



Women's, Children's, & Family Health



November 2010

Title V Needs Assessment: Special Series Fact Sheet

Vol. 2 No. 26

Child and Adolescent Diabetes in Alaska

Diabetes is a group of diseases marked by high levels of blood glucose, resulting from defects in insulin production, insulin action, or both. Type 1 diabetes (juvenile diabetes) occurs when the body does not produce insulin. It usually strikes children and young adults. Type 2 diabetes occurs when the body either does not produce enough insulin or the ignores the insulin. Type 2 diabetes is usually seen in people over age 40.

Type 2 diabetes occurs more commonly among some groups. For example, the highest incidences of type 2 diabetes in youth occur among African American, Native American, and Hispanic youth.¹ Type 2 diabetes occurs more commonly among overweight and obese people, probably because excess weight leads to insulin resistance.¹ Early life risk factors may influence subsequent diabetes risk including high or low birth weight, maternal gestational diabetes, and lack of breastfeeding.¹ A strong association between presence of the disease and positive family history, regardless of ethnicity, points to the influence of genetic factors.^{1,2}

Seriousness

Healthy People 2010 Targets and National Data

Indicator	Alaska 2009	Nation 2009	Healthy People 2010 Goal [*]
Prevalence of clinically diagnosed diabetes among adults 18 years of age or older, rate per 1,000	5.8 [†]	8.3 [†]	2.5
Prevalence of clinically diagnosed diabetes among children 0-19 years of age, rate per 1,000	2.8 ^{††} (2006 - 2009)	2.2 [^] (2007)	NA

NA The Healthy People 2010 goal for this indicator is not applicable for this age group.

^{††}The prevalence for Alaska is based on an approved Medicaid claim for diabetes or diabetes medication for children 0-19 years of age and may not be representative of clinically diagnosed diabetes.

- During 2009, the prevalence of diabetes among Alaska adults (5.8 per 1,000) was 30% lower than the national rate of 8.3 per 1,000.
- During 2006-2009, the prevalence of diabetes (based on approved Medicaid claims) among Medicaid-enrolled children 0 - 19 years old in Alaska was 25% higher than the 2007 prevalence of clinically diagnosed diabetes in U.S. children.

Severity

Childhood Diabetes

The trend of increased childhood obesity has contributed to increasing childhood diabetes. Diabetes in childhood, and

particularly poorly managed diabetes, is associated with heart disease and stroke, kidney disease, eye and nerve damage, and other problems.³ Diabetes is the leading cause of adult blindness, lower limb amputations, and kidney failure.³

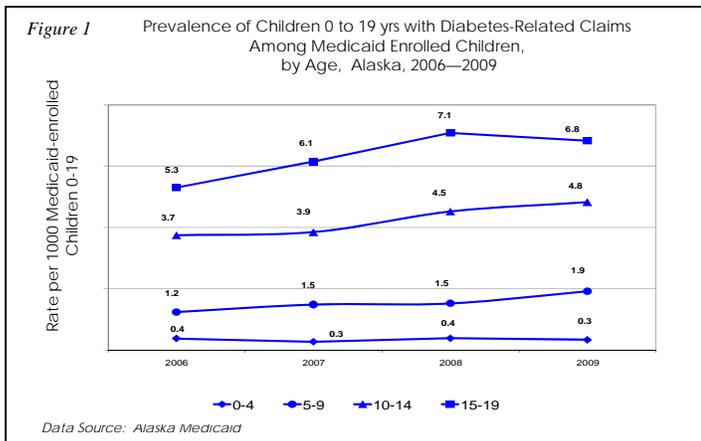
Gestational Diabetes

Gestational (or pregnancy-related) diabetes can be associated with fetal malformations, neonatal hypoglycemia, and other complications. Compared to Alaskan mothers with no diabetes, Alaskan mothers with preexisting or gestational diabetes were more likely to have other complications identified including pregnancy-related hypertension (2.5- and 2-fold, respectively), eclampsia (5.6 - and 2-fold), cardiac disease (6- and 1.8-fold), and renal disease (24- and 2-fold).⁴ Furthermore, mothers with preexisting or gestational diabetes were more likely to have an amniocentesis, induction of labor, and deliver by caesarian section. Infants born to mothers with preexisting and gestational diabetes had an increased risk of cardiac malformations (16- and 4-fold, respectively), other circulatory or respiratory malformations (24- and 2-fold), assisted ventilation >30 minutes (4.4- and 1.3-fold), and to be born at <37 weeks gestation (3-fold increased risk associated with preexisting diabetes).⁴ Maternal diabetes has also been associated with high birth weight and risk for type 2 diabetes in off-spring.⁵

Urgency

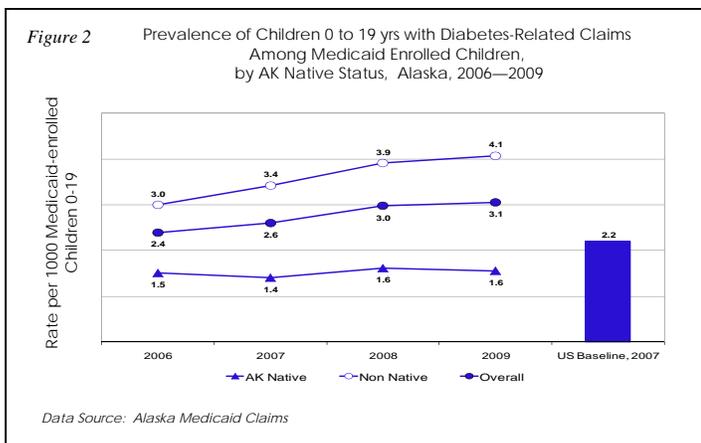
- Nationally, type 2 diabetes is increasingly diagnosed in children and teens. It is estimated that in 2001, 15% of diabetes cases among U.S. youth ages 10-19 years had a type 2 diagnosis.¹ The increasing prevalence of childhood obesity and lack of activity among children give concern that type 2 diabetes may be expected to occur in younger pre-pubertal children.⁶

- During 2006 - 2009 the annual prevalence of diabetes (based on an approved claim for diabetes or a diabetes-related medication) among Medicaid-enrolled children 0-19 years of age in Alaska remained unchanged. Figure 1.



Disparities

- In the U.S., the burden of diabetes is higher for some racial/ethnic minority groups, based on cultural variations and economic barriers.⁸ Reasons for the disparity are rooted in cultural variations and economic barriers. In the past, Alaska Native people had a substantially lower diabetes risk but that advantage is decreasing.
- Among Alaskan children enrolled in Medicaid, non-Native children had an increased risk compared to Alaska Native children. The average annual prevalence of diabetes among non-Native children during 2006-2009 was almost two and a half times that of Alaska Native children (3.6 and 1.5 per 1,000, respectively). Figure 2.



Economic Loss

Diabetes is an expensive medical condition. In SFY 2006, Alaska Medicaid spent about \$6.6 million for health care costs of children and youth (0-19 years of age) with diabetes.⁷ The average expenditure for a child with diabetes was \$18,837, three times more than that for a child with a chronic condition other than diabetes (\$6,040), and nearly four times that of a child with no chronic condition (\$4,994). Alaska Medicaid expenditures for recipients of all ages with diabetes was approximately \$138 million, or 14.2% of all Medicaid expenditures.⁷

About half of all Alaska births are covered by Alaska Medicaid. Over 7% of Medicaid recipients with a pregnancy-related claim had gestational or pre-existing diabetes, consuming 12.6% of Medicaid pregnancy-related expenditures in SFY 2006, or about \$6.5 million.⁵ The per capita cost of pregnancy care for recipients with gestational diabetes was \$8,787 whereas the cost for recipients with pre-existing diabetes was \$10,024.

Interventions & Recommendations

Specific interventions for type 2 and gestational diabetes include treatment programs, education, and assuring access to care for individuals with the disease. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. Interventions to prevent type 1 diabetes are unknown.

The greatest need is for interventions to prevent childhood onset of type 2 diabetes. The American Diabetes Association recommends that primary prevention target high risk individuals and that a public health approach of school and community-based programs be used. Interventions for individuals include drug therapy for glycemic control and reducing risk factors for long term complications, and family-centered approaches to encourage healthy diets and physical activity. Population-based programs include targeted support for breastfeeding in high risk subpopulations, and school or community based activities that promote weight management, active lifestyles, and healthy diets.⁹ These interventions are addressed more completely in the Fact Sheets 'Child and Adolescent Overweight and Obesity in Alaska', 'Child and Adolescent Physical Activity in Alaska', and 'Child and Adolescent Nutrition in Alaska' as a part of this series.

Intervention Effectiveness

Findings from the Diabetes Prevention Program, a randomized clinical trial of Americans that were at high risk of developing type 2 diabetes, showed that lifestyle changes in diet, exercise, and weight loss can prevent or delay type 2 diabetes in those at high risk. Participants of the study that made these lifestyle changes reduced their risk of type 2 diabetes by 58%.⁷

Effectiveness of the interventions focusing on overweight and obesity, nutrition, and physical activity are addressed in their respective Fact Sheets (see above).

Capacity

Propriety

The prevention effort will need to be a multi-agency approach to incorporate a broad spectrum of disciplines including Public Health, Education, Parks and Recreation, and others. Pregnancy-related diabetes is primarily a clinical management and education issue.

Economic Feasibility

The economic feasibility depends on the specific intervention and the extent of its implementation.

Acceptability

The primary contributing factor to childhood diabetes is obesity, and there is a growing consensus that this problem must be addressed.

Resources

Alaska Obesity Prevention and Control Program; Alaskan's Taking On Childhood Obesity initiative; School Nursing/School Health Program to provide technical assistance on disease management in school settings.

Data Sources: Alaska Youth Risk Behavior Survey (YRBS) to identify and monitor risk factors associated with diabetes such as overweight, nutrition, and physical activity; Childhood Understanding Behaviors Survey (CUBS) to monitor nutrition and physical activity in toddlers; Alaska Medicaid; Alaska Bureau of Vital Statistics.

Legality

Not an issue.

References

- ¹ Mayer-Davis EJ. Type 2 diabetes in youth: epidemiology and current research toward prevention and treatment. *J Am Diet Assoc.* Apr 2008;108(4 Suppl 1):S45-51.
- ² Libman IM, Arslanian SA. Prevention and treatment of type 2 diabetes in youth. *Horm Res.* 2007;67(1):22-34.
- ³ American Diabetes Association. Complications of Diabetes in the United States. *All About Diabetes* [website]. Available at <http://www.diabetes.org/type-2-diabetes/complications.jsp>. Accessed December 30, 2008.
- ⁴ Alaska Division of Public Health, Section of Epidemiology. Diabetes in Pregnancy, Alaska, 1991-2000. *Epidemiology Bulletin, Recommendations and Reports*, 2001, Vol. 5, No. 3.
- ⁵ American Academy of Pediatrics. Rise in Childhood Diabetes Linked to Increase in Type 2 Diabetes. News Release. February 2000.
- ⁶ American Diabetes Association. Type 2 Diabetes in Children and Adolescents. *Diabetes Care*; 23(3):381-389. March 2000.
- ⁷ Alaska Division of Public Health, Section of Chronic Disease Prevention & Health Promotion. Alaska's Diabetes Burden, 2004 - 2006. January, 2009. Available at http://www.hss.state.ak.us/dph/chronic/diabetes/burden/Diabetes_Burden.pdf
- ⁸ Diabetes Disparities Among Racial and Ethnic Minorities. November 2001. AHRQ Publication No. 02-P007. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.ahrq.gov/research/diabdsp.htm>
- ⁹ Knowler WC, Barrett-Connor E, Fowler SE. Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin. *New England Journal of Medicine*; 346(6):393-403. February 2002.

Data Sources

[†] Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, [2009]. Accessed October 27, 2010. Available at: <http://apps.nccd.cdc.gov/BRFSS/>.

[‡] Alaska Medicaid Claims: 2006-2009 Data. State of Alaska, Department of Health and Social Services.

[^] National Institute of Diabetes and Digestive and Kidney Diseases. National Diabetes Information Clearing House. *National Diabetes Statistics, 2007* [website]. Last updated June 2008. Available at: http://diabetes.niddk.nih.gov/dm/pubs/statistics/#d_allages. Accessed December 17, 2008.

^{*} Healthy People 2010. U.S. Department of Health and Human Services. Healthy People 2010. 2nd ed. With understanding and improving health and objectives for improving health. 2 Vols. Washington, DC: U.S. Government Printing Office. 2000.