health DATA NOTES

North Dakota Department of Health

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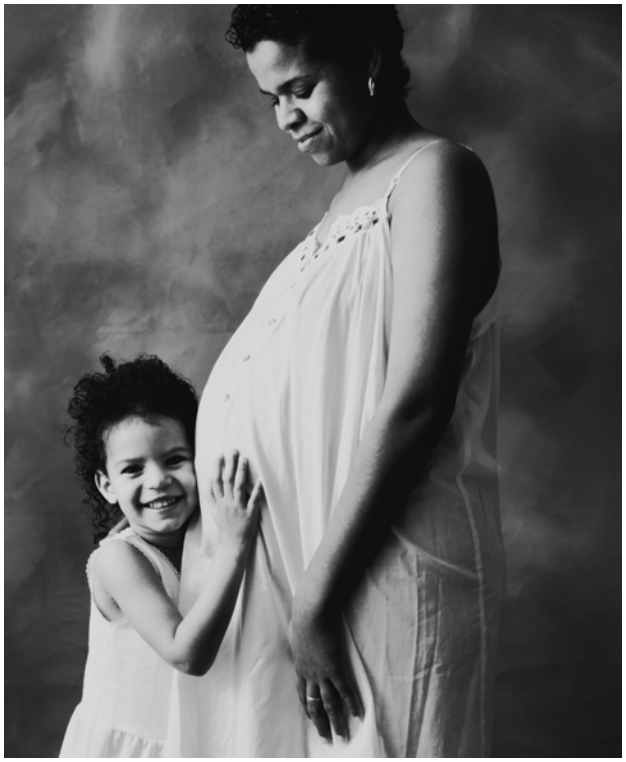
Maternal Tobacco Use and Respiratory Disease in Children

Maternal tobacco use during pregnancy can lead to adverse birth outcomes for the infant. The following study was conducted to assess whether tobacco use by pregnant women impacted the respiratory status of their infants as measured by inpatient hospital admissions. The hypothesis is that children born to women who used tobacco during pregnancy, and who are assumed to continue to smoke after delivery, are more likely to be hospitalized for respiratory disease than children born to mothers who did not use tobacco.

Birth certificate files from 1999 through 2001 for resident births in which Medicaid was listed as the source of payment for the delivery were linked with Medicaid claims files for inpatient hospital admissions of matched infants with a primary diagnosis of respiratory disease. There were 5,107 Medicaid birth certificate files for the three-year period; of those, 4,845 (95 percent) were matched with Medicaid enrollment files using the child's name (first, last and middle initial) and date of birth.

Respiratory disease was defined as ICD9 codes between 460 and 519. Included in this range are acute respiratory infections; pneumonia and influenza; acute pulmonary diseases such as bronchitis, emphysema and asthma; and other diseases of the respiratory system. Of children born Jan. 1, 1999, or later, 728 were hospitalized as inpatients within the first year of life for any of the identified respiratory diseases. Of these, the respiratory disease was listed as the primary diagnosis in 602 of the hospitalizations. The 602 hospitalizations were to 503 separate Medicaid recipients; of these, 345 were matched to a birth certificate. About 7 percent (345 / 4,845) of Medicaid children were hospitalized with a respiratory disease between the time of their birth and their first birthday.



Overall, nearly 40 percent (1,911 / 4,845) of Medicaid mothers reported using tobacco while pregnant. A significant association was found between maternal tobacco use and child hospitalization for respiratory disease. About 9 percent of children born to mothers who used tobacco were hospitalized within their first year, compared to 6 percent of children whose mothers did not use tobacco. This association was found to be significant at a 95 percent degree of confidence.

Among mothers who used tobacco during their pregnancy, the hospitalization percentage for their infants appeared to decrease if they stopped smoking during their first trimester or reported smoking fewer than 20 cigarettes per day, although the difference was not statistically significant.

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Tobacco Use continued from p. 1

Summary: In this study, children born to mothers enrolled in the North Dakota Medicaid program who used tobacco during pregnancy between 1999 and 2001 were more likely to be hospitalized with a respiratory disease during their first year than were children whose mothers did not use tobacco. In addition, hospitalization appeared to decrease when mothers stopped smoking or smoked fewer cigarettes.

Figure 1: Tobacco use during pregnancy

	Percentage	*95% Confidence Interval*
Used tobacco	9.0	7.7 to 10.3
Did not use tobacco	5.9	5.5 to 6.8
Stopped smoking	8.1	4.8 to 11.3
Did not stop	9.0	7.3 to 10.7
Fewer than 20 cigarettes	8.8	7.3 to 10.2
20 or more cigarettes	13.7	7.2 to 20.2

Diabetes Among North Dakota Children Enrolled in Medicaid

Research Methods

The prevalence of diabetes among North Dakota children enrolled in Medicaid was examined using health care claims from Data Probe. Claims were collected from UB 92 inpatient, UB 92 outpatient, Claims Professional inpatient and Claims Professional outpatient files. The claims were sorted by calendar year for 1998 through 2000 based on the date of service on the claim. Claims were identified based on inclusion of any ICD9 code of 250 through 25092 listed as the first through eighth diagnosis on the claim. Only claims for children younger than 18 were used. Unduplicated individuals were identified by aggregating each claim based on the recipient's Medicaid identification number. Data were analyzed for each of the three years individually and for the three-year period cumulatively. The results may be affected by enrollment bias. Enrollment in Medicaid and the likelihood of children accessing health care resulting in claims forms can be influenced by demographics and other characteristics of the children.

Annual Rates

The National Health Interview Survey conducted by the National Center for Health Statistics at the Centers for Disease Control and Prevention estimates the national prevalence rate of diabetes in children to be between 1.2 and 1.6 per 1,000. The number of unduplicated cases in North Dakota increased sharply from 68 in 1998 to 91 in 1999 and 85 in 2000. Figure 2 summarizes the annual rates of diabetes in North Dakota children enrolled in Medicaid.

Figure 2: Annual rates of diabetes

Year	*Enrollees*	*Diabetes DX*	*Rate/1000*
1998	29,608	68	2.3
1999	30,946	91	2.9
2000	33,204	85	2.6

Cumulative Rates

During the three-year period 1998 through 2000, 45,907 unduplicated children younger than 18 were enrolled in the North Dakota Medicaid program. Of these, 159 had a diagnosis of diabetes on a claim form, for a rate of 3.5 per 1,000 children.

Children between the ages of 12 and 17 had rates substantially higher than children age 11 or younger. The diabetes rate for males (4.0) was higher than for females (3.0) RR=1.3. The rate for American Indian children (4.5) was significantly higher than for white children (3.1) RR=8.4 (CI 4.1 – 17.5).

Type II Diabetes

According to the Diabetes Control Program of the North Dakota Department of Health and the *Physician's International Classification of Diseases, 9th Revision, Clinical Modification* from 1998, type II, or adult-onset diabetes, is defined as an exclusive five-digit ICD diagnosis with the fifth digit

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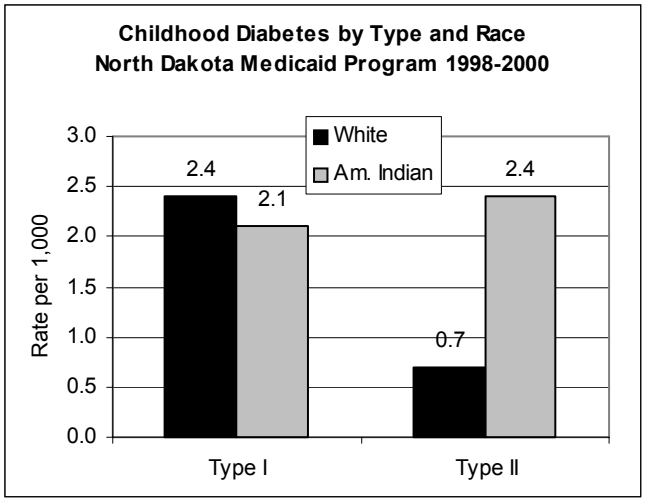
Diabetes continued from p. 2



being 0 or 2. Using these criteria, the number of North Dakota children enrolled in Medicaid and diagnosed with type II diabetes also has increased sharply, from eight in 1998 to 24 in 1999 and 25 in 2000.

Type II diabetes was rare in children younger than 12. There were 20 cases for a rate of 0.5 per 1,000. Males had higher rates of type II diabetes than females (1.3 – 1.0) RR=1.3. American Indian children had significantly higher rates of type II diabetes than white children (2.4 – 0.7) RR=3.2 (CI 1.9 – 5.5).

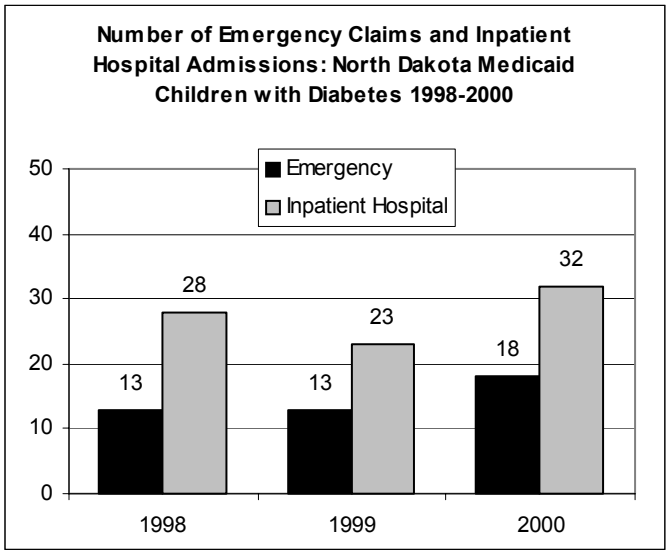
Health Care Utilization

During the three-year period, there were 44 claims for emergency services for children with diabetes involving 31 separate children. Seven of the children had two emergency claims and three had three separate claims. The number of emergency claims increased from 13 in both 1998 and 1999 to 18 in 2000.

Between 1998 and 2000, there were 83 inpatient hospital admissions for children with diabetes involving 50 separate children. Five children had two admissions, six children had three and three children had more than three admissions. The number of inpatient hospital admissions increased from 28 in 1998 to 32 in 2000.

Summary

- Between 1998 and 2000, the rate of North Dakota children enrolled in Medicaid and diagnosed with diabetes was 3.5 per 1,000. This is higher than national prevalence estimates.
- Among North Dakota Medicaid children, males have slightly higher rates of diabetes than do females and American Indian children have significantly higher rates than white children.
- The number of Medicaid children coded as having type II diabetes is increasing. A disproportionate number of American Indian children have type II diabetes.
- It appears that the number of Medicaid children with diabetes who receive health care through emergency rooms and inpatient hospitalizations may be increasing.



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