

Medicaid and Preterm Birth and Low Birth Weight: The Last Two Decades

Emmanuel A. Anum, MBChB, M.P.H., Ph.D.,¹ Sheldon M. Retchin, M.D., MSPH,²
and Jerome F. Strauss, III, M.D., Ph.D.¹

Abstract

Objectives: To determine if (1) birth outcomes among women on Medicaid differ significantly from outcomes of those with private insurance, after controlling for known risk factors, and (2) enhanced prenatal care influences care use and birth outcomes.

Methods: This is a review of studies published between 1989 and 2009 that examined birth outcomes (1) between women on Medicaid and those with private insurance and (2) among Medicaid enrollees who received comprehensive prenatal care.

Results: When corrected for risk variables, birth outcomes are not different between private insurance and Medicaid patients. The impact of comprehensive prenatal care programs on birth outcomes varies across states and regions.

Conclusions: There is a need for critical evaluation of comprehensive programs in a regional and state context to determine opportunities for improvement.

Introduction

MEDICAID IS A VITAL PROGRAM for socioeconomically disadvantaged women in their reproductive years. In 2003, 12% of all women of childbearing age and 37% of poor women in that age group were dependent on Medicaid for healthcare coverage.¹ States must now cover pregnant women with incomes up to 133% of the federal poverty level, and most set more generous eligibility standards.² The proportion of pregnancies covered by Medicaid increased from 17% in 1985 to 35% in 1998.³ This expanded coverage was implemented to improve birth outcomes by improving access to prenatal care.

From 1991 to 2004, the number of Medicaid beneficiaries enrolled in some form of managed care increased from 2.7 million to 27 million. In 2004, approximately 60% of all Medicaid enrollees received benefits through managed care (www.cms.hhs.gov). The rationale for moving toward managed care was based on presumed cost saving, improved access, and continuity of care. Findings from studies that have compared birth outcomes between Medicaid recipients in managed care and those in fee-for-service programs have shown that preterm birth and low birth weight rates do not differ between the two groups.^{4–13}

Although the Medicaid program has expanded eligibility to cast the net widely for improving birth outcomes, pregnant women with Medicaid often delay seeking prenatal care.¹⁴ A major issue is that the eligibility criterion is pregnancy; thus, coverage begins with the pregnancy and conventionally ends 60 days afterward. Thus, despite the availability of coverage, the eligibility is determined by the event itself—an event that is frequently unanticipated. Therefore, the prior insurance status of the woman before becoming eligible for Medicaid can determine whether prenatal care is delayed. Not surprisingly, low-income women are more likely to be uninsured before becoming eligible for Medicaid. Compared with women with private insurance, Medicaid recipients are more likely to have more risk factors for adverse birth outcomes, but the impact of method of payment for prenatal and delivery services on care use and birth outcomes has not been fully explored.

Rates of preterm birth vary in different regions of the United States and among states.^{15,16} Preterm birth rates are highest in Mississippi, Alabama, Louisiana, Kentucky, South Carolina, and the District of Columbia and lowest in New Hampshire, Vermont, Oregon, Minnesota, Alaska, Connecticut, and Idaho.¹⁵ The Southeast has the highest preterm birth rates (ranging from 12.1% in Virginia to 18.3% in Mississippi).

¹Department of Obstetrics & Gynecology and ²Department of Medicine, Virginia Commonwealth University, Richmond, Virginia.

The Northeast with a range of 9.2% (in Vermont) to 12.7% (in New Jersey), and the West, with rates ranging from 10.3% (in Oregon) to 14.3% (in Nevada), have the lowest preterm rates. The Midwest region (ranging from 10.4% in Minnesota to 13.2% in Ohio) and Southwest region (ranging from 12.7% in Arizona to 13.6% in Texas) have preterm rates that are intermediate.¹⁵

We conducted an extensive literature review of studies published in the last two decades with the goal of determining (1) if birth outcomes among women on Medicaid differ significantly from those of women with private insurance, after controlling for known risk factors, and (2) if enhanced prenatal care influences birth outcomes.

Materials and Methods

A Medline search was conducted of studies published between 1989 and 2009 that examined prenatal care use and birth outcomes (1) between women on Medicaid and those with private insurance and (2) among Medicaid enrollees who received comprehensive prenatal care. Different combinations of search words and phrases were used. These included the following: (1) Medicaid + comprehensive prenatal care + birth outcomes, (2) Medicaid + enhanced prenatal care + birth outcomes; and (3) birth outcomes + Medicaid + private insurance. In all cases, once appropriate studies had been identified, references cited and all other related articles were reviewed. Studies that evaluated prenatal care adequacy but did not report on pregnancy outcomes were excluded. Preterm birth and low birth weight were the focus of the study. To be included, a report had to describe the participant selection process, have an adequate sample size, and adjust for maternal demographic and other preterm birth/low birth weight risk factors. Well-designed studies on community-based evaluation programs were also included.

Results

Are birth outcomes among women on Medicaid significantly different from those of women with private insurance?

Compared with women with private insurance, those on Medicaid have been shown to be a high-risk group for adverse birth outcomes.^{17,18} The Medicaid group is younger, with a high prevalence of smoking and illicit drug use and late enrollment into prenatal care, but when known preterm and low birth weight risk factors have been controlled for, do women on Medicaid have worse birth outcomes than non-Medicaid women? Using data from the 1988 National Maternal and Infant Health Survey, Kaestner¹⁴ found no statistically significant relationship between insurance status and birth weight.

In a comparison of prenatal use and birth outcomes between Medicaid and non-Medicaid enrollees of managed care plans in Washington state, Krieger et al.¹⁷ reported that mothers enrolled in Medicaid managed care were more likely to have late enrollment or no prenatal care. The percentage of mothers who enrolled during the last trimester of pregnancy was 25.3% for the Medicaid group and only 2.3% for the non-Medicaid group. The low birth weight rates for the Medicaid and non-Medicaid enrollees were 5.6% and 3.3%, respectively. After adjusting for maternal age, maternal race, and

marital status, the risk of low birth weight for Medicaid recipients, relative to the non-Medicaid mothers, was not statistically significant (Table 1).

A study that compared obstetrical care in a random sample of women who were either on Medicaid or privately insured and entered prenatal care at low risk found similar prenatal care and resource use. The two groups showed no significant differences in low birth weight or preterm birth rates.¹⁹

Howell et al.²⁰ compared obstetrical care and birth outcomes among four groups of women in California: short-term Medicaid enrollees (enrolled for 0–3 months of pregnancy), long-term Medicaid enrollees (enrolled for 4 or more months of pregnancy), non-Medicaid mothers living in low-income areas, and non-Medicaid mothers residing in high-income areas. Their findings revealed that Medicaid and non-Medicaid mothers residing in low-income areas had increased likelihood of receiving late prenatal care compared with mothers living in high-income areas. Although mothers with a short-term Medicaid enrollment had a 70% increased risk for low birth weight relative to non-Medicaid mothers residing in high-income areas, the low birth weight risk for long-term Medicaid enrollees was not different from that of non-Medicaid mothers residing in high-income areas. The statistically significant difference in low birth weight risk between the short-term Medicaid enrollees and residents in high-income areas may have been a result of selection bias. Medicaid eligibility procedures in California during the study period allowed women to enroll retroactively after experiencing a high-cost delivery, and this retroactive coverage could have inflated the low birth weight rate among this group of women.

Marquis and Long²¹ examined the effect of Medicaid expansion on prenatal care access and birth outcomes for pregnant women in Florida from 1989 to 1994. Medicaid enrollees receiving care in the public health system had low birth weight rates similar to those of women with private insurance. Medicaid women who received care in the private system, however, had a significantly higher low birth weight rate than the privately insured.

Compared with Medicaid recipients, women with private insurance are more likely to be better educated, to be of higher socioeconomic status, and to have adequate prenatal care. These are all factors associated with improved birth outcomes, but after controlling for preterm and low birth weight risk factors, method of payment for prenatal care and delivery services does not appear to influence birth outcomes. Medicaid groups with poorer birth outcomes relative to the privately insured were those receiving Medicaid in the private system and those who enrolled for 3 months or less during their pregnancy (Table 1). While noting that Medicaid recipients may receive less prenatal care than privately insured women, Kaestner¹⁴ found no evidence that the prenatal care given to Medicaid recipients is of lower quality than that received by privately insured women.

Medicaid birth outcomes under enhanced prenatal care services

Prenatal support services designed to improve birth outcomes among Medicaid recipients include psychosocial, nutritional, and health promotion assessment, counseling and referral to public health and social services, and making transportation services available to those who might need

TABLE 1. PRETERM BIRTH AND LOW BIRTH WEIGHT RATES BETWEEN MEDICAID AND NON-MEDICAID WOMEN

Reference	Study	Population/ location	Medicaid group	Comparison group	Low birth weight, %	Preterm birth, %	Variables controlled for
17	Krieger et al., 1992	Washington	Managed care	Non-Medicaid managed care	Difference ns		Age, race, smoking, parity, marital status, interbirth interval, previous preterm delivery, length of enrollment
21	Marquis and Long, 2002	Florida	Medicaid, public system	Privately insured	Difference ns		Age, marital status, previous live births, race/ethnicity, presence of risk factors
20	Howell et al., 1991	California	Medicaid, public system Medicaid, private system Medicaid enrollment for 0-3 months of pregnancy Medicaid enrollment for 4 or months of pregnancy	Medicaid, private system Privately insured Non-Medicaid mothers residing in high-income areas Non-Medicaid mothers residing in high-income areas	Lower in Medicaid group Higher in Medicaid group Higher in Medicaid group Difference ns		Race and ethnicity, age, parity, and complications of pregnancy
19	Dobie et al., 1998	Washington	Medicaid, low risk	Privately insured, low risk	Difference ns	Difference ns	Marital status, age, smoking status, previously pregnant status, race, ethnicity, pregnancy complications, provider rural/urban status, provider practice type

ns, nonsignificant.

them. The overall impact of these services on pregnancy outcome is, however, not known.

In a prospective study in which pregnant women were randomly assigned to comprehensive prenatal care or standard prenatal care, McLaughlin et al.²² found comprehensive prenatal care to be associated with higher birth weight for primiparous but not multiparous women. Comprehensive care services provided included psychosocial support for the mothers, education, and promotion of healthy behavior during pregnancy. Earlier multicenter randomized trials of the effect of comprehensive prenatal care on birth outcomes among women considered to be at high risk for low birth weight, however, found no significant differences in low birth weight incidence between intervention and control groups.^{23,24} Klerman et al.²⁵ examined birth outcomes between two groups of high-risk Medicaid-eligible African American women randomly assigned to receive augmented prenatal care or usual care. The augmented care included additional appointments, extended time with clinicians, education on behaviors likely to reduce risk, smoking cessation programs, and social support services. Although more smokers in the augmented group quit smoking, the two groups did not have differences in birth outcomes. Hodnett and Fredericks²⁶ reviewed 16 randomized trials that evaluated the effects of social support programs on pregnancy outcome among at-risk women and reported that such programs were not associated with improvements in any perinatal outcomes.

Studies that evaluated Maternal and Infant Care (MIC) programs that offer comprehensive prenatal care targeted toward high-risk populations have reported varying impact on birth weight and preterm birth.²⁷ Studies on centering (CenteringPregnancy), an innovative patient-centered model of prenatal care that provides care in group sessions to groups of 8–12 pregnant women with similar gestational age and integrates health education and group support with routine prenatal care, have reported significant improvements in low birth weight and preterm birth rates among women in the Centering group.²⁸

Studies conducted in the West of the country^{29–32} all show significantly improved birth outcomes for Medicaid recipients who received enhanced prenatal care that included psychosocial, nutrition, and health education services. Korenbrot et al.²⁹ evaluated perinatal care services in California and reported a reduced low birth weight risk for Medicaid mothers who received enhanced prenatal services in which social work, nutrition, and health education services were coordinated with clinical perinatal services, relative to those receiving the routine Medicaid services. Homan and Korenbrot³⁰ also reported that receiving one or more nutrition, health education, and psychosocial service sessions each trimester contributed significantly to better birth outcomes. Adequacy of service delivery did not, however, explain differences in outcome at individual provider sites or setting types.

Ricketts et al.³¹ examined low birth weight rates by prenatal risk factors among Medicaid-eligible women who received care coordination, nutritional, behavioral, and lifestyle risk, or psychosocial services through Colorado's Prenatal Plus program. Their findings showed a significant reduction in low birth weight rate among women who resolved all their risk compared with those who did not resolve their risk (7.0% vs. 13.2%, $p < 0.001$). Among women who were smokers

when they started the program, 51% stopped smoking during pregnancy. Of women reporting psychosocial or mental health problems, 55% had risk resolution during pregnancy. Among women with inadequate weight gain from nutritional risk, 62% resolved their risk. Between 20% and 37% of women with multiple risks were able to resolve all their risks before delivery.

Baldwin et al.³² evaluated the effect of Washington state's expansion in prenatal care services for Medicaid enrollees on birth outcomes. Their findings showed that receiving Medicaid-sponsored support services, including nutritional and psychosocial counseling, health education, case management, and home visiting, was associated with a decrease in low birth weight rate among women who had high risk for giving birth to low birth weight babies. Among nonmedically high-risk Medicaid recipients, provision of support services and case management had little impact on birth weight.

Most studies conducted in the Northeast^{33–36} also showed that enhanced prenatal care has a positive impact on birth outcomes. However, in a 2005 study that examined the effects of timing of initiation of prenatal care on birth outcomes among Medicaid recipients in enhanced prenatal care, Reichman and Teitler³⁷ reported no significant effects on birth weight or preterm birth with prenatal care initiation in any trimester. The authors suggested that most pregnancy complications result from life circumstances and behaviors preceding the pregnancy and are difficult to reverse, even with enhanced prenatal care. In a 1996 publication, Reichman and Florio³⁴ reported reduced low birth weight rates among black Medicaid recipients in New Jersey's HealthStart program who received culturally sensitive enhanced prenatal care. There was, however, no evidence that the program improved birth outcomes among whites. Improved prenatal care and lower low birth weight rates were also reported in a cohort of Hispanic women who received culturally sensitive comprehensive, interdisciplinary prenatal care at a community hospital in Boston, Massachusetts.³⁶ Reichman and Teitler³⁵ also reported improvements in birth weight with programs that addressed nutritional needs but not with comprehensive programs that targeted behavioral modification. Prenatal participation in a Supplemental Food Program for Women, Infants, and Children (WIC) has been associated with reduced low birth weight rates among both black and white Medicaid recipients in North Carolina.³⁸

Examination of the impact of enhanced prenatal care on birth outcomes among Medicaid recipients in New York City showed a positive association between participation in the Prenatal Care Assistance Program (PCAP), New York State's comprehensive perinatal care initiative, and improved birth outcome.³³ Women enrolled in PCAP had lower preterm birth and low birth weight rates.

Three of the four studies dealing with the Midwest^{39–42} reported significant improvements in birth outcome. Keeton et al.³⁹ examined birth outcomes among Medicaid recipients who participated in the Illinois Family Case Management Program, a comprehensive care program designed to provide services, including access to prenatal care, pediatric primary care, specialty services, identification and removal of health-care access barriers, and health education. Their findings showed that women in the program were less likely to have low birth weight infants compared with those in Medicaid

only. Silva et al.⁴² also reported a lower rate of low birth weight delivery among women who participated in the Family Case Management Program in Winnebago County, Illinois, but found that increasing number of visits or increasing time with a family case manager provided no additional protection against low birth weight.

A study of a community-based prenatal care program in Omaha that provided services that included case management, health education, screening, home visits, and transportation to participants also reported improvements in birth outcomes, especially for black non-Hispanic participants.⁴⁰ In contrast, a randomized clinical trial that examined the impact of a short-term home-based psychosocial intervention among high-risk low-income black women in Cleveland, Ohio, reported no decrease in low birth weight rate among women who received home visits that focused on nutrition, smoking and drug education, and access to community support services.⁴¹ Subjects in the intervention group had a greater number of prenatal visits, but the increase in clinic visits was not correlated with a reduction in low birth weight.

Studies conducted in the Southeast showed the greatest variability in the effect of enhanced prenatal care on birth outcome. In an evaluation of a community-based prenatal intervention project designed to reduce low birth weight rates in a predominantly African American neighborhood in the District of Columbia, Herman et al.⁴³ reported no differences in low birth weight rates between study and comparison groups.

Buescher et al.⁴⁴ reported that compared with women who received care coordination Medicaid services, women who did not had a 21% higher low birth weight rate and 23% higher infant mortality rate. Mothers who received care coordination for ≥ 3 months had better outcomes than those who received it for < 3 months. A comparison between Medicaid enrollees receiving care in the public health system and those receiving care in the private system found that women in the public system had a significantly lower low birth weight rate (7.6%–7.7% vs. 8.9%–9.8%).²¹ Buescher and Ward⁴⁵ also found that North Carolina and Kentucky Medicaid enrollees who received prenatal care outside public health departments were more likely to have low birth weight infants compared with Medicaid women receiving care at health departments. The authors attributed this difference to the comprehensive prenatal care the public health departments provide. However, a study that examined birth outcomes of Medicaid-eligible women receiving care that included nutritional, psychosocial, and health educational risks assessment and counseling, in addition to clinical care from public and private providers certified to deliver enhanced prenatal care services in California, found no significant differences in low birth weight and preterm birth risk between public hospital clinics and private physicians' offices after adjusting for risk factors.⁴⁶

A study that examined the effect of prenatal care intervention services on preterm birth among Medicaid recipients in South Carolina's High Risk Channeling Program reported a positive association between receiving nutritional services and preterm birth.⁴⁷ Women who received one nutritional service had a 20% reduction in risk for preterm birth compared with those who received no such service, and mothers who received two or more nutritional services were 40% less likely to have a preterm birth. Receiving social services had no

association with preterm birth. Newman et al.⁴⁸ examined the impact that the South Carolina Partners for Preterm Birth Prevention, a public/private partnership for the reduction of premature birth in a Medicaid population, has on preterm birth and reported significant reduction in the rate of preterm births at < 28 weeks. There was, however, no reduction in the overall frequency of preterm birth or low birth weight.

An evaluation of a nurse case management and home visitation program, part of a multicomponent intervention program comprising education, support, and referral services on birth outcomes among African American women, showed that pregnant women who received home visits were less likely to have preterm birth compared with those who did not. However, no significant association with low birth weight was reported.⁴⁹

Piper et al.⁵⁰ evaluated a prenatal care case-management program for Medicaid recipients in Tennessee (Project HUG) that included care provider referrals, visit scheduling, nutritional and health education, and assistance with transportation and reported improved prenatal care use among HUG participants. The project's impact was greater in black women than in white women. No significant reduction in incidence of very low birth weight or preterm births was noted, however. Nason et al.⁵¹ also found comprehensive prenatal care coordination provided to Medicaid recipients in Birmingham, Alabama, to be associated with improved birth outcomes in black women but not white women.

Programs that integrate psychosocial, nutritional, and health education services with routine prenatal care are designed to improve birth outcomes by reducing preterm birth and low birth weight risk, but some of these risk factors precede pregnancy and may not be easily resolved with enhanced care. Studies reporting a positive association between comprehensive prenatal care programs and birth outcomes show great variability in effect among different Medicaid subpopulations. This differential effect could be a result of differences in program content or implementation strategies. It is also possible that there may be certain inherent risk factors for adverse pregnancy outcomes (e.g., genetic or environmental factors) that these comprehensive intervention programs are not impacting, but the findings from Colorado's Prenatal Plus program show that interventions targeted toward specific risks are likely to succeed in improving birth outcomes. Studies that have evaluated Medicaid eligibility expansions have reported variable effects on prenatal care use but little impact on birth outcomes.³² Although Howell⁵² described improved use of prenatal care services among low-income women after the Medicaid expansions, the majority of the studies find no effect of the eligibility expansion on low birth weight or preterm birth rates.

Discussion

Our review of the existing literature demonstrates that when corrected for risk variables, there may be no difference between private insurance and Medicaid in terms of birth outcomes (Table 1). It should be noted that findings from most of the studies listed in Table 1 are from linking Medicaid claims data to birth certificate data, a process that is prone to selection bias. This bias may be either a bias in selecting which records from the claims data to match with birth certificate

TABLE 2. STUDIES THAT EXAMINED IMPACT OF COMPREHENSIVE PRENATAL CARE ON BIRTH OUTCOMES AMONG MEDICAID RECIPIENTS

<i>Reference</i>	<i>Study</i>	<i>Region</i>	<i>Population/location</i>	<i>Outcome</i>	<i>Services provided in addition to clinical care</i>
29	Korenbrodt et al., 1995	West	California	Reduced low birth weight risk	Social work, nutrition, and health education services
30	Homan and Korenbrot, 1998		California	Significantly better birth outcomes	Psychosocial, nutrition, and health education
31	Ricketts et al., 2005		Colorado	Significant reduction in low birth weight rate	Care coordination, nutritional, behavioral, and lifestyle risk or psychosocial services
32	Baldwin et al., 1998		Washington	Decrease in low birth weight rate among high-risk women	Nutritional and psychosocial counseling, health education, case management, and home visiting
33	Joyce, 1999	Northeast	New York City	Lower preterm birth and low birth weight rates	Risk assessment, nutritional services, health education
34	Reichman and Florio, 1996		New Jersey	Reduced low birth weight rates among blacks but not whites	HealthStart: services include early initiation of care, case coordination, more intensive care, WIC services, culturally sensitive psychological counseling, and health education
35	Reichman and Teitler, 2003		New Jersey	Improvements in birth weight	Programs that addressed nutritional needs
37	Reichman and Teitler, 2005		New Jersey	No effect on probability of low birth weight or preterm birth	HealthStart: services include early initiation of care, case coordination, more intensive care, WIC services, culturally sensitive psychological counseling, and health education
36	Pearce et al., 1996		Massachusetts	Lower low birth weight rate among Hispanic women	Culturally sensitive, comprehensive, interdisciplinary prenatal care for Hispanic women
39	Keeton et al., 2004	Midwest	Illinois	Reduced low birth weight risk	Access to prenatal care, pediatric primary care, specialty services, identification and removal of healthcare access barriers, and health education

42	Silva et al., 2006	Illinois	Lower rate of low birth weight delivery	Early recruitment, risk assessment, identification and removal of healthcare access barriers, support services, and health education
40	Cramer et al., 2007	Nebraska	Improvements in birth outcomes	Case management, health education, screening, home visits, and transportation
41	Graham et al., 1992	Ohio	No decrease in low birth weight rate	Home-based psychosocial intervention focused on nutrition, smoking and drug education, and access to community support services for high-risk low-income black women
43	Herman et al., 1996	Southeast District of Columbia	No effect on low birth weight rates	Improved access to prenatal and WIC services, smoking cessation, alcohol and drug abuse education, and referral services
44	Buescher et al., 1991	North Carolina	Lower low birth weight and infant mortality rates	Care coordination, nutritional, psychosocial, and resource needs services
47	Schulman, 1995	South Carolina	Reduction in preterm risk was reported in women who received nutritional services	Risk assessment, medical and prenatal care, case management, nutritional assessment, social services
48	Newman et al., 2008	South Carolina	Significant reduction in rate of preterm births less than 28 weeks; there was, however, no reduction in overall frequency of preterm birth or low birth weight	Case identification early in pregnancy, telephonic risk assessment and patient education, 24-hour availability of nursing consultation, patient-centered telephonic case management for women with risk factors for preterm delivery
49	Wells et al., 2008	Maryland	Reduced risk for preterm birth but no significant association with low birth weight	Home visitation program comprising education, support, and referral services for African American women
50	Piper et al., 1996	Tennessee	No reduction in incidence of very low birth weight or preterm births	Referrals, visit scheduling, nutritional and health education, and assistance with transportation
51	Nason et al., 2003	Alabama	Improved birth outcomes in blacks but not whites	Psychological risk assessment, education, WIC services

WIC, Women, Infants and Children.

records or bias because some of the Medicaid claims data do not successfully match to the vital records. Such a linkage process has been reported to have a 90%–93% match between indicators from the Medicaid claims file and the birth certificate file.⁵³ The matched analytic dataset generated tends to underrepresent outcomes of high-risk pregnancies.⁵³ Thus, the preterm and low birth weight rates reported for Medicaid recipients may underestimate the true rate.^{53,54} A recent study that examined the gestational age distributions for preterm births to Medicaid recipients on managed care and privately insured women found no differences in gestational age at birth, although babies delivered to women on private insurance had a higher mean birth weight.⁵⁵

Enhanced services offered by some Medicaid programs have reduced preterm births and low birth weights in regions and states that have lower prematurity and neonatal death rates (Table 2), a correlation that is not unexpected. Of concern, such programs are not as uniformly successful in the Southeast and in states with the highest rates of preterm and low birth weight births. This observation is, of course, consistent with the epidemiological data. The observations also highlight the need for critical evaluation of programs to reduce prematurity and low birth weight in a regional and state context to determine opportunities for improvement.

Findings from randomized studies conducted in different parts of the country as well as outside the United States have reported mixed results on the impact of enhanced care on birth outcomes. This may be the result of differences in program content and implementation or participant selection bias. However, a closer look at Table 2 shows that such enhanced programs are more likely to be successful in the West and Northeast.

The average cost of delivery for a Medicaid mother who enrolls for a period of 6–7 months before delivery and receives enhanced prenatal services that include home visits, behavioral and nutritional risk assessment, case management, referral services, and enrollment in the WIC program, in addition to routine prenatal care, is approximately \$6611. The cost of enhanced services averages \$350 per patient per year (VA Premier, 2008 cost for maternity services).

Programs that have not significantly reduced preterm birth and low birth weights may have failed for a number of reasons, including inadequate tools to predict women at risk and the absence of effective interventions. The Southeast and the states with poor responses to enhanced programs have a higher percentage of African Americans, who are at greater risk for preterm birth, possibly because of increased stress, bacterial vaginosis, and genetic factors. Interventions that have proved to be successful in other regions and states do not specifically address these risk factors. In contrast, in regions and states with a lower proportion of African Americans, enhanced Medicaid programs, including home visits and incentives for prenatal care, do result in improved outcomes. Thus, population-specific or community-specific and culturally sensitive programs should be developed, although in the absence of definitive knowledge of and effective means to mitigate biological causes of preterm birth, these may not achieve great success.

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Disclosure Statement

The authors have no conflicts of interest to report.

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Address correspondence to:
 Jerome F. Strauss, III, M.D., Ph.D.
 MCV Campus, Sanger Hall, 1st Floor, Room 1-071
 1101 East Marshall Street, PO Box 980565
 Richmond, VA 23298
 E-mail: jfstrauss@vcu.edu

