Prenatal care is one of the greatest public health achievements of the century, giving states a remarkable return on their investment. With a great body of research that bolsters the argument that prenatal care works, policymakers have played a key role in ensuring that as many expectant mothers as possible receive care—through Medicaid, the State Children’s Health Insurance Program, health departments and other programs. However, despite the remarkable gains made during the past 25 years, the United States still lags behind other industrialized nations in problems that prenatal care can help prevent: very low and low birth weight babies, neonatal and infant mortality, and maternal mortality.

Most women obtain prenatal care through private practice physicians, hospital outpatient departments or health departments. Although Medicaid now pays for 40 percent of all births, fully 13.4 percent of women gave birth in 1999 with no insurance, greatly complicating their access to timely care. Even worse, of roughly 4 million births in 2002, more than 140,000 were to women who received late or no prenatal care. In addition, although rates of smoking among pregnant women are half as high as 15 years ago, 11 percent were smokers in 2002. Women with low-incomes, minorities (particularly African-Americans) and immigrants, teenagers and over-35 mothers, urban and rural, as well as those with mental illness and substance use disorders (including tobacco), are those for whom pregnancy carries higher risk. Key questions for states include the following:

Do mothers have access to an obstetrician? The medical malpractice insurance crisis has taken a heavy toll on the ranks of obstetricians. The American College of Obstetricians and Gynecologists estimates that the average obstetrician will be sued at least 2.5 times during his or her career. With such high litigation rates—and the highest defense costs among all medical specialties at over $34,000 per claim—the field has experienced a marked increase in premiums, causing many doctors to change their practices and some to stop delivering babies. As these problems persist, the number of medical graduates who choose obstetrics dropped.

Do mothers have access to culturally competent care? With African-Americans experiencing poorer outcomes rates—nearly double those of white and Hispanic Americans—a marked disparity still exists in prenatal care. Research consistently points to the need for culturally competent care. Immigrant populations also have special needs. For example, recent research indicates that Indian immigrants—among the more well-educated immigrant populations—have startlingly poorer outcomes than whites.

Do mothers have access to care in the appropriate setting? Teen mothers frequently begin care later in a pregnancy, resulting in poorer outcomes. Recent research highlighted success in lowering the rate of low birth weight babies among teens through prenatal care at school-based health centers.

Do mothers have access to appropriate, quality care? Due to geographic isolation, rural mothers face the problem of access to quality care. A study conducted by the Georgia Department of Health found that almost 25 percent of very-low-birthweight neonatal deaths in the state between 1994 and 1996 could have been avoided had mothers received care with higher technology.

Do mothers have access to mental health and substance cessation/abstinence programs? Research shows both mental health and substance use disorders are factors in birth weight and mortality for infants and mothers. However, mothers often hide these stigmatized conditions from providers. Resistance to admit problems outright, lack of funds to enroll in counseling, and fear of criminal prosecution and/or losing custody of their child prevent many women from seeking this care.

“What Works” features successful programs from Rhode Island and San Mateo County, California, that are engaged actively in improving access to comprehensive prenatal care, with an eyetoward women in high-risk categories. “On the Horizon” explores the emerging movement of promotora programs (community-based, culturally competent programs), which originated in Texas' Hispanic communities and have experienced early success and expansion throughout the Lone Star State.

**U.S. Neonatal Mortality Rate, 1980-2000**

- **1980**
  - Black: 12.5
  - White: 7.5

- **2000**
  - Black: 7.5
  - White: 3.8

*Note: Rate is per 1,000 live births in specified group.*
*Source: Alabama Center for Health Statistics, [Tables/2000/aveTAB55.htm](http://ph.state.al.us/Chs/HealthStatistics/Tables/2000/aveTAB55.htm).*
PSYCHOLOGICAL AND SOCIAL RISK FACTORS

Effects of Psychosocial Risk Factors and Prenatal Intervention on Birth Weight

STUDY AND RESULTS: More than 90,000 pregnant women enrolled in HealthStart, New Jersey's comprehensive prenatal care program, participated in this study, which analyzed the link between psychosocial risk factors and birth weight. Researchers collected data on 11 psychosocial risk factors at the women's first visit and developed customized "plans of care" according to the individual needs. Risk factors included substance abuse, smoking, wantedness of pregnancy, nutritional status, caregiving responsibilities in the home, and affiliation with the criminal justice system as either victim or perpetrator. Interventions took the form of nutrition services, social and psychological services, health education and home visits. Researchers concluded that, although women who smoked or abused drugs and alcohol had babies who were 123 grams to 137 grams lighter than women who did not, treatment for these issues did not result in improved birth weight. In fact, birth outcomes worsened as interventions increased. Unwantedness of pregnancy and connection to the criminal justice system also resulted in lower birth weights, but home visits did not result in higher birth weights. Nutritional services such as WIC, however, provided noteworthy benefits in birth weight; WIC recipients had an average 48-gram increase in birth weight.

WHAT'S IMPORTANT: Published in 2000, this study examines data from an era before managed care. The study concludes that managed care may erect barriers to high-technology care among women in higher socioeconomic strata, "who may be more at the mercy of managed care," that limit referrals to specialists and high technology care.


TECHNOLOGY AND PRENATAL CARE

Use of High-Technology Care among Women with High-Risk Pregnancies in the United States

STUDY AND RESULTS: This study links two data sets from the 1988 National Maternal and Infant Health Survey and a survey of all obstetrical hospitals and analyzes the resulting composite data. Noting that access to high-technology care historically has reduced rates of infant mortality, researchers sought to examine women's access to it. Researchers categorized pregnancies as either High Risk I (at risk of pre-term birth and low birth weight) or High Risk II (the same risks as High Risk I, plus an additional diagnosis), and examined potential differences in geographical access to care. The study found that 71 percent of High Risk I and 56 percent of High Risk II women received high-technology care. Only 50 percent of High Risk I and 39 percent of High Risk II women in rural areas received such care, while their urban counterparts received treatment in high-technology facilities two to three times more often. Researchers found that prenatal care in a private setting reduced the chance of high-technology delivery.

WHAT'S IMPORTANT: This study tested the effectiveness of an audio computer-assisted self-interview (A-CASI) program to screen pregnant women for alcohol consumption that they might be reluctant to discuss openly with health care providers. The computer interview consisted of both brief and detailed questions about use of alcohol during the three months before and during pregnancy, demographic questions including literacy and experience with computers, general medical questions, and pregnancy history questions. To accommodate participants at all levels of literacy, each question was heard aloud via headphones and also displayed on the computer monitor, and women answered questions by touching the screen with a stylus. 507 English-speaking pregnant women over age 18 in the District of Columbia took part. Researchers guaranteed confidentiality, a key aspect of this study. Ninety-six percent liked using the computer, and women answered questions on the computer. Audio Computerized Self-report Interview Use in Prenatal Clinics

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WHAT'S IMPORTANT: This type of technology could be extremely beneficial in helping to identify drinking and intervene before the fetus is harmed. Computer screening could be extended to other types of risk behaviors that women may be tempted to hide from health care providers. Furthermore, its efficacy in an urban clinic setting offers promise in terms of relieving overworked staff. Programs in other languages could be developed for non-English speakers.

Reduced Low Birth Weight for Teenagers Receiving Prenatal Care at a School-Based Health Center: Effect of Access and Comprehensive Care

STUDY AND RESULTS: This study examines access to and comprehensiveness of care, and birth outcomes for teenagers receiving prenatal care in school- and hospital-based settings. The study, a retrospective cohort study of 390 teens, used existing data from medical records, birth certificates, and school and hospital databases to examine and compare the care and outcomes. The study found that teenagers who received prenatal care in a school-based setting were significantly less likely to deliver a low birth weight infant than teenagers who received care at the hospital-based setting. The authors cited comprehensiveness of care as the major reason. The hospital and school sites both used the same prenatal charting forms, but the school-based site used additional forms for documenting psychosocial assessments.

WHAT'S IMPORTANT: The authors conclude that the use of school-based health centers as a delivery model for pregnant teenagers is warranted and that providers that are caring for pregnant teenagers should include screening and advice for behavioral and psychosocial conditions as a part of prenatal care.


Maternal Characteristics Associated with Place of Delivery and Neonatal Mortality Rates among Very-Low-Birthweight Infants, Georgia

STUDY AND RESULTS: This study, commissioned by the Georgia Department of Human Resources, examines access to subspecialty care centers in the state to determine steps the state could take to improve statistics on very-low-birthweight births (VLBW) to achieve Healthy People 2010 goals. The study sample included 4,770 VLBW infants. Researchers found that the strongest factor in determining receipt of subspecialty care is county of residence. Mothers residing in counties with such facilities delivered in those facilities 89 percent of the time. The farther a mother resides from a subspecialty facility, the less likely she will deliver there, with 71 percent of mothers in adjacent, and 53 percent in non-adjacent, counties doing so. Researchers also found that adequacy of prenatal care contributed to likelihood of delivery in such facilities. The study estimates that between 760 and 1,100 VLBW infants might have survived if mothers had received care in subspecialty facilities.

WHAT'S IMPORTANT: This study examines several critical issues surrounding infant mortality: adequacy of prenatal care, siting of facilities and geographic disparities. Researchers advise that support of strong, collaborative, regional perinatal care networks should help mothers and infants receive optimal levels of care.

How close are we to eliminating health disparities in the realm of prenatal care?

We have a long way to go. It continues to be a major, extremely important issue. We still have major disparities around infant mortality, low birth weight, premature birth, and other measures of overall health of mothers and children. These indicators are a strong reflection of whether our society is doing a good job of promoting the health of its citizens. We have made some progress; certainly, there is more awareness and some programs have been developed that are very positive. However, to see the kind of systems change we need to affect these disparities requires a level of commitment that we have yet to reach.

What obstacles remain and where have we made progress?

What I try to do is help communities address the root factors that contribute to these disparities rather than looking only at risk factors and obstacles. We didn't just look at a problem like low birth weight and say, “we've got to address cigarette smoking,” or “we need to improve the nutritional status of pregnant women.” We are asking, “what are the underlying factors that contribute to the inequities that are underlying the disparities, and how can we best address those?” We're trying to shift the paradigm. We need to create opportunities for all people who care about this issue to come together to address it. This is a major change because it means that the people who are affected by these disparities need to be involved from the start. We have systems that do not honor people of all cultures. We don't look at strengths—our approach is based on deficiency and deficits and mortality and morbidity, but when we really listen to families that are affected by these disparities, what they cry out for is to be treated with respect and dignity.

What kind of successes did you have using these principles?

State HMO leaders have begun to work with community-based organizations to set up outreach efforts and make services more culturally competent. The Medicaid program in Wisconsin has become more respectful in honoring families and has tried to make the process of enrolling in Medicaid easier. Gains included hospitals becoming more conscious of the fact that many people don't feel they're treated with respect and dignity. The community health centers have certainly made improvements in the services they provide. For us to really influence these issues, we need to put our resources into it—our human resources, our financial resources, our intellectual resources, our hearts and our minds—because it's a huge effort. If we can't provide equal opportunities for babies to have a good start in life, we really don't fix the underlying factors that contribute to these disparities rather than looking only at risk factors and obstacles. We didn't just look at a problem like low birth weight and say, “we've got to address cigarette smoking,” or “we need to improve the nutritional status of pregnant women.” We are asking, “what are the underlying factors that contribute to the inequities that are underlying the disparities, and how can we best address those?” We're trying to shift the paradigm. We need to create opportunities for all people who care about this issue to come together to address it. This is a major change because it means that the people who are affected by these disparities need to be involved from the start. We have systems that do not honor people of all cultures. We don't look at strengths—our approach is based on deficiency and deficits and mortality and morbidity, but when we really listen to families that are affected by these disparities, what they cry out for is to be treated with respect and dignity.

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How can state legislatures assist in reducing disparities in prenatal care?

The Wisconsin legislature helped us quite a bit. Some Wisconsin legislators took the time to become aware of these issues. The key is for legislators to take the time to become aware of these issues.
Rite Care Improves Access to Prenatal Care

Rhode Island designed the prenatal component of Rite Care—its Medicaid managed care program—to marshal early intervention strategies and improve the health of newborns. The state focused on prenatal care not only to improve health outcomes but also to produce cost savings. Healthier births mean fewer emergency room visits, shorter hospital stays and early treatment for chronic conditions.

Rite Care tackles many barriers, such as disorganized delivery systems, low capacity and low cultural competency. The state has worked to simplify the application process, make services accessible and conduct patient outreach. To help ensure access, the program offers increased reimbursement rates to prenatal and obstetrical providers. The state requires that health plans conduct outreach to all members of childbearing age and that providers see enrollees as early as possible in the first trimester and within three weeks of a positive pregnancy test. To help women get to their appointments, the program offers bus passes and cab vouchers and administers a toll-free information line that connects women with counselors who enroll them into prenatal care.

Rite Care's proactive approach to investing in high-quality care for expectant mothers achieved considerable results. Researchers attribute improvements to the targeted interventions that increased the number of obstetric providers serving Medicaid patients and, consequently, easing the burden on community health centers and hospital clinics.

A January 2004 report ranked Rhode Island first in the nation with the lowest percentage of births to women who received late or no prenatal care at only 1.1 percent, less than one-third of the national average of 3.7 percent.

### Table 1. Improvements in Access to Care and Infant Health

<table>
<thead>
<tr>
<th>Measure</th>
<th>1993 (pre-Rite care)</th>
<th>2000 (post-Rite care)</th>
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<tbody>
<tr>
<td>Pregnant Medicaid beneficiaries receiving adequate prenatal care</td>
<td>56 percent</td>
<td>73 percent</td>
</tr>
<tr>
<td>Percentage of female Medicaid beneficiaries who began prenatal care in the first trimester</td>
<td>77 percent</td>
<td>84 percent</td>
</tr>
<tr>
<td>Incidence of low-birth-weight babies in Providence</td>
<td>10 percent</td>
<td>5 percent</td>
</tr>
<tr>
<td>Percentage of infants who had their first physician visit within the first two weeks</td>
<td>54 percent</td>
<td>70 percent</td>
</tr>
<tr>
<td>Percentage of infants who waited less than two weeks for specialty care</td>
<td>44 percent</td>
<td>71 percent</td>
</tr>
</tbody>
</table>


San Mateo Prenatal to Three Initiative, California

“Pre to Three,” San Mateo County’s largest home visitation program, increases parent confidence and skills, promotes early identification of medical and developmental problems and provides a seamless array of services for infants, toddlers and families. The initiative is a countywide collaboration among a number of regional and local agencies. Prenatal care facilities, hospitals and other agencies refer low-income families to the initiative’s centralized registration system, which then assigns them to one of three home visit teams. The teams are comprised of public health nurses, social workers and specialists who visit women during pregnancy and up to eight weeks after birth. The program interventions include home visitation, specialty services (such as mental health and substance abuse counseling, infant and child services, and literacy efforts), community outreach, and parent support and education groups.

In 2002, an evaluation of the initiative found that the number of families served increased substantially from 1,870 to 5,521. Program costs per family decreased from $222 per visit to $111 per visit in the last year. The shows a range of improvements in self-reported parental behaviors as the program progressed, displayed in Table 2.

### Table 2. Findings from Prenatal to Three Evaluation

<table>
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<tr>
<td>Percent of mothers who breastfed after birth</td>
<td>87.7 percent</td>
<td>88 percent (exceeding Healthy People 2010 standards)</td>
</tr>
<tr>
<td>Percent of mothers who continued breastfeeding after six months</td>
<td>30.1 percent</td>
<td>51.3 percent (exceeding Healthy People 2010 standards)</td>
</tr>
<tr>
<td>Percent of mothers reporting smoking during their pregnancy</td>
<td>17.4 percent</td>
<td>2.9 percent</td>
</tr>
<tr>
<td>Percent of mothers with a history of mental health problems receiving a home visit</td>
<td>54.1 percent</td>
<td>80.8 percent</td>
</tr>
<tr>
<td>Percent of parents who reported symptoms of postpartum depression receiving a home visit</td>
<td>56.2 percent</td>
<td>78.9 percent</td>
</tr>
<tr>
<td>Percent of families with premature infants receiving a home visit</td>
<td>72 percent</td>
<td>89.5 percent</td>
</tr>
</tbody>
</table>

Pregnant women who are most at risk are often difficult to reach. Some lack basic information about the importance of prenatal care. Others are unaware of the services available to them or unsure of how to access them. For these women, community health workers (CHW) often serve as the critical link to vital prenatal care.

Known by a variety of names—lay health workers, promotoras, outreach educators, peer health educators and community health outreach workers—CHWs work to improve pregnancy outcomes by educating women about basic prenatal services and bringing them into the health care system. In some places, CHWs go door-to-door to identify pregnant women and develop relationships with them during their pregnancies. They assist women and their families with applications for Medicaid, WIC and other programs and offer informal counseling and basic health education on topics such as substance abuse, HIV transmission, breastfeeding and lead poisoning prevention.

An estimated 12,000 CHWs serve in programs across the United States. As states begin to recognize the integral role these health workers play in linking services and improving health outcomes, many state legislatures may consider the formal credentialing of CHWs. By setting standards for certified CHWs, states can ensure that these workers have a minimum knowledge base and can provide them with a defined set of services and level of credibility within the health community.

Several states already have begun discussing credentialing, and two states—Ohio and Texas—have passed legislation requiring certification of CHWs. After establishing a temporary committee to examine issues about outreach and education for promotoras and community health workers, the Texas Legislature passed legislation in 2001 that required the Department of Health to develop a community health worker training and certification program. In doing so, Texas became the first state to formally credential CHWs. The Ohio legislature followed suit in 2003. It created a CHW credentialing program under the Board of Nursing. In Ohio, CHWs work one-on-one with pregnant women before and after the child is born to make sure they keep appointments and understand the importance of checkups and childhood screenings. The credentialing program will help Ohio provide training for the CHWs and encourage CHWs to advance their careers.

Some potential drawbacks exist to credentialing CHWs. Credentialing requirements create barriers for others who are trying to enter the field and training may distance them from the neighbors they are seeking to help. Furthermore, CHWs provide such a broad array of services that developing a defined set of skills or knowledge base may be difficult. However, states can expect to hear more about credentialing of CHWs as their use in reaching the pregnant women who are most at risk continues.

The Maternal and Child Health Bureau of the Health Resources and Services Administration (www.mchb.hrsa.gov) administers Title V, one of the largest federal grant programs. For more information about the Women, Infants and Children Program (WIC)—run by the U.S. Department of Agriculture—visit www.fns.usda.gov/wic.

The Centers for Disease Control and Prevention (www.cdc.gov) and the Annie E. Casey Foundation (www.aecf.org) offer a wealth of data about how the nation and individual states rank in terms of birth weight, preterm birth, infant mortality and initiation of prenatal care.

The Texas Department of Health’s Office of Public Health Practice (http://www.tdh.state.tx.us/ophp/chw/default.htm) maintains a page with information about the Lone Star State’s Promotora credentialing program, the first in the nation.