities of licensed obstetrical practitioners at each designated level of care shall be:

(a) Level I perinatal care: A physician or licensed midwife with appropriate training and expertise shall attend all deliveries. At least one person capable of initiating neonatal resuscitation shall be present at every delivery. An ultrasound machine shall be readily available to labor and delivery. A radiologist or obstetrician skilled in interpretation of ultrasound scans shall be available within a timeframe appropriate to meet the patient's needs;

(b) Level II perinatal care: A physician or licensed midwife with appropriate training and expertise shall attend all deliveries. At least one person capable of initiating neonatal resuscitation shall be present at every delivery. An ultrasound machine shall be readily available to labor and delivery. A radiologist or obstetrician skilled in interpretation of ultrasound scans shall be available 24 hours a day within a timeframe appropriate to meet the patient's needs. Portable, neonatal-appropriate equipment and appropriately trained personnel to administer the service must be available within a timeframe appropriate to meet the patient's needs. Care for moderately high-risk women and neonates shall be provided by appropriately qualified physicians. General pediatricians and general obstetricians with the expertise to assume responsibility for acute care for infants and women shall be immediately available within 20 minutes, 24 hours a day to provide needed services. The chief of obstetric anesthesia services shall be board-certified in anesthesia and shall have training and experience in obstetric anesthesia. A neonatologist shall be available on-site within 20 minutes 24 hours a day to provide needed services. The hospital staff shall also include a radiologist skilled in interpretation of ultrasound scans, a clinical pathologist, personnel qualified to administer specialized pharmaceutical services to newborns, and a designated, in-house credentialed person for neonatal resuscitation, all of whom shall be available 24 hours a day. Personnel with credentials to administer obstetric anesthesia shall be readily available. Specialized adult and pediatric medical and surgical consultation shall be readily available;

(c) Level III and RPC perinatal care: A physician or licensed midwife with appropriate training and expertise shall attend all deliveries. At least one person capable of initiating neonatal resuscitation shall be present at every delivery. An ultrasound machine shall be readily available to labor and delivery. A radiologist, obstetrician or maternal-fetal medicine specialist skilled in interpretation of ultrasound scans shall be available in-house 24 hours a day. Portable, neonatal-appropriate equipment and appropriately trained personnel to administer the service must be available within a

timeframe appropriate to meet the patient's needs. Maternal-fetal medicine specialists and neonatologists who care for high-risk mothers and newborns in the Level III or RPC hospital shall have qualifications equivalent to those of the chief of their service as described in section 721.5(c) and (d) of this Title or at a minimum will have successfully completed a fellowship in maternal fetal medicine or in neonatal medicine, whichever is appropriate. A maternal-fetal medicine specialist and a neonatologist shall be available on-site within 20 minutes 24 hours a day to provide needed services. Obstetric and neonatal diagnostic imaging, provided by radiologists with special expertise in diagnosis of maternal and neonatal disease and its complications, shall be available 24 hours a day. Pediatric and adult subspecialists in cardiology, neurology, hematology, genetics, nephrology, metabolism, endocrinology, gastroenterology, nutrition, radiology, infectious diseases, pulmonology, immunology, and pharmacology shall be available for consultation. In addition, pediatric surgeons and pediatric surgical subspecialists, e.g., cardiovascular, neurological, orthopedic, ophthalmologic, urologic, and otolaryngological surgeons, shall be available for consultation and care. Pathologists with special competence in placental, fetal, and neonatal disease shall be members of the Level III or regional perinatal center staff. A clinical pathologist shall be available 24 hours a day. A board-certified anesthesiologist with special training or experience in maternal-fetal anesthesia shall be in charge of obstetric anesthesia services at a Level III or regional perinatal center facility, and personnel with credentials in the administration of obstetric anesthesia shall be available for all deliveries. Personnel with credentials in the administration of neonatal and pediatric anesthesia shall be readily available as needed. Personnel qualified to prepare, dispense and administer specialized pharmaceutical services to newborns shall be available 24 hours a day.

### **Section 721.7 Nursing Care.**

In addition to providing nursing care that meets generally accepted professional standards, hospitals shall meet the following additional nursing requirements at each designated level of care.

(a) Level I perinatal care service hospital. Maternal and newborn nursing care shall be provided under the direct supervision of a registered nurse. All obstetric nursing personnel shall be qualified in interpretation of fetal heart rate monitoring and understand the physiology of labor. All newborn nursing personnel shall be qualified in assessment of the newborn and all aspects of routine monitoring and care, including education and support related to breastfeeding.

(b) Level II care hospital. In addition to the qualifications described in subdivision (a) of this section, direct patient care shall be provided by registered nurses who have education and experience in the care of moderately high-risk women and/or newborns. All nurses caring for ill women or newborns shall demonstrate competence in the observation and treatment of such patients, including cardio respiratory monitoring. Registered nurses in a Level II perinatal care hospital shall be able to: monitor and support the stability of cardiopulmonary, neurologic, metabolic, and thermal functions;

assist with special procedures such as lumbar puncture, endotracheal intubation, and umbilical catheterization; and perform emergency resuscitation.

(c) Level III perinatal care hospital. Responsibilities of registered nurses shall include those defined in subdivisions (a) and (b) of this section. In addition, registered nurses in the Level III perinatal care hospital shall have specialty certification or advanced training and experience in the nursing management of high-risk women, neonates and their families. They shall also be experienced in caring for unstable women and neonates with multi-organ system problems and in specialized care technology. An advanced practice nurse shall be available to the staff for consultation and support on nursing care issues. Assessment and monitoring activities shall remain the responsibility of a registered nurse or advanced practice nurse in obstetric-neonatal nursing, even when personnel with a mixture of skills are used.

(d) RPC. Responsibilities of registered nurses shall include those defined in subdivisions (a), (b), and (c) of this section. In addition, nurses with special training shall participate in regional perinatal center responsibilities such as outreach, training, education and support.

### **Section 721.8 Ancillary personnel.**

The ancillary personnel requirements for each designated level are as follows:

(a) All designated Level I, II, III perinatal care services and RPCs shall have:

- (1) an organized plan of action that includes personnel and equipment for identification and immediate resuscitation of newborns and mothers requiring cardio respiratory assistance;
- (2) personnel who are capable of determining blood type, cross-matching blood, and performing antibody testing and who are available on a 24-hour basis;
- (3) infection control personnel responsible for surveillance of infections in women and neonates, as well as for the development of an appropriate environmental control program;
- (4) a radiologic technician available 24 hours a day to perform imaging;
- (5) at least one staff member with expertise in lactation and breastfeeding management responsible for the hospital's breastfeeding support program, as described in section 405.21(f)(3)(i) of this Title;
- (6) at least one staff member with expertise in bereavement responsible for the hospital's bereavement activities, including a systematic approach to ensuring that individuals in need receive such services;

(7) at least one qualified social worker available who has experience with the socioeconomic and psychosocial problems of pregnant women, ill neonates, and their families assigned to the perinatal service. Additional qualified social workers sufficient to meet the needs of women and newborns are required when there is a high volume of medical activity or psychosocial need; and,

(8) licensed practical nurses and other licensed patient care staff with demonstrated knowledge and clinical competence in the nursing care of women, fetuses, and newborns during labor, delivery, and the postpartum and neonatal periods.

(9) The need for other support personnel shall depend on the intensity and level of sophistication of the other support services provided and shall be sufficient to meet the needs of the patients.

(b) Additional requirements for Level II, Level III perinatal care services and RPC designation:

(1) at least one occupational or physical therapist with neonatal expertise;

(2) at least one registered dietician/nutritionist who has special training in perinatal nutrition and can plan diets that meet the special needs of high-risk women and neonates;

(3) appropriate and adequate numbers of the nursing staff who are trained in breastfeeding support for mothers and infants with special needs;

(4) qualified personnel for support services, such as laboratory studies, radiologic studies, and ultrasound examinations, who are available 24 hours a day; and

(5) respiratory therapists or nurses with special training who can manage the mechanical ventilation of neonates with cardiopulmonary disease.

### **Section 721.8 Ancillary personnel.**

The ancillary personnel requirements for each designated level are as follows:

(a) All designated Level I, II, III perinatal care services and RPCs shall have:

(1) an organized plan of action that includes personnel and equipment for identification and immediate resuscitation of newborns and mothers requiring cardio respiratory assistance;

(2) personnel who are capable of determining blood type, cross-matching blood, and performing antibody testing and who are available on a 24-hour basis;

(3) infection control personnel responsible for surveillance of infections in women and neonates, as well as for the development of an appropriate environmental control program;

(4) a radiologic technician available 24 hours a day to perform imaging;

(5) at least one staff member with expertise in lactation and breastfeeding management responsible for the hospital's breastfeeding support program, as described in section 405.21(f)(3)(i) of this Title;

(6) at least one staff member with expertise in bereavement responsible for the hospital's bereavement activities, including a systematic approach to ensuring that individuals in need receive such services;

(7) at least one qualified social worker available who has experience with the socioeconomic and psychosocial problems of pregnant women, ill neonates, and their families assigned to the perinatal service. Additional qualified social workers sufficient to meet the needs of women and newborns are required when there is a high volume of medical activity or psychosocial need; and,

(8) licensed practical nurses and other licensed patient care staff with demonstrated knowledge and clinical competence in the nursing care of women, fetuses, and newborns during labor, delivery, and the postpartum and neonatal periods.

(9) The need for other support personnel shall depend on the intensity and level of sophistication of the other support services provided and shall be sufficient to meet the needs of the patients.

(b) Additional requirements for Level II, Level III perinatal care services and RPC designation:

(1) at least one occupational or physical therapist with neonatal expertise;

(2) at least one registered dietician/nutritionist who has special training in perinatal nutrition and can plan diets that meet the special needs of high-risk women and neonates;

(3) appropriate and adequate numbers of the nursing staff who are trained in breastfeeding support for mothers and infants with special needs;

(4) qualified personnel for support services, such as laboratory studies, radiologic studies, and ultrasound examinations, who are available 24 hours a day; and

(5) respiratory therapists or nurses with special training who can manage the mechanical ventilation of neonates with cardiopulmonary disease.

## **Section 721.9 Regional quality improvement activities.**

(a) Quality of care reviews of affiliates. Each hospital with a Level I, Level II or Level III perinatal care service shall enter into and comply with a perinatal affiliation agreement as defined in this Part with an RPC in its geographic area or network of perinatal affiliates. RPC representatives shall participate in the affiliate hospital's quality assurance committee and other reviews of the quality of perinatal care provided by the affiliate and in the provision of recommendations for quality improvement of perinatal services. Each RPC and each affiliate hospital shall take actions necessary, including but not limited to entering into a perinatal affiliation agreement, to authorize such participation by the RPC's representatives in the affiliate hospital's quality assurance committee and for purposes of such participation, the RPC representative or representatives shall be deemed members of the affiliate's quality assurance committee. RPC representatives may only access confidential patient information for quality improvement purposes through their roles on the affiliate hospitals' quality assurance committees as set forth in the affiliation agreements and these regulations. Members of hospitals' quality assurance committees must maintain the confidentiality of patient information and are subject to the confidentiality restrictions of Public Health Law Section 2805-m.

(1) The RPC representative(s) shall participate in the review of information and data for quality improvement purposes as described in the affiliation agreement which may include:

- (i) statistical data from the statewide perinatal data system or equivalent data available from other sources;
- (ii) the affiliate hospital's quality improvement program, policies, and procedures;
- (iii) care provided by medical, nursing, and other health care practitioners associated with the perinatal service;
- (iv) appropriateness and timeliness of maternal and newborn referrals and transfers and of patients retained at the affiliate hospital who met criteria for transfer to a higher level of care; and
- (v) maternal and newborn serious adverse events or occurrences that may include the following:
  - (a) maternal and newborn fatalities;
  - (b) maternal and newborn morbidity in circumstances other than those related to the natural course of disease or illness;
  - (c) maternal and newborn nosocomial infections;

(d) maternal and newborn high-risk procedures; or

(vi) pathology related to all deaths and significant surgical specimens.

(2) The hospital shall implement quality improvement recommendations by its RPC. In the event of a disagreement related to a recommendation, the hospital and the RPC shall follow the dispute resolution process outlined in their perinatal affiliation agreement and section 721.2 of this Title.

(b) Each RPC shall cooperate with the department in regular quality improvement reviews by the department of the RPC's perinatal care, the RPC's internal quality improvement activities, and the services it provides to its perinatal affiliates:

(1) The department's quality of care review of the RPC shall include the elements set forth in section 721.9(a)(1) of this Title.

(2) The department's quality improvement review of an RPC shall include review of the quality of the services it has provided to its perinatal affiliates.

(3) The RPC shall cooperate with the department by providing medical records and other relevant documents and information on a timely basis when requested.

(c) Quality improvement outreach program. Each RPC shall provide professional education and training for physicians, nurses, and other staff at all hospitals in the region or affiliative network for which it provides quality of care review. Education and training shall be designed to update and enhance staff knowledge and familiarity with relevant procedures and technological advances.

### **Section 721.10 Perinatal affiliation agreements and transfer agreements.**

(a) Each hospital with a Level I, II or III perinatal care service shall enter into and comply with a perinatal affiliation agreement with an RPC. Each hospital with a Level I or II perinatal care service may also enter into a transfer agreement with a hospital with a Level III perinatal care service if such an agreement would result in an acceptable level of care and provide a more convenient alternative than transfer to an RPC. All such agreements and amendments to such agreements shall be made available to the department, upon request. The terms of such agreements shall be mutually agreed upon by the affiliating hospitals.

(b) Changes in the identity of the RPC with which a hospital has a perinatal affiliation agreement may not be made more frequently than once annually. Such changes shall require 30 days prior notice to the department.

***Promising Practices to Improve Birth Outcomes:  
What Can We Learn from New York?***

***Appendix B***

***Persons Who Provided Valuable Information for this Paper***

Barbara L. McTague,  
Director, Division of Family Health and Title V  
New York State Department of Health  
Albany, NY

Barbara A. Brustman, EdD,  
Director, Research and Policy Unit  
New York State Department of Health  
Albany, NY

Michael Medvesky, MPH  
Director Public Health Information Group  
New York State Department of Health  
Albany, NY

Deborah Kaplan, PA, MPH  
Assistant Commissioner  
Bureau of Maternal, Infant and Reproductive Health  
New York City Department of Health and Mental Hygiene  
New York, NY

Martine Hackett, PhD, MPH  
Bureau of Maternal, Infant and Reproductive Health  
New York City Department of Health and Mental Hygiene  
New York, NY

Judy Sackoff, PhD  
Director of Research  
Bureau of Maternal, Infant & Reproductive Health  
New York City Department of Health and Mental Hygiene  
New York, NY

Aviva Schwaez, MPH  
Infant Mortality Research Analyst  
Bureau of Maternal, Infant & Reproductive Health  
New York City Department of Health and Mental Hygiene  
New York, NY

Richard Aubry, MD  
Medical Director  
Syracuse Healthy Start Project  
Syracuse, NY

Sharon Chesna, Past President, National Perinatal Association &  
Executive Director, Healthy Mothers and Babies Perinatal Network  
Binghamton, NY

Kathleen Coughlin, Project Director  
Syracuse Healthy Start  
Onondaga County Health Department  
Syracuse, NY

Mario Drummonds, MS, LCSW, MBA  
Executive Director/CEO  
Northern Manhattan Perinatal Partnership,  
New York, NY

Bernadette Johnson, Coordinator  
Healthy Families New York  
NYS Office of Children & Family Services  
Rensselaer, NY

Emily Koumans, MD, MPH  
National Center for HIV, STD, and TB Prevention  
Centers for Disease Control & Prevention  
Atlanta, GA

Cathy LaMay, Director  
Greater Adirondack Perinatal Network &  
School Beat Healthy Heart Program  
Glens Falls, NY

Eunju Lee, PhD  
University at Albany/SUNY  
Center for Human Services Research  
Albany, NY

Jenn O'Connor, Senior Policy Associate  
Schuyler Center of Analysis and Advocacy  
Albany, NY

John Palmer, PhD, Executive Director  
Harlem Hospital Center  
New York, NY

Segrid Renne, MPA, Project Director  
Central Harlem Healthy Start  
New York, NY

Cydney Wessel, Senior Director  
Healthy Families America  
Chicago, IL