



# Maternal, Infant, and Child Health

U.S. Department of Health & Human Services • Public Health Service

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## PROGRESS REVIEW



In the 13th session in the second series of assessments of *Healthy People 2010*, Anand Parekh, Acting Deputy Assistant Secretary for Health (Science and Medicine), chaired a focus area Progress Review on Maternal, Infant, and Child Health. He was assisted by staff of the co-lead agencies for this *Healthy People 2010* focus area, the Centers for Disease Control and Prevention (CDC) and the Health Resources and Services Administration (HRSA). Also participating in the review were representatives from other U.S. Department of Health and Human Services (HHS) offices and agencies. While acknowledging that substantial progress had been made in many fields covered by the focus area, Dr. Parekh noted that disparities among racial and ethnic groups persist as a significant and sometimes growing problem that calls for redoubled efforts on the part of all concerned.

The complete November 2000 text for the Maternal, Infant, and Child Health focus area of *Healthy People 2010* is available online at [www.healthypeople.gov/document/html/volume2/16mich.htm](http://www.healthypeople.gov/document/html/volume2/16mich.htm). Revisions to the focus area chapter that were made after the January 2005 Midcourse Review are at [www.healthypeople.gov/data/midcourse/html/focusareas/fa16toc.htm](http://www.healthypeople.gov/data/midcourse/html/focusareas/fa16toc.htm). Some more recent data used in the Progress Review for this focus area's objectives and their detailed definitions can be accessed at [wonder.cdc.gov/data2010](http://wonder.cdc.gov/data2010). For comparison with the current state of the focus area, the report on the first-round Progress Review (held on October 22, 2003) is archived at [www.healthypeople.gov/data/2010prog/focus16/2003fa16.htm](http://www.healthypeople.gov/data/2010prog/focus16/2003fa16.htm). The meeting agenda, tabulated data for all focus area objectives, charts, and other materials used in the Progress Review can be found at a companion site maintained by the CDC National Center for Health Statistics (NCHS): [www.cdc.gov/nchs/about/otheract/hpdata2010/focusareas/fa16-mich2.htm](http://www.cdc.gov/nchs/about/otheract/hpdata2010/focusareas/fa16-mich2.htm).

### Data Trends

In his overview of data for the focus area, NCHS Director Edward Sondik summarized the current health status of children and mothers in the United States. About 6 million pregnancies occur annually in the country. In 2005, the U.S. rate of births assisted by cesarean section reached the highest level ever recorded. Birth defects affect 1 in 33 U.S. births and, with reference to the rate of infant mortality, the United States is ranked

29th internationally, having fallen from 12th place in 1960. Of the measurable objectives and subobjectives for Maternal, Infant, and Child Health, 21 are improving (i.e., have made significant advances toward their targets), 3 have met or exceeded their targets, 10 are getting worse, 8 show little or no change, and 4 have no trend data to update the baseline estimate. Four subobjectives were dropped at the January 2005 Midcourse Review due to the

lack of a data source. Dr. Sondik examined in greater detail the objectives selected for highlighting during the Progress Review.

**(Obj. 16-1c):** The death rate for infants up to 1 year of age decreased from 7.2 per 1,000 live births in 1998 to 6.8 per 1,000 in 2004. In 2004, the infant death rates per 1,000 live births among the five racial or ethnic groups for which data were available were as follows: Asian/Pacific Islander, 4.7; Hispanic, 5.5; non-Hispanic white, 5.7; American Indian/Alaska Native, 8.4; and non-Hispanic black, 13.6. Although the infant death rate among the non-Hispanic black population has improved markedly since the early 1940s, when it was more than 70 per 1,000, the decrease in the rate has flattened over the past decade. The target for all groups is 4.5 per 1,000 live births. The five leading causes of infant death were congenital abnormalities (20 percent), short gestation or low birth weight (LBW) not elsewhere classified (17 percent), sudden infant death syndrome (SIDS) (8 percent), maternal pregnancy complications (6 percent), and unintentional injuries (4 percent). However, Dr. Sondik stated that a re-analysis of the causes of infant mortality in 2004 revealed that 37 percent of the deaths were due to preterm-related causes.

**(Objs. 16-16a and 16-15):** Consumption of the recommended daily amount of folic acid (at least 400 µg daily) by nonpregnant women ages 15 to 44 years increased from 21 percent in the period 1991–94 to 27 percent in the period 2003–04. The target is 80 percent. This increase in consumption corresponds to a decrease in the incidence of spina bifida and other neural tube defects—from six new cases per 10,000 live births in 1996 to five new cases per 10,000 in 2003. The target is three new cases per 10,000 live births.

**(Objs. 16-11a, -11c):** In 2004, the proportion of preterm births (<37 weeks of gestation) was 12.5 percent, an increase from 11.6 percent in 1998. The target is 7.6 percent. Among the five racial or

ethnic populations for which data were available, the proportions of preterm births in 2004 were as follows: Asian/Pacific Islander, 10.5 percent; non-Hispanic white, 11.5 percent; Hispanic, 12.0 percent; American Indian/Alaska Native, 13.7 percent; and non-Hispanic black, 17.9 percent. Among the non-Hispanic black population, 4.1 percent of the preterm births in 2004 were at less than 32 weeks of gestation, compared with 1.6 percent of births among the non-Hispanic white population. The target is 1.1 percent for all groups.

**(Objs. 16-10a, -10b):** In 2004, LBW (<2,500 grams) affected 8.1 percent of live births, an increase from 7.6 percent in 1998. The target is 5 percent for all groups. Among the five racial or ethnic populations for which data were available, the proportions of LBW infants in 2004 were as follows: Hispanic, 6.8 percent; non-Hispanic white, 7.2 percent; American Indian/Alaska Native, 7.5 percent; Asian/Pacific Islander, 7.9 percent; and non-Hispanic black, 13.7 percent. In 2004, very low birth weight (VLBW) (<1,500 grams) affected 1.5 percent of live births, an increase from 1.4 percent in 1998. The target is 0.9 percent for all groups. Among the five racial or ethnic populations for which data were available, the proportions of VLBW infants in 2004 were as follows: Asian/Pacific Islander, 1.1 percent; Hispanic, 1.2 percent; non-Hispanic white, 1.2 percent; American Indian/Alaska Native, 1.3 percent; and non-Hispanic black, 3.1 percent.

**(Objs. 16-1h and 16-13):** The rate of SIDS deaths among infants aged less than 1 year decreased from 79 per 100,000 live births in 1996 to 55 per 100,000 in 2004 (54 per 100,000 among non-Hispanic white infants, compared with 111 per 100,000 among non-Hispanic black infants). The target is 23 per 100,000. Over the same period of time, the proportion of infants aged less than 8 months who were put to sleep on their backs increased from 36 percent in 1996 to 70 percent in 2004, meeting the 2010 target. In 2006,

the proportion put to sleep on their backs increased to 76 percent.

**(Obj. 16-4):** Maternal deaths increased from a rate of 9.9 per 100,000 live births in 1999 to 13.1 per 100,000 in 2004. The target is 4.3 per 100,000 for all groups. The rate increase seen in 2003 and 2004 is in large part attributed to changes in the reporting system that have led to improved classification of maternal deaths and more accurate estimates of maternal mortality. Among mothers aged 35 years and older, the rate in 2004 was 28.2 per 100,000; among mothers aged less than 20 years, it was 6.6 per 100,000. Among the four racial or ethnic populations for which reliable data were available, the maternal death rates in 2004 were as follows: Hispanic, 8.5 per 100,000; Asian/Pacific Islander, 9.6 per 100,000; non-Hispanic white, 9.8 per 100,000; and non-Hispanic black, 36.1 per 100,000.

**(Objs. 16-9a, -9b):** The proportion of cesarean births from low-risk pregnancies among women with no prior cesarean birth increased from 18 percent in 1998 to 25 percent in 2004. The target is 15 percent. The proportion of cesarean births from low-risk pregnancies among women who had a prior cesarean birth increased from 72 percent to 90 percent over the same time period. The target is 63 percent.

**(Obj. 16-6a):** The proportion of pregnant women who received prenatal care beginning in the first trimester was 84 percent in 2004 (77 percent among the non-Hispanic black population, compared with 89 percent among the non-Hispanic white population). The target is 90 percent for all groups. Among pregnant women aged less than 15 years, the proportion who received such care in 2004 was 49 percent, compared with 90 percent of pregnant women aged 30 to 34 years. Estimates of prenatal care in the first trimester varied by level of education: 73 percent of pregnant women with less than high school education received care in 2004, compared with 82 percent among high school graduates and 92 percent among those with at least some college education.

**(Objs. 16-19a, -19b, -19c, -19e):** The proportion of mothers who had ever breastfed their infants increased from 70 percent among those with infants born in 2000 to 74 percent among those with infants born in 2004. The target is 75 percent. The proportion who breastfed their infants at 6 months of age was 42 percent among those with infants born in 2004, an increase from 34 percent among those with infants born in 2000. The target is 50 percent. The proportion who breastfed their infants at one year of age also increased: from 16 percent among those with infants born in 2000 to 21 percent among those with infants born in 2004. The target is 25 percent. The proportion who breastfed exclusively through their infant's first 6 months of life increased from 10 percent among those with infants born in 2003 to 11 percent among those with infants born in 2004. This new subobjective has a target of 17 percent. Breastfeeding has been shown to lower total healthcare costs by reducing sick care visits, prescriptions, and hospitalizations.

**(Obj. 16-14c):** In metropolitan Atlanta, GA, the median age at which autism spectrum disorder (ASD) was identified among 8-year-old children decreased from 69 months in 1996 to 62 months in 2002, surpassing the target of 66 months. Among the three racial or ethnic groups for which data were available, the median age of ASD identification in 2002 was as follows: non-Hispanic white, 58 months; non-Hispanic black, 61 months; and Hispanic, 68 months. By gender, the median age of ASD identification in 2002 was 65 months for female 8-year-olds and 61 months for male 8-year-olds.

**(Obj. 16-23):** In 2001, the only year for which data are currently available, 35 percent of children aged 18 years or younger received their care in family-centered, comprehensive, and coordinated systems. The target is 100 percent. In that year, the proportions by race and ethnicity were as follows: two or more races, 21 percent; American Indian/Alaska Native, 23 percent; Hispanic, 24 percent; non-Hispanic

black, 29 percent; Asian, 31 percent; non-Hispanic white, 38 percent; and Native Hawaiian and Other Pacific Islander, 38 percent. By education level, the

proportions in 2001 were as follows: less than high school completion, 23 percent; high school graduates, 35 percent; and at least some college, 38 percent.

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## **Key Challenges and Current Strategies**

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In presentations that followed the data overview, the principal themes were introduced by Peter van Dyck, HRSA's Associate Administrator for Maternal and Child Health; Edwin Trevathan, Director of CDC's National Center on Birth Defects and Developmental Disabilities (NCBDDD); and Eve Lackritz, Chief of the Maternal and Infant Health Branch within CDC's National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). Their statements and briefing materials provided to Progress Review participants for later discussion identified a number of barriers to achieving the objectives, as well as activities under way to meet these challenges, including the following:

### **Barriers**

- The underlying causes of racial and ethnic disparities in maternal mortality are manifold and complex, involving social, behavioral, and medical factors that remain poorly understood. Women older than 35, regardless of race or ethnicity, have a higher risk of death from all major causes of pregnancy-related mortality.
- Reduction of maternal deaths requires a detailed knowledge of clinical and behavioral events leading up to death and a framework for identifying opportunities for prevention. Much of this information cannot reliably be obtained from vital records. State-based reviews have strengthened the data in this field, but many States do not have a formal mechanism for reviewing maternal deaths.
- A national CDC study found that the prevalence of complications during pregnancy was often similar for black women and white women, but that black women were more likely to die when they had these complications; that is, they had increased case fatality rates.
- Pre-pregnancy overweight or obesity poses increased risk to both the mother and the infant, including increased risk for gestational diabetes, cesarean section, and subsequent juvenile obesity and diabetes. Because weight loss during pregnancy is not medically recommended, early intervention prior to pregnancy is critical.
- Rates for both primary and repeat cesarean deliveries among low-risk pregnancies have been rising in the United States since 1996, a trend that has been attributed in part to changes in physician practices, demographics, and maternal choice.
- The recently observed decline in SIDS deaths has been offset by an increase in the rate of deaths classified as cause unknown/unspecified, accidental suffocation in bed, and other causes of Sudden Unexpected Infant Deaths (SUID). Thus, most of the decline in SIDS rates since 1999 is likely due to a shift in the diagnosis and reporting of the syndrome.
- In addition to its major impact on the infant mortality rate, preterm birth can also lead to an increased incidence of long-term disability, including congenital neurological problems, such as cerebral palsy. The rate of preterm birth has increased 18 percent since 1990, and recent estimates by the Institute of Medicine (IOM) suggest that at least \$26.2 billion is spent each year for the hospitalization of preterm infants, not including rehospitalizations and long-term care. Approximately one-half of preterm births occur in women with no known risk factors, and no

screening tests exist to accurately identify women who will deliver preterm.

- Lack of support from healthcare professionals and employers is a major barrier to breastfeeding initiation and maintenance. Working full-time outside the home has been strongly associated with lower rates of breastfeeding initiation and shorter duration. Low-income women are more likely than their higher income counterparts to return to work sooner after delivery and to be engaged in jobs that make it challenging for them to continue breastfeeding.
- Recent data from CDC's Autism and Developmental Disabilities Monitoring Network show that the majority of affected children studied in the greater metropolitan Atlanta area had documented developmental concerns before the age of 3. However, the average age of diagnosis was much later—in some cases, after 5 years—by which age, many children would have missed the opportunity for critical early intervention.

### **Activities and Outcomes**

- HRSA's Title V Block Grant to States has operated as a Federal-State partnership for more than 65 years. States and other jurisdictions use Title V funds to design and implement a wide range of programs to improve the health of women, children, and families. Specific initiatives may vary among the 59 States and jurisdictions utilizing the funds, but all programs are aimed at reducing infant mortality. The outcomes of these efforts provide an index of accountability to the States and the Nation as a whole.
- Through an education program for all coroners and medical examiners, CDC headed a national initiative that developed an accurate and standardized method for investigating and reporting of infant death scenes.

- Since 1990, HRSA's Maternal and Child Health Bureau (MCHB) has funded the National Fetal and Infant Mortality (FIMR) Resource Center to support States and communities in examining the causes of fetal and infant death and improving services and resources for women, infants, and their families. The FIMR Resource Center is a joint partnership between MCHB and the American College of Obstetricians and Gynecologists.
- With support from HRSA and other HHS agencies, the IOM is updating its 1990 recommendations on weight gain during pregnancy, as well as suggestions for encouraging use of the recommendations by consumers, practitioners, and the public health community.
- Breastfeeding is one of the six core strategies of the CDC State-based cooperative agreements to address obesity and related chronic diseases using a socio-ecological model. The CDC Guide to Breastfeeding Interventions provides States with an ongoing resource for improving breastfeeding protection, promotion, and support in communities.
- HRSA is completing an employer-based resource kit and companion train-the-trainer curricula to increase employers' awareness of the economic benefits of breastfeeding and to increase the number of employers that have a worksite breastfeeding support program in place. These materials outline manageable, flexible models for implementing or enhancing such programs.
- CDC and its partners have undertaken the largest population-based study of birth defects ever conducted in the United States: the National Birth Defects Prevention Study. Initiated in 1999, the study has collected data from more than 25,000 participants, which has enabled scientists to explore key avenues of research, including the relationship between smoking and risk of orofacial clefts, the use of antidepressants and birth defects, and the relationship between obesity and birth defects.

- To advance toward the nationwide provision of the essential infrastructure for monitoring prevalence and conducting etiologic studies, CDC has assisted in the establishment of surveillance systems for developmental disability and autism in 11 States, which are now components of the Autism and Development Disabilities Network. Four of these States are now monitoring also for cerebral palsy.
- HRSA's Healthy Start program provides services tailored to the needs of high-risk pregnant women, infants, and mothers in geographically, racially, ethnically, and linguistically diverse high-risk communities (defined as communities in which the infant mortality rate is 1.5 times the national average). Comprising nearly 100 federally funded projects, the program targets women who have or have had an adverse pregnancy outcome or are at high risk for one. Focusing on the 2-year interconceptional period after delivery, the program works to ensure that the mother, the infant, and their family have a medical home and the health and social services needed for healthy lives. Healthy Start projects have strong collaborative linkages with State programs, including Title V Maternal and Child Block Grants, Medicaid, and State Child Health Insurance Programs, as well as with local perinatal systems, such as community health centers.
- Through targeted, culturally sensitive health communication interventions, CDC is working with local, State, and national agency partners to increase folic acid consumption by Hispanic women (by encouraging the addition of folic acid to corn flour, for example) and to increase the number of women who consume at least 400 micrograms of folic acid every day. Currently, the proportion of Hispanic women who follow this recommended regimen of daily uptake is less than half that of non-Hispanic white women.
- Through its Leadership Education in Neurodevelopmental Disabilities grant program, HRSA trains individuals from a wide variety of professional disciplines to assume leadership roles and to ensure levels of clinical competence to improve the health of children who have, or are at risk of developing, neurodevelopmental or other related disabilities, such as autism and mental retardation.
- In 2007, CDC published findings from Project Choices which showed that women who received brief motivational counseling sessions were twice as likely to reduce their risk for an alcohol-exposed pregnancy as women who did not receive the counseling. CDC is working with partners to increase the proportion of healthcare professionals who offer screening and brief intervention to high-risk women at the individual and community level. This includes collaboration with the American College of Obstetricians and Gynecologists in development of a tool kit to guide healthcare providers in the screening.

## **Approaches for Consideration**

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Participants in the Progress Review made the following suggestions for public health professionals and policymakers to consider as steps to enable further progress toward achievement of the objectives for Maternal, Infant, and Child Health:

- Make greater use of data collected for other purposes, for example, by third-party payers, to monitor pregnancy complications and maternal illness. Creative use of such data offers the opportunity to better define severity and provide better surveillance of those complications of pregnancy that threaten the lives of women.
- Increase the proportion of healthcare providers who are knowledgeable about the benefits of, and are advocates for, folic acid consumption by women of childbearing age and breastfeeding by new mothers.
- Seek to expand access to prenatal care services nationwide.
- Ensure that the same methodologies used for control of all other epidemics are brought to bear on the prevention of preterm birth, the leading cause of hospitalization among pregnant women.
- Expand research to determine the factors contributing to the disparate rates of maternal mortality between black and white women.

- In health promotion outreach activities directed toward mothers, expectant mothers, and women of childbearing age in general, encourage greater use of home visits by culturally sensitive healthcare workers. Explore ways to assist communities with the cost of such visits.

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[Signed December 26, 2007]

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