Primary Care Case Management and Birth Outcomes in the Iowa Medicaid Program

ABSTRACT

Objectives. This study compares prenatal care utilization and birth outcomes between Iowa Medicaid recipients receiving care in a primary care case management (PCCM) system and those receiving care in a fee-for-service (FFS) system.

Methods. Birth certificates linked with Medicaid hospitalization claims were analyzed for seven PCCM and seven FFS counties.

Results. From 1989 through 1992, there was (1) a 20% increase in the number of women who received adequate prenatal care in the FFS counties, vs a 5% increase in the PCCM counties; (2) a 17% increase in the number of women who initiated care within the first trimester in the FFS counties, vs a 6% increase in the PCCM counties; and (3) a 442% increase in the number of women who received enhanced prenatal services in the FFS counties, vs a 278% increase in the PCCM counties. There were no significant differences between groups in mean gestational age or birthweight; however, there was an increase of very-low-birthweight babies in both groups.

Conclusions. PCCM, as implemented by the Iowa Medicaid program, has not appreciably improved prenatal care utilization or birth outcomes. (*Am J Public Health.* 1997;87:80–84)

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Introduction

Medicaid program expenditures have risen at an annual rate of 6.2% since the passage of Medicaid in 1965 and currently account for 36.4% of all state health spending.[1] Frustrated with these rising costs, many states are testing Medicaid managed care initiatives. As of June 30, 1994, more than 7.5 million Medicaid recipients were enrolled in 340 managed care plans in 45 states.[2] Several major delivery models have emerged: health maintenance organizations (HMOs), with either mandatory or voluntary enrollment; health insuring organizations, which assume full responsibility for care within a specified geographic area, and primary care case management (PCCM). The PCCM model requires that Medicaid recipients choose or be assigned a participating primary care physician to act as their care manager. Physician care managers receive a nominal monthly management fee for each Medicaid recipient in exchange for managing the patient's care and for performing a gatekeeping role—the primary care physician's prior approval is required for specified services if those services are to be reimbursed. However, medical care reimbursement continues to be based on discounted fees for services rendered. PCCM is the model currently being implemented in Iowa, and services that require prior approval include inpatient care, emergency room care for nonemergency conditions, specialist care, and services provided by nonphysicians, including enhanced prenatal care services (e.g., nutritional education, health education, and social work counseling). PCCM is a recent innovation in Medicaid programs and the fastest growing type of managed care plan in public programs. Its ease of implementation and administration and its viability in rural or other underserved areas make it particularly attractive.

Evaluations of Medicaid managed care plans have yielded important information regarding the effects of case management on utilization, recipient satisfaction, and cost.[3–6] Numerous studies have demonstrated savings or reductions in the growth of expenditures for utilization of emergency room care, inpatient services, and specialists.[7–14] However, concerns persist regarding the impact of managed care on the health outcomes of Medicaid beneficiaries. Although it is presumed that women who participate in managed care plans will receive more coordinated, continuous, and appropriate care, resulting in healthier birth outcomes, studies to date have reported mixed findings.[15] The purpose of this study was to determine whether PCCM improved the adequacy of prenatal care utilization or had any significant effect on birth outcomes of infants born to participating Iowa Medicaid enrollees.

Experimental Design and Methods

In July 1990, Iowa implemented the Medicaid Patient Access Service System (MediPASS), a seven-county PCCM dem-

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onstration program for persons eligible to receive assistance from the Aid to Families with Dependent Children (AFDC) program. This study used a longitudinal design, with the seven demonstration counties composing the managed care group and seven matched counties with fee-for-service (FFS) systems serving as quasi-experimental controls. The demonstration counties were chosen by the Iowa Department of Human Services because of their large numbers of Medicaid recipients and participating physicians. The seven control counties were also selected by the Department. Although the two sets of counties do not have comparable populations, they were matched with respect to age and race.

The analyses compared data for the PCCM and FFS groups from 1989 through 1992. This period included 1 year prior to implementation of the MediPASS program (1989), 1 implementation year (1990), and 2 years after implementation to enable us to control for baseline differences. The effects of differing health status should be controlled through the pre- and posttest experimental design, with the assumption that significant factors, such as health status, do not naturally vary significantly between the two sets of Medicaid enrollees.

One hypothesis of this study was that the PCCM program would improve the adequacy level of prenatal care utilization; specifically, that PCCM participants would be more likely than FFS participants to receive adequate prenatal care, to initiate prenatal care during their first trimester, and to access enhanced prenatal care services. Additionally, it was hypothesized that women in the PCCM program would experience improved birth outcomes, compared with FFS participants, as measured by birthweight, gestational age, and birth diagnosis.

Data were obtained from the Iowa State Department of Public Health database of linked birth certificates and Medicaid birth hospitalization claims for the years 1989 through 1992. Comparable information for years before 1989 was unavailable. During this period, there were 14 422 births to Medicaid recipients in the PCCM counties and 5764 in the FFS counties (total n = 20 186).

Results

Utilization Outcomes

The Kessner Adequacy of Prenatal Care Index has been widely used in public health research and planning activities for more than 20 years. The index categorizes prenatal care utilization into adequate, intermediate, and inadequate levels. Levels are determined by considering the month prenatal care began and the number of prenatal care visits, adjusted for length of gestation.[16] Figure 1 shows the percentage of women in the study population who received adequate prenatal care, as assessed by the Kessner Index, during the study period. In the aggregate, 64.2% of the women in both study groups over the 4-year period received adequate prenatal care, 25.6% received intermediate care, and 10.2% received inadequate care. These proportions are consistent with those reported in the large-sample 1980 National Natality Survey, in which prenatal care utilization, as measured by the Kessner Index, was found adequate for 65.9% of respondents, intermediate for 26.3%, and inadequate for 7.7%.[17] There was an apparent trend over the 4-year period for the FFS group to have higher percentages of adequate prenatal care utilization than the PCCM group. The crude odds ratio for adequacy of utilization showed no group difference in 1989. However, the overall test for heterogeneity of the odds ratio was significant, and all subsequent odds ratios were adjusted for year. In 1990 and 1991, the adjusted odds ratio yielded significant differences between the two groups. And in 1992, the adequacy of prenatal care utilization for the managed care patients was only 67% of that achieved by the FFS patients (95% confidence interval [CI] = 0.59, 0.76).

The two components of the Kessner Index, month prenatal care began and number of prenatal care visits, were examined individually. The means and standard deviations for each of these variables for each of the 4 years are reported in Table 1. The mean month of care initiation was 3.0 for both groups in 1989. Although there was a general trend in both groups to begin care earlier, the FFS group experienced greater gains. In 1992, the mean month of care initiation was 2.8 in the PCCM group and 2.6 in the FFS group, a statistically significant difference ($P < .01$). Women in both groups averaged nearly 11 prenatal care visits in 1989. In 1992, they averaged slightly more than 11 visits, with no significant group difference.

Figure 2 shows the percentage of women who initiated prenatal care during the first trimester. Again, there was a trend over the 4 years for a greater percentage of FFS participants than PCCM participants to initiate care early. In the baseline year, the odds ratio for first-trimester care initiation was not significant. In 1990 and 1991, the adjusted odds ratios showed PCCM patients less likely than FFS patients to initiate care during the first trimester. In 1992, the adjusted odds ratio revealed that PCCM enrollees were only 70% (95% CI = 0.61, .80) as likely as women in the FFS program to begin prenatal care in the first trimester. The 1980 National Natality Survey found that 78% of women initiated care during the first 3 months of pregnancy. Except for the FFS group in 1992, the women in the present study did not achieve this national norm.[17] It appears that having a primary care case manager did not increase the likelihood of early prenatal care for these Iowa Medicaid recipients.

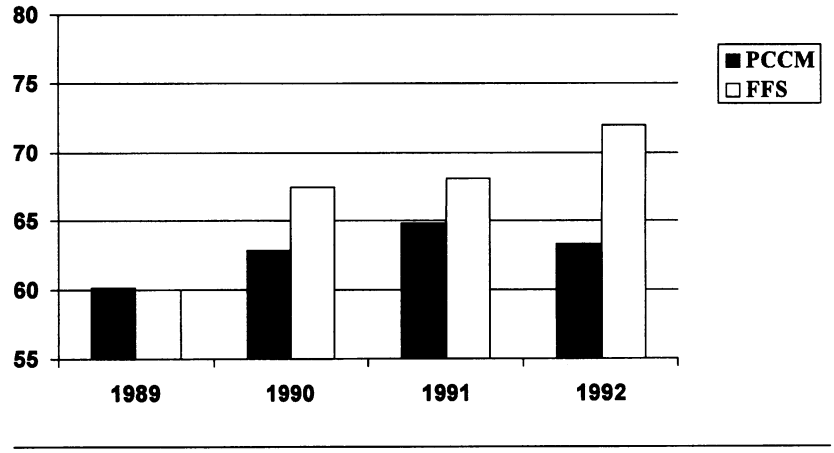

FIGURE 1—Percentage of women receiving adequate prenatal care (Kessner Index) in Iowa primary care case management (PCCM) and fee-for-service (FFS) counties, 1989 through 1992.

TABLE 1—Prenatal Care Utilization by Medicaid Recipients in Iowa Counties with Primary Care Case Management and Fee-for-Service Programs, 1989 through 1992

	Primary Care Case Management				Fee-for-Service			
	1989 (n = 3040)	1990 (n = 3815)	1991 (n = 3562)	1992 (n = 4005)	1989 (n = 1067)	1990 (n = 1500)	1991 (n = 1528)	1992 (n = 1669)
Month of care initiation mean (SD)	3.0 (1.8)	2.9 (1.6)	2.8 (1.6)	2.8 (1.6)	3.0 (1.8)	2.9 (1.6)	2.7 (1.6)	2.6 (1.5)
No. visits, mean (SD)	10.7 (3.9)	11.0 (4.2)	11.4 (4.2)	11.4 (4.7)	10.9 (4.1)	11.0 (4.2)	11.5 (4.1)	11.7 (4.5)

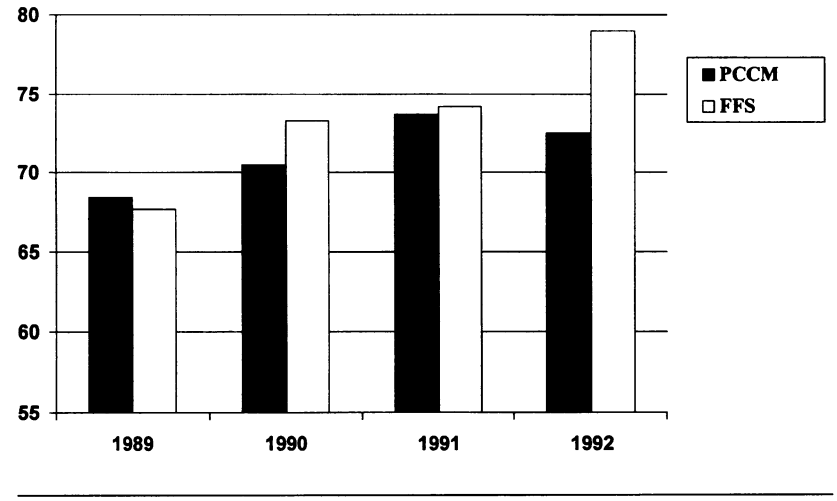

FIGURE 2—Percentage of women initiating care during the first trimester in Iowa primary care case management (PCCM) and fee-for-service (FFS) counties, 1989 through 1992.

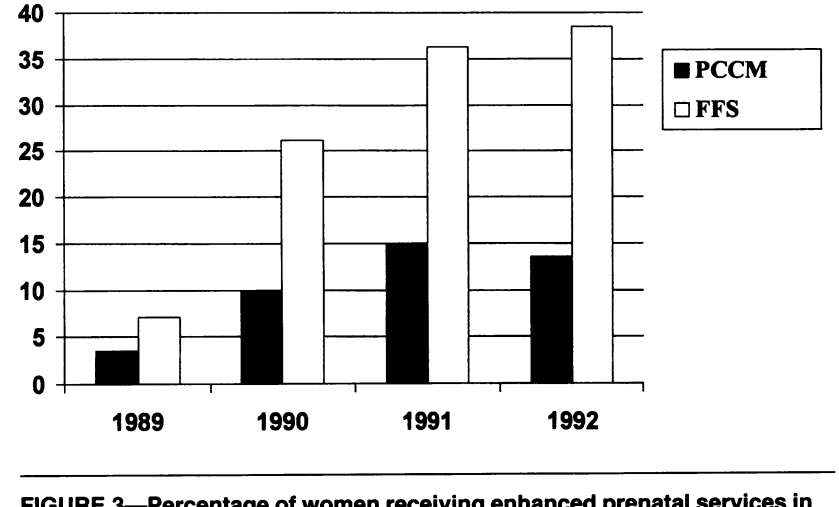

FIGURE 3—Percentage of women receiving enhanced prenatal services in Iowa primary care case management (PCCM) and fee-for-service (FFS) counties, 1989 through 1992.

The percentage of the study population who received enhanced prenatal services (e.g., nutritional intervention) is shown in Figure 3. Although both groups experienced an increase in the number of women receiving enhanced services between 1989 and 1992, the gap between the groups continued to widen over the study period. In 1989, Medicaid recipients in the seven counties with PCCM were 48% as likely as their FFS counterparts to access enhanced services; in 1992, they were only 25% (95% CI = 0.22, 0.29) as likely. The reasons for the nearly threefold group difference in 1992 need further exploration.

Birth Outcomes

The birth outcome measures examined were birthweight, gestational age, and birth diagnosis-related group (DRG; Table 2). Over 90% of all newborns in the study were of normal birthweight (>2500 g). Although from 1989 to 1992 there was a decrease in the percentage of low-birthweight babies in the FFS group from 9.0% to 7.3%, a closer look reveals that while the percentage of low-birthweight babies (i.e., 1500–2499 g) decreased 2.5%, the percentage of very-low-birthweight babies (<1500 g) actually doubled, from 0.8 to 1.6%. In the PCCM group, there was a slight increase in the percentage of low-birthweight newborns, from 8.2% to 8.7%, with a 0.4% increase in the lowest weight category. From 1989 to 1992, the number of very-low-birthweight newborns in both groups doubled, from 49 to 99. The reasons for this twofold increase appear to be independent of the Medicaid reimbursement program. However, the implications have serious medical, social, and economic consequences and further research is needed.

The mean gestational ages did not differ significantly during the 4 years, remaining relatively stable at approximately 39 weeks.

A DRG assignment categorizes a birth diagnosis into one of seven groups. The percentages of infants assigned to DRG 391, normal newborn, are listed in Table 2. In 1992, the adjusted odds ratio indicates that infants in the PCCM group were only 80% (95% CI = 0.69, 0.90) as likely as infants in the FFS group to have a normal-newborn DRG assignment. (Note: The reporting of newborn DRGs was not

TABLE 2—Birth Outcomes (%) for Medicaid Recipients in Iowa Counties with Primary Care Case Management and Fee-for-Service Programs, 1989 through 1992

	Primary Care Case Management				Fee-for-Service			
	1989 (n = 3040)	1990 (n = 3815)	1991 (n = 3562)	1992 (n = 4005)	1989 (n = 1067)	1990 (n = 1500)	1991 (n = 1528)	1992 (n = 1669)
Birthweight								
Very low (<1500 g)	1.4	1.4	1.2	1.8	0.8	1.1	1.2	1.6
Low (1500–2499 g)	6.8	6.4	6.3	6.9	8.2	6.0	5.5	5.7
Gestational age ≥37 weeks	90.7	91.8	92.6	90.8	90.5	92.7	93.0	91.4
Normal-newborn diagnosis[a]	65.5	66.0	66.9	66.7	70.9	73.5	72.3	71.7

[a]Assignment to diagnosis-related group (DRG) 391, normal newborn.

as complete as other data reporting; DRG data were missing for about 9% of newborns.)

Discussion

Within the current health care reform environment, the expectations for positive benefits from managed health care initiatives are quite high. Managed care promises to simultaneously improve access, enhance quality, and reduce costs. While the rhetoric of managed care continues to dominate health policy discussions, there is a paucity of data to support the anticipated health care benefits to be derived from managed care initiatives. The results of this study did not confirm our hypotheses. It appears that PCCM, as implemented by the Iowa Medicaid program, has not appreciably improved prenatal care utilization or birth outcomes.

Although there was a general trend from 1989 to 1992 for both groups to experience improved levels of prenatal care utilization, women in the FFS group experienced a more dramatic improvement. On average, women enrolled in the traditional FFS program received slightly more prenatal care visits, and a larger proportion of this group received adequate levels of prenatal care and initiated care early. In addition, the FFS group, without any self-referral restrictions, received significantly more enhanced prenatal care services. Of the enhanced services provided to pregnant women, several research studies have confirmed the positive impact of nutritional intervention on birth outcomes.[18–20] In Iowa, these enhanced services are generally provided at licensed maternal and child health centers. Patterns of physician referral for these services require examination and explanations for the disjunction between medical and enhanced services. In addition, it is unclear whether sufficient outreach initiatives were implemented in either group to ensure early entry into prenatal care services. Research to identify effective strategies to bring women into care earlier, regardless of their insurance plan, is needed.

Research regarding the effectiveness of prenatal care in promoting healthy pregnancies and births remains inconclusive. While several studies have found no significant relationship between prenatal care utilization and birth outcomes,[18,21–23] the preponderance of research studies employing more specific analyses have found prenatal care to be of particular importance in enhancing healthy birth outcomes among women identified as being at high risk.[24–31] However, this study found no significant improvement in birth outcomes for the PCCM enrollees, and in spite of the fact that FFS participants, on average, accessed prenatal care services earlier and more frequently than PCCM participants, an appreciable difference in birth outcomes as measured by mean birthweight and gestational age and birth DRGs was not apparent. This finding reraises the issue of the degree of influence or direct impact prenatal care has on the promotion of healthy births. This is not to negate the importance of prenatal care; it is, rather, a call for research to identify other, more pervasive measures that have a significant impact on healthy birth outcomes and that can be implemented during pregnancy or even before pregnancy begins.

Additionally, we found an alarming trend in the number of very-low-birthweight newborns in both study groups. This doubling in the actual number of the tiniest newborns, whose well-being is associated with high costs of care, does not appear to be influenced by the type of maternal Medicaid coverage. Concurrent health problems, high-risk behaviors (e.g., smoking, alcohol or substance abuse), or both may be contributing factors. Further investigation needs to be conducted.

Though it is generally thought that managed care improves access to primary care providers and therefore should improve prenatal care utilization and birth outcomes, that pattern is not seen in these results. This may be due, in part, to limitations of the study, which include a more urban population in the PCCM counties and an inability to adequately control for certain baseline medical and social risk factors that may have a stronger or more pervasive influence on birth outcomes than prenatal care utilization. In addition, research studies comparing the effects of FFS, PCCM, and other managed care initiatives (e.g., HMOs) would provide valuable information to policymakers, health care providers, and consumers.

Although some research has indicated that cost savings can be realized by implementing various managed care programs, an attendant improvement in health care access and birth outcomes for pregnant women is not assured. Caution should be exercised before states implement any managed care programs for vulnerable populations that have historically experienced access barriers to appropriate health care services. □

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