

# Special Report

## Low-birth-weight rate reduced by the obstetrical access project

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*Obstetrical (OB) access was a Medicaid pilot project that operated in 13 California counties from July 1979 through June 1982. The project goals were to both improve access to care in underserved areas and improve pregnancy outcomes by providing enhanced prenatal care, including psychosocial, health education, and nutrition services. The project registered 6,774 women. The findings were: 87 percent of the registrants started prenatal care during the first or second trimester; 84 percent of the registrants completed care in the project; OB access mothers had a low-birth-weight rate of 4.7 percent, compared with 7.0 percent for a matched control group, suggesting a 33-percent reduction in low birth weight through the project; and the benefit-cost ratio of this program was about 2 to 1 for the short run because of savings in neonatal intensive care services. The State of California approved legislation in 1984 authorizing the project's scope of services for Medi-Cal recipients on a statewide basis.*

### Introduction

This article describes the successful efforts of a demonstration project in improving both access to care and birth outcome for a group of nearly 7,000 low-income and Medicaid patients in California, July 1979 through June 1982. The difficulty of obtaining early and appropriate prenatal care by high-risk women has been a perennial problem for both public and private maternity care providers. Low-income women, including Medicaid beneficiaries, are de facto high risk and tend to have higher rates of pregnancy complications and poorer outcomes. The single most useful outcome measure is the low-birth-weight rate, as described by the Institute of Medicine (1985) in their report on the prevention of low birth weight. There is a high correlation between low birth weight and infant mortality. Reducing the incidence of low birth weight will reduce infant mortality. The problem of reducing low birth weight is multidimensional, as it encompasses health manpower distribution, health care financing, and cost-effectiveness issues, as well as language and cultural barriers.

The pregnancy of the low-income woman is often associated with multiple and severe social problems,

late entry to care, more frequent lack of compliance with the prescribed medical regimen, and a high incidence of complications of pregnancy. Unfortunately, these problems usually stem from factors beyond the provider's and often the patient's control. The goal of this article is to provide a brief account of the success of one program that has significantly improved pregnancy outcome through the use of alternative approaches to patient care and provider reimbursement under California's Medicaid program (Medi-Cal). The program model, we believe, can be adapted for use in other States and legislation, the Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1985 and Omnibus Budget Reconciliation Act (OBRA) of 1986, increases the authority for States to adopt enhanced prenatal care benefits for their Medicaid mothers.

Studies conducted in California during the 1970's showed that an increasing number of the most appropriately trained physicians were declining to serve Medi-Cal and other low-income pregnant women. One study (Department of Health Services, 1977), found that there were 17 counties where there were no resident obstetricians/gynecologists (OB/GYN's) and an additional 16 counties where there was severe underparticipation in the Medi-Cal program. The historic and current problems of escalating costs for professional liability insurance had negatively impacted physicians' willingness to see Medi-Cal mothers, limiting this group's access to service.

Attempts were made through legislation (Assembly Bill 4242) to increase the Medi-Cal rates of reimbursement for maternity services. It was found in 1978 that the increased reimbursement did not appreciably alter provider participation on a statewide basis. The problem of access to maternity services by the Medi-Cal mother is a complex one—it includes the geographic distribution of physicians and the physician and patient relationship, as well as the level of reimbursement.

### Program description

The obstetrical access approach that was developed in California in 1979 was a demonstration project conducted by the California Department of Health Services Maternal and Child Health Branch under the sponsorship of the U.S. Department of Health and Human Services, Health Care Financing Administration (HCFA). The project was called the obstetrical (OB) access pilot project. The basic approach of the project was to use an alternative financing mechanism (modified fee for service) and a

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specified maternity benefit package. Previous studies of high-risk populations had demonstrated the promise of risk screening and appropriate prenatal care in reducing the incidence of low birth weight. The State's reimbursement method for the Medi-Cal program followed the practice in the profession of billing a global amount for prenatal care and normal delivery regardless of the actual services provided to the pregnant woman. Given the low fee, there appeared to be no economic incentive to provide more extensive prenatal services. The method also economically penalized those providers who routinely did provide more extensive services as required by low-income women, because they were not paid for these additional services. For these reasons, the project switched to a modified fee-for-service reimbursement for each service under waiver provisions. HCFA further waived the spend-down requirements, allowing coverage to continue throughout women's pregnancies if they were eligible at the time of registration.

A State project team, after expert consultation, fully specified a package of services that included an initial health history with comprehensive physical, nutritional, psychosocial, and health education assessments. At the time this project started, the Federal Medicaid program did not allow for the coverage of nutritional, psychosocial, and health education assessments. Therefore, HCFA approved waivers for these services. If these assessments indicated the need for special remedial services in any of these areas, then followup visits were approved for payment. Prenatal vitamin and mineral supplements were another component of the package. During the course of the pregnancy, 11 regular medical visits were scheduled and appropriate care provided for high-risk conditions. Arrangements were required for planned delivery in a hospital and advance financial arrangements made with the hospital by the care coordinator.

As the result of a request for proposal, the pilot project selected 11 contractors in areas contained within 13 different counties where there was a demonstrated lack of access to maternity service for low-income women. The indicators used to identify lack of access were low obstetrics/gynecology (OB/GYN) to population ratios, high percentage of out-of-county deliveries, and low socioeconomic status of the community. After rigorous review of the areas on the need criteria, interested provider groups were evaluated on their ability to provide the necessary quantity and quality of care, either directly or through subcontracts. The final approval took place after site visits by a multidisciplinary State team. This resulted in seven community nonprofit clinics and four public health departments being selected for participation. No private practice physicians became primary contractors; however, several actively participated as subcontractors. The project started on July 1, 1979, and ran until June 30, 1982. During this project period, a total of 3,256 Medi-Cal and 3,518 other low-income women registered to deliver their babies

through the OB access projects. The Medi-Cal OB access registrants represented 6.5 percent of all Medi-Cal women who had live births in OB access counties during the project period.

## Results and discussion

The project has been evaluated by State staff and the results are very encouraging (California Department of Health Services, 1984). The timeliness and continuity of prenatal care for the low-income population reached by this program was enhanced by the program structure and the efforts of the contractors. This was evidenced in first or second trimester registration by 87 percent of the participants and completion of care in the program by 84 percent of the registrants.

The figures on onset of care are comparable with those obtained for two other California perinatal projects. The evaluation determined that the data from medical records used in the project were more accurate than data from birth records, therefore, they could not be compared with State and national data.

Of the women who withdrew from the project, 66 percent either moved or could not be located; 17 percent chose alternate providers; 2 percent had emergency deliveries; and for 15 percent, the reason was unknown. These women significantly differed ( $P < .05$ ) from those who completed the project in the following ways: A greater proportion of them were white and a smaller proportion Mexican American; they started care earlier in the pregnancy; they had a higher level of education; and a larger percentage of them were smokers.

From the medical standpoint, the proportion of low birth weight (under 2,500 grams) infants among OB access patients with single births compared favorably with that of a control group selected from linked Medi-Cal birth records for 1978 by pair-matching on six key variables. The matching variables in priority order included race/ethnicity of mother, sex of infant and plurality (single versus multiple birth), age of mother, number of previous live births, and county. These variables represented all the factors that were available from the State's birth records and have been identified as known risk factors (Institute of Medicine, 1985).

Data for the control group were obtained from the 1978 birth records because it was the only year for which Medi-Cal indicators were available. The 1978 data also had the advantage in that they reduced confounding of the self-selection effect. The comparison of 1980-82 data for the demonstration group with 1978 data for the control group was not a problem, because there was only a slight reduction in low birth weight for the State from 1978 to 1982.

As shown in Table 1, the birth weight outcomes for OB access women who received full care, (a minimum of eight prenatal exams including a comprehensive initial exam, a psychosocial needs assessment, a health education needs assessment, a nutrition needs assessment, at least one birth education class, and a

**Table 1**

**Comparisons of single live births for full-care OB access mothers with those for Medi-Cal mothers, by infant birth weight: Selected years 1978 and 1980-82**

Infant birth weight in grams	Full-care OB access <sup>1</sup> 1980-82		Medi-Cal match 1978	
	Number	Percent	Number	Percent
Single live births				
Total	2,825	100.0	2,825	100.0
Less than 1,500	1	<sup>2</sup>	38	1.3
1,500-2,499	86	3.0	180	6.4
2,500 or more	2,738	96.9	2,607	92.3

<sup>1</sup> Full care is defined as a minimum of eight prenatal exams, including a comprehensive initial exam, a psychosocial needs assessment, a health education needs assessment, a nutrition needs assessment, at least one birth-education class, and a supply of prenatal vitamins.

<sup>2</sup> Less than 0.1 percent.

NOTES: A contingency table analysis of the low-birth-weight experience of matched pairs yielded a chi-square = 60.1, *df* = 1 (*p* < .001). Only single live born infants are included; twins, triplets, etc., are excluded. Percents are rounded independently and may not add to totals.

SOURCE: State of California, Department of Health Services: Data from the 1978 birth cohort file and OB access pilot project data base, July 1979-June 1982.

supply of prenatal vitamins) are compared with their Medi-Cal match cases.

The 2,825 OB access mothers had 87 births (just under 3.1 percent) in the low-birth-weight categories (less than 2,500 grams), while their matched Medi-Cal counterparts had 218 births (7.7 percent) in these categories. The 131 fewer low-birth-weight infants for the full care OB access group suggests a 60-percent reduction in low birth weight through OB access care.

Although those women receiving the full complement of OB access services may be the best example of what the program intended to accomplish, their superior outcomes could be attributed, at least in part, to above-average knowledge and motivation with respect to health care and health-seeking behavior. That is, characteristics that would prompt or enable them to take advantage of all available services, would also be likely to have an impact on their overall health status apart from the direct benefits of the program. A more conservative picture of the impact of the OB access program can be developed by looking at the average experience of all women who completed care in the OB access program, which is presented in Table 2. Motivation would only be confounded here if high motivation impacted the likelihood of entry (by self-selection) or retention in the program. Extensive outreach and careful case-management practices by contractors should have minimized the influence of this factor. The use of a matched control group from a different time period (1978) further reduces the likelihood that this factor is a threat to the validity of the findings. Because this study used a nonrandom design, it cannot definitively rule out the implications of self selection. However, the use of a strong quasi-experimental design that employs a control group matched on a number of

**Table 2**

**Comparisons of single live births for OB access cases with those for Medi-Cal cases, by infant birth weight: Selected years 1978 and 1980-82**

Infant birth weight in grams	OB access 1980-82		Medi-Cal match 1978	
	Number	Percent	Number	Percent
Total	5,224	100.0	5,224	100.0
Less than 1,500	25	0.5	68	1.3
1,500-2,499	219	4.2	300	5.7
2,500 or more	4,980	95.3	4,856	93.0

NOTES: A contingency table analysis of the low-birth-weight experience of matched pairs yielded a chi-square = 26.8, *df* = 1 (*p* < .001). Only single live born infants are included; twins, triplets, etc., are excluded. Percents are rounded independently and may not add to totals.

SOURCE: State of California, Department of Health Services: Data from the 1978 birth cohort file and OB access pilot project data base, July 1979-June 1982.

key-risk factors from a different time period goes a long way to controlling for the selection effect.

Among the 5,224 OB access cases, there were 244 (4.7 percent) low-birth weight infants, compared with 368 (7.0 percent) for the same number of matched Medi-Cal cases (Table 2). The 124 fewer low-birth-weight infants among the OB access project cases indicates that, for approximately 2.4 percent of all births, low birth weights may have been avoided. This corresponds to a 33-percent reduction in the low-birth-weight rate. The success of all OB access mothers as a group, including those who did not take advantage of all available services, is still evident. Their low-birth-weight rate, relative to the comparison group, argues for the effectiveness of a specified and comprehensive maternity package over the unspecified global fee approach.

The costs of this alternative approach are important to consider as they appear to be higher than the global fee. One must recognize that the flat global fee does not measure the total amount paid by the State for maternity care. It is believed that some providers bill the State for a pregnant woman's office visit for prenatal care, but indicate the primary diagnosis as something other than pregnancy or prenatal care. Hence, the woman may receive what amounts to an unrecorded prenatal visit. Therefore, the actual amount that is attributable to a Medi-Cal pregnancy is likely to be underreported in the literature as a result of the difficulty in analyzing (manually or otherwise) all pregnancy-related expenditures. The average amounts paid by the OB access project were \$872 for professional services and prenatal care plus \$2,166 for hospital costs, giving a total of \$3,038 per completed pregnancy. The evaluation attempted to obtain similar data for the comparison group, but found numerous problems with the accuracy of such data.

The cost of care by patient characteristic is also of interest. Those women who started care in the third trimester had an average total cost 5 percent higher than those starting in the first trimester (\$3,182 versus

\$3,031). The highest risk group had the highest average cost and the poorest outcomes compared with the lowest risk group (\$3,880 versus \$2,764). Low-birth-weight cases (under 1,500 grams) had the highest average total cost (\$14,944)—five times more than the overall average (\$3,043). The low-birth-weight group (under 2,500 grams) as a whole had an average total cost (\$6,598), that was nearly 2.5 times that of normal-birth weight cases (\$2,804). Clearly, low-birth-weight infants incur very high expenses and the avoidance of low birth weight has some major expenditure implications for tax payers as well.

Because there was a 33-percent reduction in low birth weight, a priori, it seems likely that implementation of such a program could result in considerable savings to the taxpayer. A major reduction in low birth weight indicates a probable reduction in expenditures on costly neonatal intensive care unit (NICU) services usually associated with low-birth-weight infants.

The final evaluation report (California Department of Health Services, 1977) determined the benefit-cost ratio of the obstetrical access services it implemented statewide. This analysis was based on data on the average costs for NICU services for each low-birth-weight category (Korenbrodt, 1984, 1982; Phibbs, 1981) and the costs of the additional obstetrical access services. The analysis yielded a benefit-cost ratio range from 1.7 to 2.6 to 1, depending on whether the costs (on the average) of all available services or the cost of services utilized was used in the calculations.

## Conclusion

The findings of the study were as follows:

- Access to care increased through the contractual mechanism developed by the project, and 87 percent of the registrants started prenatal care during the first or second trimester.
- Continuity of care was provided so that 84 percent of the registrants completed care in spite of a variety of access barriers.
- Pregnancy outcomes for the OB access mothers were superior to a matched group of similar mothers from the same counties: OB access mothers had a low-birth-weight rate of 4.7 percent, compared with 7.0 percent for the matched group.
- The benefit-cost ratio range of the OB access program was estimated from 1.7 to 2.6 to 1 for the short run—and probably greater in the long run—when compared with the Medi-Cal program's existing prenatal services.

The results of this study should be encouraging to all working in the field of prenatal care. Enhanced prenatal care services do improve outcome and are cost effective. If one considers special needs groups,

such as pregnant adolescents, then it would seem very appropriate to develop special programs of this type to address the needs of these groups. California has several pilot programs in this area using the basic principles of OB access care specially adapted for teenage mothers. The teenage pregnancy and parenting project in San Francisco is an example. Although evaluation of this project is not yet complete, the initial results are promising (University of California, 1984).

In these days of limited public resources and increasing focus on cost effectiveness, the benefit cost ratio range of from 1.7 to 2.6 to 1 in the short run for OB access care is important to consider. The evidence is that a more widespread adoption of similar programs is economically, as well as clinically, justified.

On the legislative front in California, the Legislature passed and the governor signed a bill (Assembly Bill 3021) that implemented the provisions of the OB access project within the statewide Medi-Cal program. Other States are also considering this enhancement of their own Medicaid plans. At the national level, Congress has passed legislation to provide greater freedom for these benefits to be included (COBRA, 1985; OBRA, 1986).

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