The Great Lakes EpiCenter News

*Epidemiology Project of the Great Lakes Inter-Tribal Council, Inc.*

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**The EpiCenter currently provides epidemiological services to the Tribes in the Bemidji Area (Michigan, Wisconsin, and Minnesota). The services include training and technical assistance in many areas of public health, data management, program planning, and program evaluation.**

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## Bemidji Area Immunization Report - Executive Summary

**By Amy Grooms**

**Background:** Nine IHS and tribal sites in the Bemidji IHS Area – 3 in Michigan, 3 in Minnesota, and 3 in Wisconsin- participated in an immunization coverage survey designed to evaluate the immunization coverage among the American Indian (AI) and Alaska Native (AN) children served at these facilities. This assessment included evaluating age appropriate immunization, collecting data on missed opportunities for immunization, as well as assessing the completeness of the immunization data included in the RPMS system compared to the chart at each facility.

**Methods:** Children 2 – 6 years of age (born between 01/01/1995 and 01/01/2000) who had at least one visit to the facility in the last three years were included in the assessment. Immunization histories in both the computer RPMS system and the chart (Blue Sheet – we did not review Patient Care Component [PCC] forms) were reviewed. Age appropriate vaccination was determined using the Clinical Assessment Software Application (CASA), version 2.5. Facilities were grouped by state, and coverage was compared to state coverage reported by the National Immunization Survey 2001. We also looked at programmatic indicators such as missed opportunities, and quantified data discrepancies between the chart and the RPMS record.

**Results:** Coverage at 24 months with 4 DTaP, 3 IPV, 1 MMR , 3 Hep B and 3 Hib (4:3:1:3:3) was 68% for the Tribal/IHS facilities in Michigan, 74% for those in Wisconsin, and 59% for those in Minnesota. Trends in 4:3:1:3:3 coverage over time also varied between geographic locations, with both Michigan and Wisconsin showing improvement as younger children (2 year olds) had higher coverage at 24 months than the 6 year olds. In Minnesota, however, coverage decreased 20% over time, with 2 year olds having significantly lower coverage at 24 months than 6 year olds.

For children born during the same time period as those included in the National Immunization Survey, 4:3:1:3:3 coverage at 24 months for IHS/Tribal facilities in Michigan and Wisconsin was comparable to coverage reported for their respective states; coverage for the IHS/Tribal facilities in Minnesota however was considerably lower (47% vs. 77%).

Overall relatively few children served by the IHS/tribal facilities included in the study received hepatitis A vaccine. Michigan had the lowest number of

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## GLITC Epidemiologist Presents at CSTE Annual Conference

The Council of State and Territorial Epidemiologists (CSTE) is a professional association of public health epidemiologists in states and territories working together to detect, prevent, and control conditions of public health significance. The CSTE works to establish more effective relationships among state and other health agencies, and to provide technical advice and assistance to the Association of State and Territorial Health Officials (ASTHO) and federal public health agencies, such as the CDC.

The CSTE has more than 400 members with surveillance and epidemiology expertise in a broad range of areas including communicable diseases, immunizations, environmental health, chronic diseases, occupational health, injury control and maternal and child health. Over 150 members serve as special topic consultants for a broad range of public health concerns such as HIV/AIDS and vaccine-preventable diseases.

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# Metabolic Syndrome

**Introduction**
The metabolic syndrome is relatively a new diagnostic term to describe a cluster of metabolic risk factors and it is characterized by insulin resistance and the end products are atherosclerosis leading to cardiovascular disease (CVD), myocardial infarction (MI), strokes, peripheral arterial disease, and endothelial dysfunction.

American Indians (AI) have the highest prevalence of diabetes in the U.S., and CVD in communities of AI is increasing. Insulin resistance (IR) precedes diabetes in AI. IR is characterized by a diminished response to the biological effects of insulin and is associated with obesity, predominantly abdominal distribution of fat, elevated blood pressure and triglyceride levels, low HDL cholesterol, small LDL particle size, and elevations in inflammatory cytokines.

**Epidemiology**
Approximately 47 million Americans or about 1 in 4 adults (23%) have the metabolic syndrome. This figure includes 10 million to 15 million individuals with type 2 diabetes (evidence suggests that insulin resistance and impaired glucose tolerance may be the link among all the manifestations of the metabolic syndrome). With the incidence of the metabolic syndrome comparable to that of hypertension (24%), practitioners are likely to see metabolic syndrome frequently, in about one quarter of patients.

Data from the Third National Health and Nutrition Examination Survey (NHANES III) show that among U.S. adults ≥20 years of age, metabolic syndrome is present in 23.8, 21.6, and 31.9% of whites, blacks, and Hispanics, respectively. NHANES III does not include data for American Indians. The Strong Heart Study (SHS) is a longitudinal, population-based study of cardiovascular disease and CVD risk factors in 4,549 American Indians. The data provided a unique opportunity to contrast the dramatic ethnic differences in prevalence of metabolic syndrome between American Indians and other ethnic groups in the U.S. The prevalence of metabolic syndrome in SHS men aged 45–49 years was 43.6% compared with 20.0% among all men in NHANES III, a prevalence ratio of 2.18. The prevalence of metabolic syndrome in SHS women in the same age group was 56.7% compared with 23.1% among NHANES III women, a ratio of 2.45.

As the US population ages, the prevalence rate of the metabolic syndrome will increase steadily among men and women in the older age groups. The prevalence of the metabolic syndrome among older segments of the population is already approaching 50%. However, African American women have an approximately 57% higher prevalence than men, and Hispanic women have an approximately 26% higher prevalence than men.

**Diagnostic Criteria for the Metabolic Syndrome**
The Third Report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III [ATP III]) in 2001 has defined individuals with the metabolic syndrome as having 3 or more of the criteria listed below.

- Abdominal obesity (waist circumference > 102 cm [40 in] in men, > 88 cm [35 in] in women)
- Hypertriglyceridemia (≥ 150 mg/dL)
- Low HDL-C (< 40 mg/dL in men, < 50 mg/dL in women)
- High blood pressure (≥130/85 mm Hg)
- High fasting glucose (blood sugar≥110 mg/dL and < 126 mg/dL) without diabetes

The World Health Organization in 1998 defined individuals with the metabolic syndrome as (Impaired Fasting Glucose (110-125 mg/dL) or Impaired Glucose Tolerance (IGT) (2-hour post-oral glucose challenge plasma glucose (2hPG) <140 mg/dL) or Diabetes) and/or Insulin Resistance plus 2 or more of the criteria listed below:

- Waist-hip ratio >0.85 (women) or >0.9 (men) and/or body mass index >30 kg/m2 (women) or 40 inches (men)
- Triglycerides ≥150 mg/dL and/or HDL cholesterol
- Triglycerides ≥150 mg/dL<35 mg/dL (women) or <40 mg/dL (men)
- Blood pressure ≥140/90 mm Hg Microalbuminuria: urinary albumin excretion rate ≥20 µg/minute or albumin/creatinine ratio ≥30 mg/g

**Etiology of the metabolic syndrome**
The causes of this syndrome are multifactorial and the major contributing factors are environmental or lifestyle, such as being overweight or obese, getting little physical activity, or eating a poor diet. Insulin resistance is now believed to be causative of the metabolic syndrome. Genetic factors may be also involved. However the exact etiology of the metabolic syndrome is still unclear.

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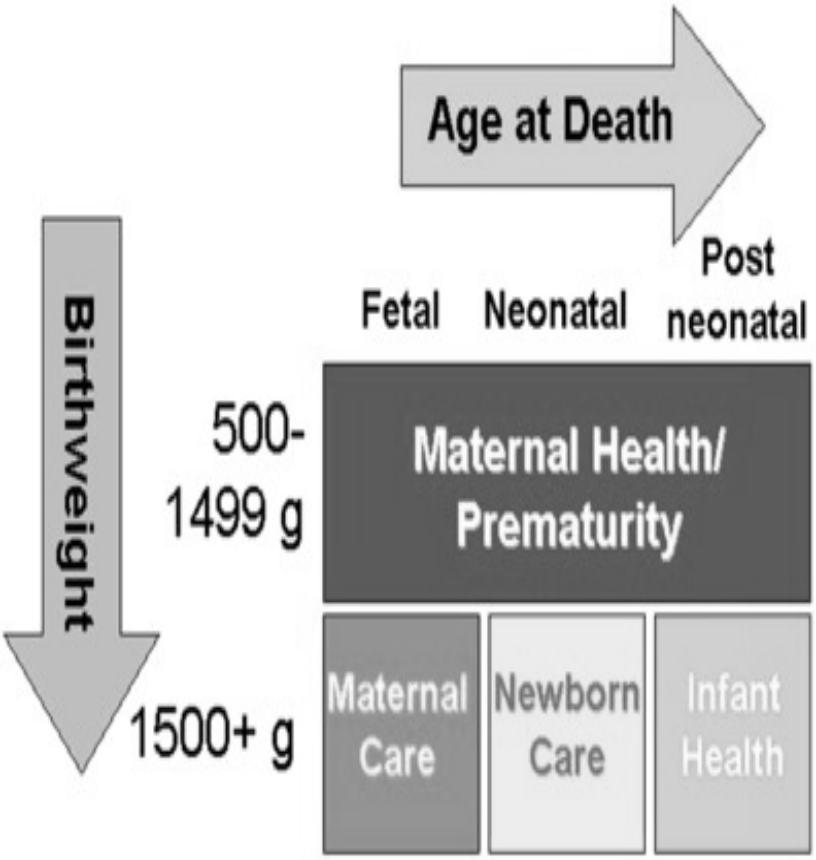
## Perinatal Periods of Risk Approach

The Perinatal Periods of Risk (PPOR) approach has been used in developing and developed countries to monitor and investigate fetal-infant mortality. The overall intent of the PPOR Approach is to develop a simple method that can be used by communities to mobilize and prioritize prevention efforts. This PPOR methodology was first developed by Dr. Brian McCarthy, an epidemiologist and obstetrician with the Division of Reproductive Health at the Centers for Disease Control and Prevention (CDC). Since 1997, in partnership with CDC and the March of Dimes and several major cities, City**M**at**CH,** an organization of urban health department MCH programs headquartered at the University of Nebraska in Omaha, has led national efforts to validate, enhance and adapt this approach for greater use in U.S. cities.

The PPOR methodology takes into account both time of death and weight at delivery. The PPOR has five major steps for addressing fetal-infant mortality:

1. engage community partners early to gain consensus and support;
2. map fetal-infant mortality by birth weight and age;
3. focus on reducing the overall fetal-infant mortality rate;
4. examine potential opportunity gaps between population groups; and target further investigations and prevention efforts.




In the figure, the block labeled "Maternal Health and Prematurity" contains all events occurring to babies weighing 500 grams to 1,499 grams at delivery; the block labeled "Maternal Care" contains the deaths occurring before delivery to fetuses weighing 1,500 grams or more; the block labeled "Newborn Care" includes deaths to infants weighing at least 1,500 grams at birth and occurring 1,500 grams at birth and occurring before the infant is 28 days old; the cell labeled "Infant Health" includes deaths occurring to infants born weighing at least 1,500 grams and occurring after 27 days and before the end of the first year of life. The PPOR methodology also defined a relevant standard population that experiences good perinatal outcomes. This standard population then can be used as a comparison or reference group for all other population groups. By comparing, and mapping fetal-infant mortality, PPOR enables communities to identify and further investigate areas in which there are the greatest opportunities for local impact. Follow-up investigations provide in-depth information and strategic direction for targeted prevention of fetal and infant mortality.

On July 15, 2003, the PPOR Approach model was presented by Dr. Diane L. Rowley in the Healthy Babies in Wisconsin: A Call to Action conference in Wisconsin Rapids. This is the beginning of the program with the goal to decrease the infant mortality rate in Wisconsin. The next step of this program is to apply the PPOR model in communities to develop a process for continuous improvements in perinatal outcomes.

The GLITC EpiCenter epidemiologist participated in the conference as a data resource staff to answer the model and Fetal-Infant mortality data related questions in the Native American group. Further questions about the PPOR in Native American communities will be discussed through on-going communication and conferences.

## Community Based Research Training Planning Finalized

Fifteen scholarships will be available to staff from Tribal Health Centers and AI Urban Programs for each of the three sessions. The scholarships will reimburse the recipient for travel, per diem and lodging at the usual government rates. Scholarships will be awarded on a first come basis with the following considerations: only one scholarship will be awarded per agency and an effort will be made to, as much as possible, disperse the scholarships across the three states. You will be notified in writing regarding whether or not your application for a scholarship has been approved.

**Session 1**: Community Based Research Training Overview
September 23-25, 2003 – Rhinelander, Wisconsin/Holiday Inn Express

**Session 2**: Community Based Research Methods and Tools
October 21-23, 2003 – Sault Ste. Marie, Michigan/Kewaden Hotel

**Session 3**: Collaborative Community Program Evaluation/Session 3
November 4-6, 2003 – Minneapolis, MN

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## Metabolic Syndrome

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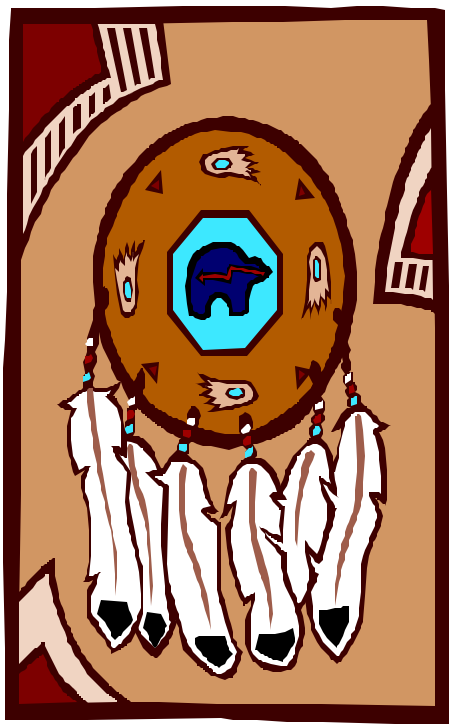
**Prevention and treatment of the metabolic syndrome**
To the extent that overnutrition and underactivity are the underlying causes of the metabolic syndrome, interventions aimed at these factors may constitute specific therapy for insulin resistance. While there are no data directly addressing the metabolic syndrome, data showing that type 2 diabetes can be prevented by these lifestyle changes provide guidance. For instance, the Diabetes Prevention Program (DPP) recently demonstrated that an intensive lifestyle modification program with the goals of at least a 7% weight loss and at least 150 minutes of physical activity per week reduced the incidence of type 2 diabetes to 4.8 cases per 100 person-years, compared with 11 cases per 100 person-years in a standard lifestyle recommendation control group. The results of the DPP confirm findings of other similar studies, including the Finnish Diabetes Prevention Study and the Da Qing (China) IGT and Diabetes Study. The American Diabetes Association (ADA) advocates counseling patients at risk for type 2 diabetes to lose weight and increase their physical activity.

**Summary**
The cluster of various metabolic risk factors is important and the ATP III report serves as a formal recognition for the magnitude of the problem. Despite evidence for increased risk among individuals with these characteristics, it remains unclear whether this "metabolic syndrome" represents a unified construct reflecting one underlying pathogenic pathway. Further knowledge about the nature of the metabolic syndrome and the degree of association among its components will help to inform implementations of preventive and intervention efforts for individuals at risk for cardiovascular disease and type 2 diabetes.

**References:**
Ford ES, Giles WH, Dietz WH. Prevalence of the metabolic syndrome among US adults: findings from the third National Health and Nutrition Examination Survey. ***JAMA* 2002;**287:356-9.

Helaine E. Resnick, Kristina Jones, Giacomo Ruotolo, Arvind K. Jain, Jeffrey Henderson, Weiquan Lu, and Barbara V. Howard. Insulin Resistance, the Metabolic Syndrome, and Risk of Incident Cardiovascular Disease in Nondiabetic American Indians: The Strong Heart Study. **Diabetes Care 2003;** 26: 861-867



## GLITC Epidemiologist Presents at CSTE Annual Conference

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Great Lakes EpiCenter Epidemiologist, Greg Rachu, recently attended and presented at the 2003 CSTE Annual Conference in Hartford, Connecticut. Rachu was invited by Dr. Michael Landen, Medical Epidemiologist of New Mexico's Department of Health, as part of a panel to discuss tribal/state/federal public health surveillance collaborations. The purpose of the discussion was to increase awareness of the work being conducted by and with tribal nations and to discuss what the role of the CSTE could and should be regarding tribal health and surveillance activities. Other members of the panel included Dr. David Harrowe, Health Officer for the Gila River Indian Community (Arizona) and Jeanne Bertolli, Epidemiologist at the Centers for Disease Control and Prevention (CDC).

Rachu's presentation focused on the Great Lakes EpiCenter's approach to public health surveillance while working for the Bemidji Area Tribes and its relationship with state and federal entities. Examples were given of the EpiCenter's involvement in various health surveillance activities, including a Native American Research Center for Health (NARCH) project entitled 'Improving American Indian Cancer Surveillance and Data Reporting in Wisconsin'; the Bemidji Area Diabetes Mellitus (DM) Surveillance Project; and the updated Community Health Profiles compiled as tribal-specific, state (MI, MN, WI), and Bemidji Area reports. These profiles highlight injury and chronic disease trends which may be useful in projecting future public health needs and provide data for tribal specific grant-writing efforts and proposals.

These and other examples were provided to acknowledge the EpiCenter's partnerships with the Tribes of Michigan, Minnesota, and Wisconsin; state health departments of MI, MN, and WI; IHS Bemidji Area Office; IHS National Epidemiology Program; IHS National DM Program; Mayo Clinic; University of Wisconsin; National Institutes of Health; Legacy Foundation; and the CDC.

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children who received the first dose of hepatitis A (1%), while Minnesota had the highest, with 40% of children having received the first dose. Less than half of the children who received the first dose of hepatitis A went on to receive the 2nd dose in all three geographic locations.

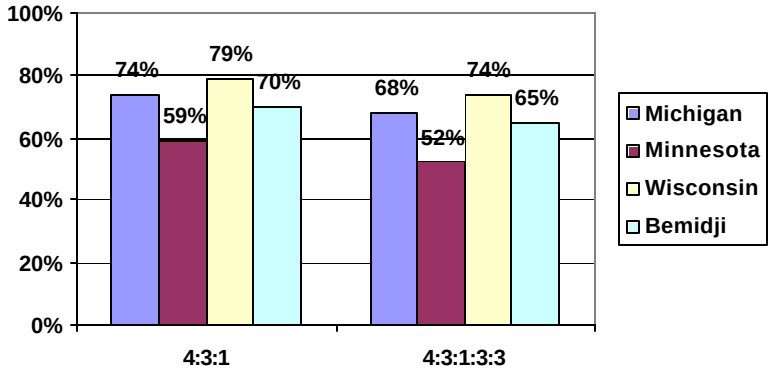
In the facilities in Minnesota, 41% of the children had a missed opportunity for immunization, compared to 22% in Michigan and 25% in Wisconsin. For all three geographic locations, the majority of the missed opportunities occurred during an acute care visit.

In Minnesota and Wisconsin, ~ 50% of the children had immunization data that was recorded in the chart, but missing in the RPMS system. In Michigan, 30% of the children were missing immunization Data in the RPMS. In Minnesota and Wisconsin, ~20% of the children also had data that was recorded in RPMS that was not included in the chart on the Blue Sheet; in Michigan, 30% of the charts had missing data on the blue sheet.

**Conclusion:** The Michigan and Wisconsin facilities had relatively high 4:3:1:3:3 coverage, comparable to coverage in the rest of the state. The Minnesota facilities, however, had lower coverage, and coverage appears to have declined over time. Further investigation into the reasons for the decline is necessary. Hepatitis A vaccine is not being widely offered in any of the geographic locations, though Minnesota has made considerable progress; improvement in giving the 2nd dose of hepatitis A is need at all sites. All sites could reduce the number of missed opportunities for immunization by focusing on providing immunizations during acute care visits.

There was considerably more missing data in the RPMS system than in the chart/Blue Sheet, though we found that in ~ 20 % of the records the Blue Sheet was not complete. Data quality could be improved at all sites by better implementation of the RPMS package and a more thorough assessment of the data flow process to identify problems.

**Figure 1: Percentage of children Up-to-Date at 24 months with 4:3:1 and 4:3:1:3:3**

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