health DATA NOTES

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An Evaluation of North Dakota's Medicaid Targeted Case Management Program for High-Risk Pregnant Women and Infants

The Targeted Case Management (TCM) Program for High-Risk Pregnant Women and Infants has been authorized by the North Dakota Medicaid Program since 1997. Eligible women are those enrolled in the North Dakota Medicaid Program who have risk factors that could result in poor birth outcomes.

The goals of the TCM Program are to:

- Provide early and continuous prenatal care.
- Identify risk factors and develop a plan to lessen the risks.
- Connect women to support services that will contribute to a healthy baby.
- Improve current and long-term life situations.
- Enhance the maternal life course, such as employment and education.
- Improve child health by promoting preventive health services, such as immunizations and well-baby checkups.

The North Dakota Department of Human Services conducted a retrospective cohort study to evaluate the effectiveness of the TCM Program. The study group was comprised of women who participated in the TCM Program. The control group was comprised of women with similar characteristics who did not receive TCM. The two groups were compared for birth outcomes and selected health problems for both the mothers and their babies.

Study Group

The study group consisted of women who received TCM and had a delivery paid for by Medicaid during 2001 or 2002. Because TCM services are provided primarily by Healthy Start agencies on either the Turtle Mountain Reservation or the Spirit Lake Reservation, the study group was limited to women who were American Indian and had a county of residence listed on their child's birth certificate as Benson, Ramsey or Rolette. Sixty-six women met the criteria to be included in the study group.

Control Group

Other than participation in TCM, the control group had the same inclusion criteria as the study group. The women in the control group had a birth paid by Medicaid during 2001 or 2002, were American Indian and were residents of Benson, Ramsey or Rolette counties. In addition, they had risk factors comparable to women in the study group.

Eligibility for TCM is based on an assessment of the presence of risk factors. To be considered high risk, women must meet any one of a list of 11 risk factors or any three of an additional 14 risk factors. To assess similar risk for control group members, risk factors were determined from their child's birth certificate. Overall, 12 of the total 25 risk factors were found on the birth certificates. In order to be included in the control group, women needed to meet the same criteria as TCM participants based on identified risk factors.

Study Design

The study was designed to assess three levels of comparison between the study group (TCM) and the control group. They were:

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1. Prenatal and pregnancy complications and Medicaid costs.
2. Birth outcomes and Medicaid costs.
3. Postpartum infant services and Medicaid costs.

Prenatal and Pregnancy Complications and Medicaid Costs

Birth certificates for the 66 TCM women and 124 control women were collected and linked with their Medicaid health-care claims for service dates from nine months prior to delivery through the delivery date. In order to assign a Medicaid ID number to a birth certificate record, birth certificate files and Medicaid claims files were matched electronically based on the following sequence: mother's last name, mother's first name, mother's date of birth and mother's county of residence. Records that did not match electronically were matched manually to achieve a 100 percent match.

Prenatal and pregnancy complications and Medicaid costs were defined as any claim during the prenatal period with a primary diagnosis in the ICD-9 range of 640 to 648: "complications mainly related to pregnancy."

Table 1: Pregnancy Complications – Costs by Group

	Pregnancy Complications
Study Group (n=66)	
Total costs	$59,686
Women with claims	52
Average per woman	$ 1,148
Control Group (n=124)	
Total costs	$89,001
Women with claims	89
Average per woman	$ 1,000

Total costs for both the study group and the control group were summed and an average per woman was calculated and totaled. (Table 1)

Higher costs were associated with pregnancy complications during the prenatal period for women in the TCM Program than for women in the control group. However, the costs for women in the TCM Program were influenced by the month of pregnancy in which they began to receive the TCM service and the number of TCM contacts. Women who began TCM services during the first trimester of their pregnancy or had more than five contacts had substantially fewer costs related to pregnancy complications than did women who began the service later or had five or fewer contacts. (Table 2)

Table 2: Pregnancy Complications – Costs by Timing and Frequency of TCM Services

	Began care in first trimester, or more than five contacts	Began care later than third month, or fewer than six contacts	Both groups
Costs	$24,265	$35,421	$59,686
Number of women	26	26	52
Ave. cost per woman	$ 933	$ 1,362	$ 1,148

Table 3: Birth Outcomes by Group

	Study	Control	Relative Risk	Confidence Interval
Low birth weight	1.5%	10.5%	6.9	0.9 – 51.7
Pre-term birth	6.1%	12.1%	2.7	0.8 - 8.9
Weight gain > 40 lbs	24.2%	40.3%	1.7	1.0 - 2.7
1st trimester PNC	69.7%	41.1%	0.6	0.5 - 6.8
Alcohol use	8.2%	12.1%	1.6	0.6 - 4.2
Tobacco use	50.0%	67.7%	1.4	1.0 - 1.8
Anemia	6.1%	13.7%	2.3	0.8 - 6.5
Gestational diabetes	3.0%	4.0%	1.3	0.3 - 6.7
PA hypertension	0.0%	3.9%	NA	NA - NA

Birth Outcomes and Medicaid Costs

Two birth outcomes (low birth weight and pre-term birth), four pregnancy behaviors (weight gain, prenatal care, and tobacco and alcohol usage) and three maternal medical risks (anemia, gestational diabetes and pregnancy-associated hypertension) were assessed for the two groups of women by using birth certificate data. (Table 3)

A lower percentage of babies born to women who received TCM services were born low birth weight or pre-term (less than 37 weeks) than to babies born to women in the control group. In addition, a lower percentage of women who received TCM gained more than 40 pounds and used alcohol and tobacco during pregnancy. TCM women also had a higher percentage of first trimester prenatal care and less frequent anemia and pregnancy-associated hypertension than the control group women. Only weight gain and tobacco use reached a 95 percent degree of statistical significance.

Postpartum Infant Services and Medicaid Costs

Health-care claims resulting from conditions originating in the perinatal period (primary diagnosis ICD-9

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760-779) incurred within a year of birth were totaled for babies born to mothers who participated in TCM and mothers in the control group. Babies born to women receiving TCM had lower overall and average costs for conditions originating in the perinatal period. (Table 4)

Infants born to women who received TCM had on average fewer inpatient hospital admissions and emergency visits for conditions originating in the perinatal period than did babies born to mothers in the control group. In addition, babies born to mothers who received TCM were more likely to have a routine child health exam (ICD9 V202) than were babies born to women in the control group. (Table 5)

Summary

Although there were higher costs to the North Dakota Medicaid Program related to pregnancy complications during the prenatal period for women who participated in the TCM Program compared to the control group, the costs were related to the initiation and frequency of TCM services. Babies born to women in the TCM Program appeared to have better birth outcomes than babies in the control group. They also had fewer costs within a year of birth for conditions originating in the perinatal period, had fewer inpatient hospitalizations and emergency room visits, and were more likely to have had a routine child health exam within a year of birth. The Targeted Case Management Program appears to be effective in achieving program goals.

Study Limitations

- Although every effort was made to make the control group as similar as possible to the study group, there may be differences that cannot be detected. Based on the selection criteria, both groups were eligible to receive TCM, but those who did not may have had different motivations or reasons for not participating or did not have the same knowledge of or access to the program as participants.
- Members of both groups may have had pre-existing medical problems or other risk factors that cannot be influenced by case management services and that contribute to medical costs to the Medicaid Program.
- Women who have multiple risk factors may be less likely to seek services and therefore would have been included in the control group.

Table 4: Postpartum Infant Health-Care Costs by Group

	Study Group	Control Group	Both Groups
Infant costs (760-779)	$19,912	$55,712	$75,624
Number of babies	22	44	66
Average cost per baby	$ 905	$ 1,266	$ 1,146

Table 5: Postpartum Infant Health-Care Utilization by Group

	Study Group (n=83)	Control Group (n=128)
Inpatient Hospital		
Infants admitted	10	21
Percentage of infants hospitalized	12%	16%
Number of admissions	23	76
Admissions per infant	.28	.59
Emergency Room Visits		
Infants with visit	3	7
Percentage infants with visit	4%	5%
Number of visits	3	7
Visits per infant	.04	.05
Child Health Exam		
Infants with exam	54	75
Percentage infants with exam	65%	59%

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Editor: Terry Bohn – 701.328.4963

About This Publication ...

Health Data Notes is a quarterly publication of the Children's Special Health Services Unit of the North Dakota Department of Human Services and the Division of Family Health of the North Dakota Department of Health. *Health Data Notes* is intended to provide readers with summaries of research and analyses of issues affecting the health of the maternal and child population in North Dakota.