

# **KIDS COUNT Indicator Brief**

## **Preventing Low Birth Weight**

The Annie E. Casey Foundation

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Although the infant mortality rate has declined steadily over the past several decades, the U.S. still has a higher rate of infant death than 19 other industrialized nations – largely due to the large number of babies born each year with low birth weights (under 2,500 grams, or 5 lbs., 8 ozs.). Low birth weight (LBW) births accounted for 7.6 percent of all births in 1999, nearly 300,000 babies annually. This is the highest rate of LBW births in a quarter century (NCHS, 2001).

LBW babies fall into one of two categories: those who are born preterm, and those who are born full-term but at a weight that is low for their gestational age. There is also a third category of infants who are now often grouped together with LBW babies—full-term babies whose weight exceeds the LBW threshold but who show other signs of slow prenatal growth as measured, for example, by body length or head circumference (Frisbie, 1997).

The high rate of low birth weight births in the United States is a vexing and persistent medical and social problem—but not an unsolvable one. Experts now believe that such a complex problem demands a broad strategy, one that addresses a wide range of risk factors (Hughes & Simpson, 1995). This *KIDS COUNT Indicator Brief* describes five strategies that are essential to any plan aimed at reducing the rate of LBW births:

- **Promote and Support Research on the Causes of LBW**
- **Expand Access to Health Care**
- **Focus Intensively on Smoking Prevention and Cessation**
- **Ensure that Pregnant Women Get Adequate Nutrition**
- **Address Social and Demographic Risk Factors**

## 1. Promote and Support Research on the Causes of LBW

“More research” typically comes last in a set of recommendations addressing a health or social problem. However, in the case of low birth weight, a better understanding of its causes—especially the causes for its high prevalence in certain inner-city neighborhoods—is arguably a top priority.

- **Make research on the causes of LBW a top priority.** Understanding the roots of low birth weight has been an especially difficult public health challenge. Researchers have established a correlation between birth weight and a variety of factors, including cigarette smoking, low maternal pre-pregnancy weight, low maternal weight gain, teen pregnancy, single motherhood, socioeconomic status, and race. However, the meaning of these associations remains murky, and it is unclear whether these factors influence birth weight directly or indirectly.
- **Support research on the biological pathways that connect specific maternal behaviors with LBW.** Even where connections are easy to demonstrate (like the link between an expectant mother’s eating or smoking habits and her newborn’s health), the biological pathways that lead from cause to effect may not be clear. For example, researchers know that very young mothers are at higher risk of giving birth to an LBW infant, but they are not sure whether the direct cause is largely biological and medical (related to the mother’s physical immaturity, poor nutrition, or inadequate health care) or behavioral (related to her use of cigarettes, alcohol, or illicit drugs).
- **Expand understanding of the impact of social and economic factors.** Social and economic factors are even harder to pin down. Women living in poverty are far more likely than more affluent women to have LBW and/or preterm babies, even when known biological or medical risk factors are taken into account. Researchers are not certain why low socioeconomic status per se increases the risk for LBW. Nor is it clear why social programs for low-income people have had limited success in alleviating the problem. While Medicaid may have contributed to the decline in low birth weight that occurred in the late sixties and early seventies, expanded eligibility for Medicaid in the eighties had only a negligible effect on birth outcomes. Among women receiving public assistance, a modest reduction in LBW has been noted only for those who had known medical risk factors, such as a previous history of pregnancy complications, preterm delivery, or a preexisting medical condition

such as diabetes or hypertension. For no other high-risk group (for example, teenage mothers, unmarried women, or African American women) has any reduction been noted (Hughes & Simpson, 1995).

- **Support research into ethnic variations in LBW and preterm delivery.** The National Institutes of Health (2001) consider “unraveling the underlying reasons for ethnic variations in LBW and preterm delivery” to be one of the greatest challenges to research. Disparities between black and white mothers in birth outcomes are large and persistent. At almost all educational levels, socioeconomic strata, and age categories, African American women have double the LBW rate of white women (Ellen, 2000; Frisbie, 1997). Economic factors alone do not account for these disparities. Studies have found little difference in birth weight distribution among African American infants by income. Moreover, differences in LBW rates between black and white infants are even wider at the upper end of the socioeconomic spectrum than at the lower (Hughes & Simpson, 1995).

The reasons for these disparities are not well understood. Although black women are slightly more likely to smoke than white women, they tend to be lighter smokers. Even if one assumes that many affluent African Americans are only one or two generations away from poverty, straightforward social explanations do not account sufficiently for this differential either. American Indians, who also experience high rates of poverty, have a low incidence of LBW (although a high incidence of infant mortality). Nor do explanations emphasizing minority status tell the whole story. The incidence of LBW among most Hispanic and Asian women is similar to that of whites (Cramer, 1995).

- **Factor new research findings into program design.** A clearer understanding of the causes of LBW could significantly strengthen intervention efforts. If low maternal weight gain is really a marker for poverty, as many researchers have assumed, then nutrition supplementation programs can only address the problem’s symptoms, not its underlying cause. By the same token, if the high rate of LBW among African Americans has less to do with poverty and more to do with psychological stress stemming from racial discrimination and isolation from mainstream society, then intervention strategies that treat race merely as a proxy for socioeconomic status also miss the mark. For all of

these reasons, more and better studies, with sophisticated research designs, are a key to lowering the LBW rate.

## 2. Expand Access to Health Care

Researchers have found that women who have access to adequate health services before, during, and after childbirth have better outcomes and healthier children (Institutes of Medicine, 1988; U.S. Department of Health and Human Services, 1989).

- **Ensure that all expectant mothers have access to regular prenatal care.** Women who do not receive adequate early prenatal care are more likely to give birth to a LBW baby (The Annie E. Casey Foundation, 1999). A mother's medical problems influence birth weight, especially if she has high blood pressure, diabetes, certain infections or heart, kidney, or lung problems. An abnormal uterus or cervix can increase the mother's risk of having a LBW baby. With timely prenatal care, a woman can reduce risk to herself and her baby. Prenatal care can also link women with services aimed at curbing smoking and improving nutrition (Alexander & Korenbrot, 1995).
- **Provide health insurance coverage to all pregnant women to ensure adequate prenatal care.** Reducing the incidence of LBW requires not only expanded access to prenatal care, but also adequate health coverage, since women who lack health insurance are less likely to seek and obtain prenatal care. The American Academy of Pediatrics has called for universal health coverage for all children *and* expectant mothers. Expanding eligibility is not sufficient; efforts are also needed to ensure that all eligible individuals receive Medicaid and SCHIP services, including eligible families who have recently left the welfare rolls (Rosenbaum & Johnson, 2000).
- **Focus on those populations who are most likely to lack coverage.** Efforts to expand health insurance access and enrollment need to focus most intensively on those women who are least likely to be covered. In 2000, almost one-third of all Hispanics and almost one-fifth of all Black non-Hispanics (male and female) did not have health insurance (U.S. Census Bureau, 2001). People living in poverty, high school dropouts, and young adults (ages 18 to

24) are among those that are the least likely to have health insurance. And among women of childbearing age (15 to 44), 25 percent of those living in central cities lacked health insurance, compared to 16 percent of those living in the suburbs. Among Hispanic women of childbearing age living in central cities, 41 percent lacked health insurance (Annie E. Casey Foundation, 2001).

- **Expand access to preconception counseling and care.** Birth outcomes, including birth weight, are affected by the choices a woman makes even before she knows she is pregnant—including safe sex practices, nutrition, exercise, and avoidance of smoking, drinking, drug abuse, and consumption of certain medications. Access to information, both through school curricula and health services, is therefore crucial for women of childbearing age.
- **Expand access to mental health services aimed at reducing stress.** Scientists are beginning to learn more about the connections between mental health and birth outcomes. For example, studies have linked depression during the second trimester of pregnancy with slower fetal growth. Some groups are especially at risk. For example, high levels of depression have been found among low-income pregnant women. Both depression and anxiety may be related to psychological stress, which can affect the mother's and baby's health directly (by affecting neuroendocrine functioning and the immune system) or indirectly (by influencing behaviors such as smoking or drinking) (Chomitz & Cheung, 1995; Hoffman & Hatch, 2000). Stress can also affect an expectant mother's appetite or caloric utilization, leading to a lower gestational weight gain.

### **3. Focus Intensively on Smoking Prevention and Cessation**

Research consistently shows that, even after controlling for other factors, smokers are about twice as likely to deliver a low birth weight baby as non-smokers (Chomitz, Cheung & Lieberman, 1995). Cigarette smoking during pregnancy is the single most important known cause of low birth weight. About 13 percent of all births in the U.S. are to mothers who smoked during pregnancy in 1999 (Annie E. Casey Foundation, 2002). Smoking prevention and cessation efforts are therefore crucial to reducing the LBW rate. In fact, epidemiologists

estimate that up to 25 percent of all LBW could be avoided if pregnant women did not smoke (Kleinman, Mitchell & Madan, 1988).

- **Discourage girls and young women from starting to smoke.** According to the U.S. Public Health Service, about one in five adolescent women are smokers (Blumenthal, 1999). Promising prevention strategies include education, restriction of advertising to young people, reduced access, increased cigarette taxes, and restricted smoking in public places.
- **Design smoking cessation programs should be designed not only for prospective mothers, but also for pregnant women.** While early cessation is the ultimate goal, pregnant women need to understand that it is worthwhile to quit or cut down at any stage. According to a report by the Surgeon General, women who quit cigarette smoking at almost any point during pregnancy have lower rates of LBW babies (U.S. Department of Health and Human Services, 1990).
- **Heighten public awareness of the risks of smoking during pregnancy.** Anti-smoking campaigns should stress the impact of smoking on birth outcomes and children's health. Whenever possible, they should reflect local trends and concerns. Rates of births to mothers who smoke during maternal smoking during pregnancy vary widely among states: from a low of 7 percent in Texas to a high of 26 percent in West Virginia. (Annie E. Casey Foundation, 2002).
- **Develop smoking cessation programs that take into account the special needs of women.** Many experts stress that programs need to take into account barriers that may be particularly steep for women smokers, including a greater likelihood of depression and concerns about weight control. Some of the methods used to help smokers curb their habit, including some medications and patches, are inappropriate for pregnant women.
- **Provide training in smoking cessation to reproductive health workers.** Training in smoking cessation needs to become an integral part of the education of physicians and other reproductive health workers.

- **Ensure that health insurance covers smoking cessation.** Smoking cessation programs should be part of every public and private health insurance package. This coverage could provide the economic means to pay for these smoking cessation activities.

#### **4. Ensure that Pregnant Women Get Adequate Nutrition**

A mother's nutrition has a crucial impact on her child's later health. There is a direct link between a mother's pre-pregnancy weight and the weight of her child; there is also a connection between weight gain during pregnancy and the infant's birth weight.

- **Build nutrition counseling into preconception and prenatal care.** Expectant mothers need to eat a balanced diet; health care providers generally recommend that a woman of normal weight gain 25 to 35 pounds. Women who gain less than 22 pounds are two to three times more likely to have a LBW baby than women who gain at least that amount (Chomitz & Cheung, 1995). Consuming 400 micrograms of folic acid before conception and during the early months of pregnancy is also recommended.
- **Sustain programs that offer nutritional support to low-income expectant mothers and infants.** Designed by the U.S. Department of Agriculture for low-income families at nutritional risk, the WIC program (the Special Supplemental Food Program for Women, Infants and Children) combines nutritional education with vouchers for certain foods. On balance, most studies of the WIC program have shown modest success in reducing the rate of LBW and preterm births (USGAO, 1992). Compared with infants born to non-participants, WIC babies are born weighing more. Moreover, the babies' birthweight appears to be related to their mothers' length of enrollment (Ahluwalia, 1998). In addition to offering nutritional supplementation and monitoring adequate weight gain during pregnancy, the program aids in smoking cessation and refers women for prenatal care.

- **Ensure that food stamps are available to all eligible individuals—including those who have left the welfare rolls.** Many welfare leavers who remain eligible for food stamps are not making use of them (Porter & Primus, 1999). Barriers to participation include lack of information about eligibility, administrative problems, or lack of funding. States can improve the situation by reaching out to those who are eligible for food stamps and streamlining procedures for enrolling and receiving benefits.

## 5. Address Social and Demographic Risk Factors

- **Break the LBW cycle.** Recent research has shown that LBW is often perpetuated from one generation to the next. An infant whose mother was herself an LBW baby is four times more likely to have a low birth weight; the likelihood is six times greater in the case of an LBW father. This finding makes it easier to identify parents at risk of having an LBW baby (Conley & Bennett, 2000). It also suggests that a key to preventing LBW births is to break this cycle—and that will require a better understanding of it. Some researchers are focusing on educational experience as a crucial factor. Studies have shown that LBW is associated with weaker educational progress, even when you control for other factors. In fact, LBW dramatically reduces (by 34 percent) the likelihood of a child’s graduating from high school by age 19, even when that child is compared to siblings growing up in the same family and environment.(source) Researchers have also found that LBW mothers are 40 percent less likely to have graduated from high school than other mothers. (source) It appears that biological health at infancy, through its impact on overall development, affects education and eventual socioeconomic status—which in turn increase the risk of LBW and poor infant health. Providing educational support to LBW babies from the start may be one way to interrupt this vicious cycle.
- **Raise awareness of the links between racial segregation and LBW.** By studying LBW rates in urban neighborhoods, researchers have learned that the risk of LBW for African American mothers is significantly higher in more segregated than in less segregated areas. Some blame the environmental risks associated with inner-city living, such as exposure to environmental toxins, substandard housing, increased risk of infection, decreased availability of high quality medical care, the generally poorer quality of food and the higher prices of groceries. But poverty alone cannot

explain the high rate of LBW births in highly segregated areas. For African American families in these neighborhoods, an increase in income does not lower the incidence of LBW (Aber & Bennett, 1997). Public health officials and other decision makers need to factor into their deliberations the probability that stress related to isolation from mainstream society can, in and of itself, increase the risk of LBW.

- **Increase social supports for mothers at high risk of having LBW babies.** LBW mothers are 27 percent less likely to be married than mothers of normal weight, full-term babies (Ellen, 2000). The reasons for this are not entirely clear. On the one hand, single mothers may be at higher risk simply because they have fewer economic resources. On the other hand, stress due to an unwanted pregnancy or a lack of adequate social supports may be a factor. It is well known, for example, that socially isolated individuals generally have poorer health outcomes than members of a loving family or close-knit community (Singer & Ryff, 2001). It has also been suggested that single mothers, especially teenagers (for whom the probability of LBW is 34 percent higher than for older mothers) are more likely to ignore or deny a pregnancy, thus receiving little or no prenatal care (Conley & Bennett 2000).
- **Promote responsible fatherhood and support fragile families.** Familial ties can enhance pregnancy outcomes, including birth weight. A review of more than 200 studies shows that social support from the baby's father or other family members predicted better outcomes, especially higher birth weight. Mothers with more familial support were less likely to smoke, drink alcohol, or use drugs; had more timely prenatal care; and had less stress (Singer & Ryff, 2001).

Our nation's high LBW birth rate requires urgent attention because it takes such a great human and social toll. These infants—especially those born at the very lowest weights—often face serious health problems as newborns and are at increased risk of long-term physical impairments and developmental delays. According to a 1998 study published in *Pediatrics*, each normal birth that occurs instead of a very low birth weight birth saves \$59,700 in the first year of care (Rogowski, 1998). Annually LBW accounts for about 10 percent of all pediatric medical costs, with an estimated \$5.5 to \$6 million in health care and special education devoted to problems that should have been prevented in the first place (Lewit, 1995). Finally, lowering the LBW rate can help to improve Americans' overall health, since a growing body of evidence suggests that an infant's health status influences adult well-being.

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