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Increasing the Native American Presence in Health Care: Three Indian Health Service Programs that Support Academic Achievement

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Introduction

American Indians face persistent and pervasive disparities in medical care. Despite significant advances in health care delivery, life expectancy remains four years lower for Native Americans than the general population, and the infant mortality is 25 percent higher.[1] The causes for these disparities are complex, but an important contributor remains poor access to care. Natives continue to face cultural and socioeconomic barriers that limit use of Indian Health Service facilities.

Skepticism about Western medicine has been frequently identified as a contributor to these barriers. Natives have had an ambivalent, and sometimes even adversarial, relationship with US government physicians. Many tribes have sought independence from the federal system through the Indian Health and Education Act of 1975. Giving the tribes control over their own health care has the potential to create a system more responsive to local needs.

Yet even as tribes have sought increased independence in governing their own medical delivery, there remains a persistent dearth of Native American health care providers to take the helm of local health initiatives. While American Indians constitute 1.5 percent of the US population,[2] they are dramatically underrepresented in the professional schools. Only 0.007 percent of medical school graduates are Native American.[2] For other health professional schools, AI students make up only 0.5 to 1 percent of the student body. These numbers have been static over the past 10 years.[4] While Native Americans have seen improvement in secondary school success with a rise in high school graduation rates from 52 per cent in 1980 to 71 percent in 2002, these gains have not been matched in graduate education.[5]

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Educational achievement among Navajo Americans reflects these national trends. Data taken from the 2000 Census reveal that only 62.5 percent of Navajo Americans report completing high school or the equivalent, as compared to the national rate of 80 percent. Only 6.9 percent of Navajo complete at least a four-year college degree, as compared to 24.4 percent nationally. While 27.7 percent of Navajo begin college, only 6.5 percent of the total population achieve a two-year degree, 5 percent obtain a four-year degree, and 1.9 percent of Navajo earn a graduate degree.

Our Native American students face unique challenges in higher education. Yet they must succeed in order to take on a larger role in health care delivery. We describe three programs that offer enrichment services to encourage American Indian students to pursue careers in the health professions. Adventures in Medicine, a summer mentorship program at the Kayenta Health Center on the Navajo Nation is currently in its fifth year. The Indigenous Pride Health Career Program, a program on the Hopi Nation is currently entering its second year. Both programs have received financial and organizational support from the Northern Arizona Health Education Center. Pathways into Health, a national distance education collaborative, has also partnered with Northern Arizona Health Education Center in its development and growth.

Background

AI students are often less successful than other minorities in higher education. Dr. Yvette Roubideaux is a member of the Rosebud Sioux Tribe and a physician working at the University of Arizona in Tucson, Arizona. She is the Director of the University of Arizona/Inter-Tribal Council of Arizona Indians into Medicine (INMED) Program. In an interview for this article, she cited a very high attrition rate for Native American students in college. She said, "The dropout rate is shockingly high – 80 or 90 percent." She discovered that the average grade point average for first-year Native American students at the U of A is 1.7. "They are only able to recover on average to a 2.3 or 2.5 by their junior year. That's at the very lower limit of possibility to qualify for graduate school," she said.

Dr. Thomas Sequist, a member of the Taos Pueblo Tribe in New Mexico, now runs the Four Directions Summer Research Program for Native American college students through Harvard Medical School. According to Sequist, the fear of failure prevents many students from even entering college. "One major obstacle is that students haven't considered that they could go to college or medical school. I am concerned that students are too worried that they will fail," he said.

Sequist looks to the lack of Native American role models as an important barrier to obtaining higher education. Sequist took a circuitous route to becoming a physician. He completed an undergraduate degree in engineering and worked as an intern for several summers before deciding to pursue medical school. "I'm the first person in my family to finish an undergraduate degree, let alone medical school. My own biggest challenge was the lack of physician role models. In retrospect, I went through the process blindly. I am grateful that it turned out so well in the end," he said.

Sequist cites his mother, who worked as a nurse for the Santa Fe Indian Health Service hospital, as an inspiration. Nursing has traditionally been an accepted role for Native American professionals in the Indian Health Service. Yet, he worries that without many physician role models, Native American students choose other health careers because they don't see a degree in medicine as a feasible option. He considers career counseling one of the most important aspects of his work with Native American college students. "It takes a lot of work to convince kids that they can be a doctor. If they have examined the careers and prefer nursing, then that's great; we certainly need more Native American nurses. But I worry that a lot of kids choose careers without considering all of their options," he said.

In addition to the lack of role models in the community, Roubideaux feels that limited parental education and support present additional challenges. "I actually see a difference in students who have a parent who went to college, although I do not have data to prove this. Those students tend to do better. The importance of a college education has been instilled in them. A parent who has been to college tends to know more about how to support a student in college," she said.

Roubideaux feels that students who graduate from reservation schools struggle the most. "I think I see the biggest barriers for students from the reservation schools. Even if they were a straight-A student, they are way behind the other students once they get to college. They didn't have to work that hard in high school. As a result, they don't have the study habits. They don't have the time management skills. A lot of our students get discouraged during the first year because they aren't doing as well as they did in high school," she said.

The cultural barriers cannot be minimized. "In the environment that most of our students come from, college is not part of the cultural norm," Sequist said. Roubideaux agrees. "Students are afraid that if they go to college or medical school and become part of Western thinking, they have to give up their culture and their families. When students go to college, they think they are losing something or must give up their culture, which is not at all necessary," she said.

James Galloway, MD, the founder of the Pathways into Health Program, cited this fear of cultural loss as a primary motivation for creating a distance-learning program. In addition to his responsibilities for the Pathways into Health Program, Galloway is also the senior cardiologist and director for the Native American Cardiology Program at the University of Arizona. Galloway began his career as an internist for the IHS at Hopi, then at the Whiteriver Apache and San Carlos Apache hospitals. "Currently, students who want to pursue higher education must leave the reservation. They are forced out of their environment, yet they still have a strong pull to return home for family events like ceremonies and funerals.

They fall behind and then cannot graduate. It would be a tremendous opportunity to stay on the reservation and get an education at the same time," he said.

Karen Francis-Begay, originally from Chinle on the Navajo Nation, is now the director of Native American Student Affairs at the University of Arizona. She created the First Year Scholars Program to recreate in a university setting the family and clan supports of a home community. She also wanted to combat the stereotype of the Native American student as disconnected, ill-prepared, and disadvantaged. The First Year Scholars Program creates a living-learning community geared for Native American students. It pulls together previously existing enrichment services into a more cohesive program. Students participating in the program live together in a co-ed dorm with an on-site Native American student resident advisor. In addition, the students take courses together, some geared specifically for Native American students, and others that are general courses required for graduation. In this way, students are able to support each other emotionally and academically. The students are also required to take a Connections Class, taught by Francis-Begay, that reinforces time management and study skills. Finally, the program includes mandatory study sessions in the residential dormitory.

Francis-Begay sees financial support as an essential component of keeping Native American students in school. In addition to providing information on the financial resources available, the First Year Scholars Program also offers a $1000 stipend to each student to cover deposits and other costs incurred before the academic term begins, and for many students, before other scholarship funds become available.

The First Year Scholars Program has seen some early success. Last year, a cohort of 30 students participated in the first year of the program. "Attrition was 40 percent for first-time, full-time Native American students after the freshman year. In the first year, we need to give the skills to progress to the second, third, fourth years, and ultimately to graduation. In our First Year Scholars Program, we have had the highest persistence rate – 69 percent. Hopefully that will translate into a higher graduation rate as well," Francis-Begay said. Francis-Begay plans to expand the program each year until it reaches a maximum of 60 participants.

Those students participating in the First Year Scholar Program who dropped out cited financial hardship or family concerns as the most common reasons for leaving. "We do exit interviews with all the students. A lot of students attributed leaving to family issues and financial reasons. Some didn't get the aid that they expected. For some, the primary income provider lost his or her job; others had family stresses like a death in the family. A few said that they just weren't quite ready for college," she said.

Jennifer Stanley completed the First Year Scholars Program and is now a sophomore at the University of Arizona. She also participated in Adventures in Medicine in Kayenta while still in high school. She states that her biggest challenge in the transition from high school to college was "probably taking my own responsibility for myself, grades-wise, and going to my classes. I guess this is all about myself – I'm not doing it for anyone else but myself."

She said that before she got to college, it was hard for her to imagine university life. She said about the Kayenta mentorship program, "I didn't know what college was like. The students there were trying to tell us, but I couldn't imagine it. I think they did everything they could to help us, but it was just me." Stanley has found the Native American program at the U of A to be very helpful. "All the other students there are in the same boat as me," she said.

Marquita Mose also participated in Adventures in Medicine and graduated from Monument Valley High School in 2003. She enrolled in Scottsdale Community College and intended to get a degree to be an Emergency Medical Technician. But she struggled during her first year of college and ultimately withdrew. "Probably the biggest thing [contributing to my withdrawal] was grades. You had to take the same classes every day. Doing the work was hard, and finally I got sick of it. The language and terminology was the hardest," she said. She has recently returned to school and is currently enrolled in a program to become a nursing assistant.

Roubideaux has been impressed by the tremendous barriers facing Native American students in graduate education. "Initially I focused on the students ready to apply for medical careers. Then, I realized we were too late. The first year is the time people drop out. They get overwhelmed. [A mentor of mine] believes that you need to help people as early as possible in the pipeline," she said. Galloway concurs. "Whenever we present the Pathways program to the tribal governments, they say, 'Great, but we need to start earlier!" he said.

Adventures in Medicine, Navajo Nation

Adventures in Medicine (AIM) is a peer mentorship program at the Kayenta Health Center in Kayenta, Arizona on the Navajo Nation. Now in its fifth year, the program runs for four weeks during July. We have mentored 82 high school students through the program. In addition, we have had 16 mentors participate, four of them Native American.

The Northern Arizona Health Education Center, which focuses on increasing the number of rural health care providers, has sponsored the grant of approximately $5,000 per year. A local organization, Youth Empowerment Services, administers the grant. Our Health Promotion/Disease Prevention program also contributes to AIM. The funds pay for stipends for all participants in the program. In addition to paying the mentors, we also offer a $100 stipend to each high school student who completes the program to reinforce the value of the time they spend with us. We also pay honoraria to speakers, including traditional practitioners and patients who share their experiences with illness with the group.

Each year, we invite two first-year medical students to run the daily activities and mentor the high school students. Most

years we are able to recruit a local college student to serve as a mentor in addition to the medical students. The program runs three days per week and is broken into morning didactics and afternoon activities.

The day begins with a one-hour lesson taught by the medical students on basic human physiology. The college students teach a college preparation curriculum in which they discuss the college application process, the financial aid process, and the mentors' personal experiences. They also teach how to write a personal statement and a CV, and interview skills. The college students and medical students jointly teach a "medicine in literature" curriculum to enhance literacy skills. In the afternoons, the students participate in field trips to local health care sites, such as the dialysis center; complete a community service project to improve health awareness in the community; and volunteer in the clinic. In addition to these classes, we invite a patient once weekly to share his or her experience with illness and the medical system, and we invite various clinic staff to teach the students about health careers.

For the past three years, we have also run a "graduates program" for students participating in the program for a second or third summer. These students, generally a group of 4 - 6, receive intensive seminars on topics chosen by the mentors. They also complete their own community service project.

We incorporate a traditional Navajo medicine curriculum into our program. We invite a local practitioner to teach the students one session per week. Our most exciting field trip this year was a joint adventure with the Navajo and Hopi students. They met at the Navajo National Monument and walked the trails with a Hopi and a Navajo herbalist to study the local plants. Last year, we also initiated an "Elders Curriculum" where we invited three traditional elders to teach the students about important issues.

Indigenous Pride Health Careers Program, Hopi Nation

The Indigenous Pride Health Careers Program (IPHCP) is an intensive program that introduces minority students living on the Hopi Reservation to careers in the health professions. It also strives to promote healthy lifestyles through education. The program began in summer 2005 with a $107,000 Pathways grant from Health Resources and Services Administration (HRSA). The grant was written by the Northern Arizona Area Health Education Center (NAHEC) in Flagstaff, Arizona, who co-facilitates the program along with Hopi Health Care Center, Northland Pioneer College, and other community programs based on the Hopi Reservation.

The primary goal of the IPHCP is to promote a long-term interest in the health professions that will lead to a career in medicine. Ideally, after receiving an education, the students will return to the Hopi Reservation to bring their skills home to their own community.

The IPHCP also trains students to work as youth advocates for healthier lifestyles in the Hopi community. Students participate in and earn 15.5 college level credits in Introduction to Community Health, Community Health Field Work, First Aid and CPR, Medical Terminology, and Introduction to Social Work. In addition to the classroom work, the students participate in an intensive eight-week summer program that teaches peer-education skills. Finally, they receive pre-professional training through volunteer opportunities at Hopi Health Care Center under the guidance of physicians and other health care professionals. Upon completion of the program, students receive Community Health Advisor certification through Northland Pioneer College.

This program has recently concluded the first nine-month cycle. Ten IPHC students began in the summer of 2005 with a retreat at Northern Arizona University (NAU) to learn leadership skills. This two-day retreat was coordinated by NAHEC staff in Flagstaff. Students bonded through various activities including an all-day ropes course teambuilding exercise and hands-on workshops dealing with leadership issues.

Immediately after the conclusion of the leadership retreat, the students began their first classes: Introduction to Community Health and Red Cross First Aid/CPR training. They also attended a weekend orientation and health fair at the University of Arizona, hosted a group of summer camp students on a tour of the Hopi Reservation, and spent two days in Kayenta with students from the Adventures in Medicine program. For the majority of students, the stand-out experience was "shadowing" health care professionals at Hopi Health Care and various community-based organizations.

IPHCP wrapped up the summer with Community Health Field Work, a class that prepares students to conduct various community projects. The culminating assignment for the class is conducting an actual project within their community. This year's projects included community cooking demonstrations, a substance abuse video, an injury prevention program, and a "Stop the Pop" campaign. Some of the students were able to advertise their programs on local radio, which taught them how to create effective promotion materials.

Students were challenged as they headed back to begin the 2005 - 2006 school year. Not only did they attend school full-time and participate in school sports programs and other extra-curricular activities, but they also attended IPHCP college courses in the evening. The students completed a class in social work in the fall, and are currently completing their coursework requirements with a course in medical terminology. Students also participated in a three-day conference in February in Scottsdale, Arizona entitled "Healthy Adolescents: Building the Future," sponsored by the Arizona Adolescent Health Coalition, which exposed students to health issues confronting today's youth.

This has been an exciting year for both students and everyone coordinating IPHCP behind the scenes. Introducing students to new challenges and helping them realize that they can succeed in college and pursue any career they choose has

been a priceless experience. We will need to see several years of graduates before we can begin to assess the effectiveness of this program. This year, we anticipate introducing another 10 - 12 students to this program.

Pathways into Health, A National Program

Pathways Into Health is a unique national educational partnership between academic institutions, the Indian Health Service, and Native American tribes, communities and tribal colleges to bring graduate education to remote reservation towns via distance learning technology. The program currently involves over 140 individuals in ten university institutions, and multiple tribes and Indian organizations, tribal colleges, and the Indian Health Service, as well as other federal and non-profit organizations. A resolution of support from the National Congress of American Indians and a National Advisory Council composed of outstanding American Indian academicians offer guidance and support in this important initiative.

This program, now in its second year, strives to bring university academics to Indian communities utilizing the latest in telehealth and distance learning technology. Local health facilities then partner with the academic institutions to provide practical learning opportunities. Native American students matriculate and graduate in their home towns and can then remain in their hometowns as they pursue careers in their local health care facilities. The program, currently piloting a curriculum for laboratory technicians to become technologists, will be expanding to include training for physicians, nurses, pharmacists, psychologists, physical therapists, dental hygienists, public health experts, and other health professions.

A major component of the Pathways into Health Program is the Pipeline Committee, co-chaired by the Assistant Provost at Nothern Arizona University, Dr. Carl Fox, and Sean Clendaniel of the Northern Arizona AHEC Program. This committee is focusing on the development of national collaborations and coordination of activities related to academic support and interventions for youth from kindergarten through high school.

Conclusion

Increasing the number of Native American health care professionals is an important component of efforts to improve access of Native Americans to high-quality health care. While Native American students have made strides in secondary education, these achievements have yet to translate into sufficient numbers of Native American health care professionals, particularly physicians. The solution to this complex problem remains elusive, but clearly interventions are required at all stages of education. IHS health care providers are uniquely positioned to mentor local youth, to guide them through the educational process, and to empower them to become successful health professionals ready to direct the future of medical care for Native Americans.

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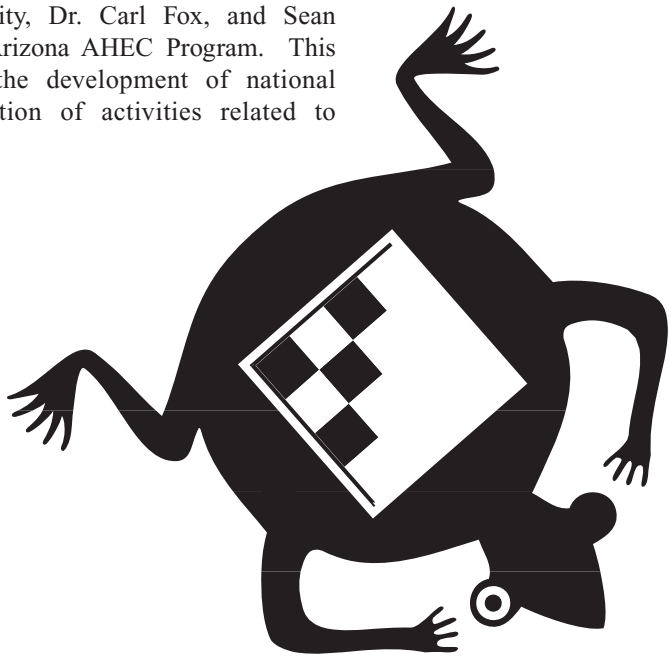

Promoting Healthy Food Choices among Children in an Isolated First Nations Community

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The Need

Nutritional health among First Nations children, particularly those living in remote areas, is poorer than among children living in urban settings.[1-4] The increasing prevalence of obesity, type 2 diabetes, and cardiovascular disease in First Nations populations suggests the need for early, more aggressive health promotion interventions.[1-13] Dental health is also known to be below the average for the remainder of the population, and poor nutrition is known to be both a cause and consequence of poor dental health.[14]

Intervention programs aimed at achieving healthier diets for school-aged children have the potential to positively influence dietary habits throughout life and contribute to the prevention of chronic disease. Such programs are frequently focused on nutritional education alone, and previous studies have shown that this is insufficient to change food choices and habits.[1,16-20] Food preference has been shown to be an important factor in determining food choices, and when these preferences are established in childhood, they tend to be maintained into adulthood.[1,16-22] Food availability may also play a role. To design effective and culturally consistent interventions, we must first understand the nutritional status of isolated First Nations communities.

The purpose of this study was to gather data on nutritional knowledge, practices, and status, as part of the development of an intervention program to improve the nutritional health of children in Hartley Bay, a remote Tsimshian First Nations community in northern British Columbia.

Methods

Participants. Hartley bay is an isolated First Nations village in Northern British Columbia. The closest town, Prince Rupert, is 135 kilometers north and accessed by a one-hour flight or seven-hour ferry ride. In this community, there are 250 people, 70 of whom are children. All 53 school-aged children, ranging from preschool to the eleventh grade (age 5 – 18 years), and their 28 primary caregivers (who prepared the majority of the children's meals) were invited to participate. Informed consent was obtained from parents of 52 (98%) of the children. The study had the approval of the University of British Columbia Behavioral Review Board.

Materials. Food intake data were collected using a three-day food diary. To enhance diary completion, the survey was conducted during school days. The diaries included instructions on how to report both the type and quantity of different foods. Nutritional knowledge, beliefs, attitudes, and preferences were assessed using questionnaires. The questionnaires were designed and the language modified by a member of the community to ensure that it was appropriate, understandable, and culturally-sensitive. The questionnaires were then pilot tested with a sample of parents and children in the community, and their suggestions incorporated.

Procedures. The children's questionnaire was administered by teachers at the school to students in or above the third grade. Teachers had children in third grade or above completed breakfast, lunch, and daytime snacks portions of the food diary during class time, and assigned dinner and night-time snacks to be completed as homework assignments. Points were awarded for the completion of each day's diary, and a small prize awarded to each student for completion of the three-day diary. For children in grade two or below, the three day food diary was completed both at home and at school, with the help of the parents for breakfast, dinner and evening snacks, and the teachers for lunch and daytime snacks. A member of the research team visited each of the four classrooms on a daily basis to answer questions regarding food diary completion and to facilitate legible and detailed recording of dietary intake.

The caregiver's questionnaires were administered to the primary caregiver for each child during the weekly home visit made by the Community Health Representative.

Outcome Measures and Analysis. The primary outcome measure was the average daily nutrient intake for the children studied. In recent years, scientists from Canada and the Institute of Medicine, Food and Nutrition in the United States have developed a harmonized set of nutritional recommendations known as Dietary Reference Intakes (DRI).[21-27] DRIs are slowly replacing the 1990 Canadian RNIs (recommended nutrient intakes). This transition is not yet complete and both systems are being used. It has generally been accepted that although micronutrient values are referenced using DRIs, for macronutrients, RNIs are still being used. Secondary analyses of current nutrition knowledge, attitudes, and beliefs of caregiver and/or child, and their relationships to actual food intake of the study children were performed.

Statistical Analysis. Children's and caregiver's questionnaire responses were manually graded, transcribed onto a Microsoft Excel spreadsheet, and descriptive statistics calculated. Nutrient intake was derived from the diaries by a qualified dietary technician who entered the food diaries into the dietary analysis software used at British Columbia's Children's Hospital (*CBORD Professional Diet Analyzer/Spreadsheet V4.2.02)*. Total daily nutrient intakes derived from the diaries were then averaged for each age range that correlated with reference values.

Table 1. Reported daily macronutrient and fibre intake

Nutrient	Age	Males (+/- SD) (N=19)	RNI	Females (+/- SD) (N= 24)	RNI	Overall (N=43)	RNI
Total energy (kcal/d)	4-6	No data	1800	1495 +/- 37	1800		
	7-9	1644 +/- 360	2200	1319 +/- 303	1900		
	10-12	884 +/- 142	2500	1386 +/- 527	2200		
	13-15	1718 +/- 377	2800	1688 +/- 143	2200		
	16-18	2548 +/- 518	3200	1526 (N=1)	2100		
Fat %*	4-6	No data		24.1 +/- 2.2		25.4 %	25-35
	7-9	24.8 +/- 3.3		24.8 +/- 7.1			
	10-12	17.6 +/- 3.8		26.4 +/- 3.3			
	13-15	29.0 +/- 5.2		25.9 +/- 2.3			
	16-18	27.5 +/- 2.6		29 (N=1)			
Protein %*	4-6	No data		13.9 +/- 2.7		13.2 %	10-30
	7-9	13.2 +/- 3.1		12.7 +/- 2.7			
	10-12	12.3 +/- 4.2		15.2 +/- 4.5			
	13-15	15.6 +/- 4.6		11.4 +/- 3.1			
	16-18	12.1 +/- 2.8		12 .2 (N=1)			
CHO%*	4-6	No data		63.6 +/- 5.1		62.4 %	45-65
	7-9	63.7 +/- 6.1		63.8 +/- 9.0			
	10-12	71.1 +/- 8.56		58.3 +/- 5.8			
	13-15	56.4 +/- 6.0		64.7 +/- 1.9			
	16-18	61.3 +/- 4.3		59 (N=1)			
Fibre# (g/day)	4-6	No data	9-11	7.4 +/- 0.69	9-11		
	7-9	8.0 +/- 4.7	12-14	7.6 +/- 5.0	12-14		
	10-12	3.4 +/- 1.7	15-17	7.0 +/- 2.1	15-17		
	13-15	8.8 +/- 3.7	18-20	11.6 +/- 2.1	18-20		
	16-18	10.0 +/- 2.7	21-23	3.5 (N=1)	21-23		

Table 2. Child food preferences, with food scored from 1 (dislike) to 4 (love)

Food Type	Mean (range)	Mean (range) Females	Mean (range) Males
Fruits (oranges, apples, bananas)	3.5	3.6	3.4
Dairy (milk)	3.2	3.1	3.4
Sweets (chocolate, ice cream, cake, cookies, soda pop)	2.9	3.1	2.7
Meat and fish	2.9	2.9	2.9
"Junk food" (chips)	2.7	3.1	2.2
Vegetables (carrots, peas, broccoli)	2.7	2.8	2.5
Grains (noodles)	2.5	2.5	2.5

Results

Of 53 school aged children, 52 (98%) consented to participate in the study, male:female ratio 1:1.27, age 4 to 18 years. We received 43 (83%) completed Food Diaries and 42 (81%) completed Children's Questionnaires. From the 28 households, we received 21 (75%) completed Caregiver Questionnaires.

Children's Food Diaries. Children's average daily macronutrient intakes calculated from the diary records are summarized in Table 1. Among the children in our study, 25% of calories were from fat, 13% from protein, and 62% from carbohydrate. All age groups in both sexes fell below the recommended nutritional intake(RNI) for daily caloric intake.

Children's Questionnaires. During the study period, most meals were prepared by a parent for 31 (74%), by a sibling for 4 (10%), by themselves for 5 (12%) and by another person (aunt, grandmother, other) for 6 (14 %) of the children. The children were asked to choose all sources from which they received their nutrition knowledge. Twenty-eight (67%) children reported learning about nutrition from parents, 27 (64%) from health care workers, 25 (60%) at school, 25 (60%) from elders, and 16 (38%) through media. Children recorded the highest preference (1 = hate, 2 = don't mind, 3 = like, 4 = love) for fruits, followed by milk, sweets, meat and fish, chips, vegetables, and noodles in descending order of preference (Table 2).

Caregiver Questionnaire. The average number of dependents for the 21 caregivers who completed the caregiver questionnaires was 2.2. The caregivers reported that the majority of meals are prepared by a parent (18; 86%). Occasionally meals are prepared by other family members including siblings (3; 14%), a grandparent or another relative (4; 19%), or a non-relative (4; 19%). Fifteen caregivers (71.4%) identified the elders, 11 (52%) identified health care workers, and 8 (38%) identified the media as a source of their nutrition knowledge. Taste was reported as being the most important determinant of food choice.

Caregivers recorded highest preference scores (1 = dislike, 2 = don't mind, 3 = like, 4 = love) to fruits, and meat and fish, followed by vegetables, grains, milk, and then sweets. Sweets received the lowest ranking, with a mean score of 2.6 (Table 3). Caregivers' comments on constraints influencing food choice included "unhealthier foods are cheaper to buy," "transportation is an added cost," "short life span for produce," "no local produce access," "meats, vegetables, and fruits are costly," "not much locally available except junk food," "limited access to vegetables and fruits," "hard to get vegetables and fruits into Hartley Bay," "eat seafood while in season and while freezer supply lasts," "seafood not as plenty as before."

Table 3. Caregiver food preferences, with food scored from 1 (dislike) to 4 (love)

Food Type	Mean (range)
Fruits (oranges, apples, bananas)	3.7
Meat and fish	3.7
Grains (noodles)	3.4
Vegetables (carrots, peas, broccoli)	3.3
Dairy (milk)	3.1
Sweets (chocolate, ice cream, cake, cookies, soda pop, donuts)	2.6
"Junk food" (potato chips)	2.4

Table 4. Food caregivers would eat more of if available (n=21)

Food Group	Number (%)
Fresh fruits	21 (100%)
Fresh vegetables	20 (95%)
Milk/dairy products	20 (95%)
Meat and fish	13 (62%)
Canned fruits and vegetables	12 (57%)
Grain products	10 (48 %)
Sweets	4 (19%)

When asked which foods they would eat more of if they had the chance, caregivers reported fruits (100%), vegetables (95%) and dairy (95%) as their foods of choice (table 4). Some of their comments regarding specific food examples and factors preventing their consumption of more of these foods were, "cereals, white and wheat bread: availability," "all kinds of fruits and having to wait for the ferry to run – too expensive on the seaplane at $0.60 per pound," "limited availability and no local grocery store." With regard to dairy products they commented that "if they buy too much, the products spoil."

When asked what ideas they could suggest to help make fresh goods and dairy more available in the community, 3 (14%) did not respond, 3 (14%) suggested improved regular ferry transport or regular ferry visits with supplies for sale from the ferry, 2 (10%) suggested improved regular plane transport, 14 (67 %) suggested a community store, and 1 (5%) suggested some healthy food supply support through the school. Additional suggestions made were for healthy cooking classes and monthly healthy food packages for set income clients. Specific comments included, "the band can have their own small grocery store, owned by the village, not by just a few people," "we desperately need a grocery store," and "ferry once a week or every two weeks to sell fruit, veggies, meats and other foods other than pop, chips, bars and sweets."

Discussion

The daily caloric intake of the children of Hartley Bay was inadequate, although the percentage of calories from fats, carbohydrates and proteins were in the normal range. Nutritional analysis showed inadequate calcium, vitamin D, fiber, and folate intake. Vitamin C consumption was above the normal range primarily due to over-consumption of sweetened juice mixes. Nutritional knowledge for these children came almost equally from school, health care workers, and family members. Caregivers identified elders as the primary source of food knowledge.

Previous nutritional studies have shown that education is important; however, when used alone, it is insufficient to change food choice and eating habits. Food preference has been shown to be much more strongly correlated with consumption than is knowledge.[1,15,19-22] Children may know which foods are healthy, but likely will not consume them unless they find them desirable to eat. The Pathways study among American Indian communities found that a multi-faceted approach could be effective in changing nutrition knowledge and diet.[28]

In our study, taste was the main determinant of food choice in children, with their highest food preference being fruits, followed by milk and sweets. Taste was the also the primary determinant of food choice in caregivers with their highest food preference being fruits and meats, followed by grain and vegetables. Fresh fruits, vegetables, and diary products are the foods that they would eat more of if given the opportunity. Lack of availability of fresh produce and dairy products due to transportation costs and perishability caused the greatest constraint on food choice. The limitation in availability of these foods is reflected in inadequate calcium, vitamin D, fiber, and folate intake found in the dietary analysis.

The daily caloric intake was inadequate although the percentage of calories from fats, carbohydrates, and proteins was in the normal range. Vitamin C consumption was above the normal range primarily due to over-consumption of sweetened juice mixes.

The primary barrier to healthier food choices in this remote community is the availability of fresh fruits, vegetables, and diary products. We have identified that they have a desire to consume these foods if they were available.

Solutions

The caregivers suggested a general store, but on discussion with the band, this was not seen as a feasible option, as the store would face pressures to provide credit or loans to customers who wanted to pay at a later date, but who would be unreliable about paying. The possibility of a store on the ferry, which comes twice a week, may be a feasible solution, which will be explored further by the community. Vitamin supplementation was considered, but this was considered not practical or sustainable. Folate supplementation, to decrease the incidence of neural tube defects in the neonate, will be recommended for females in their teens or those who plan to conceive.

Most importantly, based on the findings of this study, and with guidance from the community health director, a "SMART meals" program has been developed by a member of the village. SMART stands for: **S**wift to prepare, **M**oney wise, **A**ppropriate for the family, **R**emarkably delicious, **T**otally healthy. The SMART program has been piloted, and the response by the community has been excellent. In the beginning phase of implementation, the participants attend four sessions that focus on breakfast, lunch, dinner, or snacks preparation. These sessions teach menu planning, creative recipes, economical shopping, along with food preservation and storage techniques. The sessions are meant to be interactive, and community members are encouraged to share techniques and tips amongst one another. The "SMART Meals" program has since been expanded to include food options for feasts, which are socially and culturally important components of life in First Nations communities. In response, twenty-seven menu items have been developed to preserve the traditions held for generations by First Nations communities, while moving forward to improve the health and well being of its residents.

The above findings need to be considered in light of the study limitations. These data were based on self reporting and depend on the children's memories to recall and describe what they consumed. The data from the food diaries only reflected weekday food intake and not weekend consumption. Finally, the small sample size may also limit the generalizability of the data. However, the challenges of access to fresh foods are likely similar amongst most isolated northern British Columbia communities, and solutions found for this community may be appropriate for others.

This work was only possible because of the motivation of the Gitga'at Band Council to improve the health of their children, which led to the collaborative relationship between the community and the authors.

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Executive Leadership Development Program Announces 2006 Dates

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PURPOSE

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The Clinical Consultant's Newsletter (Volume 4, No. 3, March 2006) is available on the Internet at http://www.ihs.gov/MedicalPrograms/MCH/M/OBGYN01.cfm. *We wanted to make our readers aware of this resource, and encourage those who are interested to use it on a regular basis. You may also subscribe to a listserv to receive reminders about this service. If you have any questions, please contact Dr. Neil Murphy, Chief Clinical Consultant in Obstetrics and Gynecology, at* nmurphy@scf.cc.

OB/GYN Chief Clinical Consultant's Corner Digest

Abstract of the Month

Tired of hearing only bad news from the WHI? Reduction in diabetes incidence with combination hormone replacement

Aims/Hypothesis: Studies examining the effect of postmenopausal hormone therapy on concentrations of glucose, insulin, and diabetes incidence have been inconclusive, in part because many of the studies were too small. We examined the effect of oestrogen plus progestin on diabetes incidence and insulin resistance.

Methods: The study was a randomised, double-blind trial comparing the effect of daily 0.625 mg conjugated equine oestrogens (CEE) plus 2.5 mg medroxyprogesterone acetate with that of placebo during 5.6 years of follow-up. The participants were 15,641 postmenopausal women enrolled in the Women's Health Initiative Hormone Trial. These women were aged 50 to 79 and all had an intact uterus. Diabetes incidence was ascertained by self-report of treatment with insulin or oral hypoglycaemic medication. Fasting glucose, insulin, and lipoproteins were measured in a random sample at baseline and at 1 and 3 years.

Results: The cumulative incidence of treated diabetes was 3.5% in the hormone therapy group and 4.2% in the placebo group (hazard ratio 0.79, 95% CI 0.67-0.93, p = 0.004). There was little change in the hazard ratio after adjustment for changes in BMI and waist circumference. During the first year of follow-up, changes in fasting glucose and insulin indicated a significant fall in insulin resistance in actively treated women compared to the control subjects (Year 1 to baseline between-group difference -0.22+/-0.10, p = 0.03).

Conclusion: These data suggest that combined therapy with oestrogen and progestin reduces the incidence of diabetes, possibly mediated by a decrease in insulin resistance unrelated to body size. Future studies of alternative postmenopausal hormone therapy regimens and selective oestrogen agonists and/or antagonists should consider the effects of these regimens on insulin resistance and diabetes.

Margolis KL, et al. Effect of oestrogen plus progestin on the incidence of diabetes in postmenopausal women: results from the Women's Health Initiative Hormone Trial. *Diabetologia*. 2004 Jul;47(7):1175-87.

Comment: Thomas Burke, Anchorage

Does hormone replacement prevent type II diabetes?

The question has been raised by several small observational studies with conflicting results. Now we have three large studies that show a significant decrease in diabetes incidence for women taking estrogen with progesterone. The Nurses Health Study (N=21,028) was prospective and observational. HERS, the Heart and Estrogen/Progesterone Replacement Study (N=2,029), and WHI, the Women's Health Initiative (N=15,641), were both large prospective randomized studies.

All three showed a significant decrease in diabetes incidence of 20% or more. The studies controlled for other risk factors like weight, and the WHI showed a decrease in insulin resistance as well. It is highly unlikely that we will see additional studies of this size addressing this issue. Hopefully the diabetes risk data from the estrogen only arm of the WHI will be published soon. While public attention his focused on other findings of these studies, the change in diabetes incidence may be of greater clinical significance. As type II diabetes is such a common disease in AI/AN, we should include this information in our counseling.

We do not recommend taking hormone replacement for the purpose of disease prevention, even though we know that it is effective at least for osteoporosis, hip fracture, and colon cancer. We know that colon cancer is increased to nearly double the prevalence in some AI/AN. Currently it is reasonable to prescribe hormone replacement for the treatment of menopausal symptoms after a discussion of the risks and benefits. The decreased incidence of type II diabetes should now become a routine part of that discussion.

OB/GYN CCC editorial comment

Thanks to Dr. Burke for pointing out a possible bias that appears to overlook the benefits of hormone therapy (HT), while emphasizing the negative effects of HT. Another example is referenced below. In the estrogen alone trial, estrogen decreased coronary heart disease risk among women 50 to 59 years of age at baseline. Our goal should be to present balanced, non-judgmental counseling to our AI/AN patients.

Hsia J, et al. Conjugated equine estrogens and coronary heart disease: The Women's Health Initiative. *Arch Intern Med.* 2006 Feb 13;166(3):357-65.

From Your Colleagues
Eve Espey, Albuquerque
Sample templates for guidelines: IUDs, manual vacuum aspiration (MVA) for SAB, etc . . .

After two very interesting presentations on "Manual Vacuum Aspiration (MVA) for SAB" and "Extended Indications for the IUD" at this year's 21st Annual Midwinter Indian Health OB/PEDS Conference, Eve Espey, MD, Department of OB/GYN at the University of New Mexico, has graciously shared some ideas for possible guidelines at your facilities. These generic samples could be used as templates for your facility after the content is modified to your local specifications. Available online.

Hot Topics
Obstetrics
GDM: Can we proceed directly to one step screening/diagnosis in AI/AN women?

Some providers have noted that many AI/AN patients are lost to follow-up between a positive glucose screen test result and the performance of the definitive diagnostic test, the three-hour oral glucose tolerance test. Other providers note that many AI/AN women live in remote areas with limited access to care, yet have some of the highest rates of diabetes in pregnancy in the US, and possibly in the world.

ACOG and the Indian health system convened an expert panel of 35 in April 1993 to discuss these and other issues related to the diagnosis of gestational diabetes mellitus in pregnancy. One of the main areas of discussion was that eliminating the screening phase and proceeding directly to a diagnostic test seemed warranted in certain AI/AN populations.

There was general concurrence that these rates were so high that being an AI/AN woman was sufficient to serve in itself as a positive screen, and thus to indicate the need for a diagnostic level of testing directly. The Expert Panel suggested that upcoming Technical Bulletins (subsequently modified to 'Practice Bulletins') reflect that other loading doses are currently used in other populations. Hence, the current ACOG Practice Bulletin, No. 30 now states, ". . . there may be groups of individuals at such high risk for GDM that it may be more convenient and cost-effective to proceed directly to the diagnostic GTT without obtaining the laboratory screening test."

OB/GYN CCC Editorial comment:

After the above ACOG Consultation, the American Diabetes Association issued the following statement:

> One-step approach: perform a diagnostic OGTT without prior plasma or serum glucose screening. The one-step approach may be cost-effective in high-risk patients or populations (e.g., some Native American groups).

The ACOG Consultation was a high level document, i.e., no direct recommendations came out of the ACOG Consultation – it was ultimately left up to the local facility. Personally, a good rule of thumb is that if any AI/AN group exceeds 7 %, then they would qualify for one-step testing; hence within the context of the ACOG/ADA advice above, I suggest any AI/AN group that exceeds a 7% prevalence of diabetes in pregnancy should consider one step universal diabetes screening. This screening should occur at 24 - 28 weeks. If additional high risk factors are present, then additional screening should also be performed at the first prenatal visit.

High risk patients include those with the following factors:

- history of infant over 8 lb,14oz. (4000 grams) at birth
- first degree family history of diabetes (parents or sibling)
- initial visit BMI > 25 (BMI = kg/m^2 X 100)
- past history of stillbirth, habitual abortion, congenital anomaly
- current pregnancy: unexplained polyhydraminos, persistent glycosuria
- age > 35 years
- prior history of gestational diabetes

Other Resources

Gestational Diabetes. ACOG Practice Bulletin No. 30. American College of Obstetricians and Gynecologists. *Obstet Gynecol*. 2001;98:525–538.

Diagnosis and Classification of Diabetes Mellitus *Diabetes Care* 29:S43-S48, 2006

ACOG Consultation: Diagnosis of Gestational Diabetes Mellitus, April 12, 1993. Copies of the full 1993 Proceedings can be obtained from Elaine Locke, at *ELocke@acog.org* or Neil Murphy, MD at *nmurphy@scf.cc*.

Link between GDM and type 2 DM can be broken: update

The similarity of findings between the PIPOD and TRIPOD studies support a class effect of thiazolidinedione drugs to enhance insulin sensitivity, reduce insulin secretory demands, and preserve pancreatic beta-cell function, all in association with a relatively low rate of type 2 diabetes, in Hispanic women with prior gestational diabetes.

Xiang AH, et al. Effect of pioglitazone on pancreatic beta-cell function and diabetes risk in Hispanic women with prior gestational diabetes. *Diabetes.* 2006 Feb;55(2):517-22.

OB/GYN CCC Editorial comment

The January 2006 CCCC reported that treatment with troglitazone delayed or prevented the onset of type 2 diabetes in previous GDM patients (Buchanan, et al). Unfortunately, troglitazone was subsequently taken off the market. Xiang, et al now report a similar effect, which raises the question of a class effect in the thiazolidinedione drugs. As many as 70% of GDM patients can progress onto type II DM, especially if they do not return to their ideal body weight. Combined with the findings of the Diabetes Prevention Program that showed that consistent, moderate exercise can also decrease the progression to DM,

Xiang's finding give us two strong tools in our armamentarium to prevent the future complications of DM in our patients.

Gynecology

Diet and exercise reduce incontinence in women at risk of diabetes

Conclusions: Less frequent urinary incontinence may be a powerful motivator for women to choose lifestyle modification to prevent diabetes

Brown JS, et al. Lifestyle intervention is associated with lower prevalence of urinary incontinence: the Diabetes Prevention Program. *Diabetes Care.* 2006 Feb;29(2):385-90.

Child Health

FDA warns parents about contaminated teething rings

The Food and Drug Administration urges parents to stop giving their babies a liquid-filled plastic teething ring made by The First Years, a unit of RC2 Corp., which may be contaminated with bacteria. Liquid in the teething rings could infect infants if they swallow or absorb it through a cut in the mouth, the FDA said. The risk of illness is greatest for babies with immune systems weakened by cancer, malnutrition, or other health problems.

Chronic Illness

Prenatal setting represents a missed opportunity for tuberculosis treatment completion

Results: Among 678 women with known tuberculin skin test (TST) status, 341 (50.3%) had a TST-positive result, including 200 who were newly diagnosed. Of 291 TST-positive women with no previous LTBI treatment or history of TB, 27 (9.3%) completed >6 months of INH. In a subset with detailed follow-up, the most important reasons for not completing treatment were nonreferral for evaluation of a TST-positive result (30.9%), not keeping the appointment (17.9%), and nonadherence with prescribed treatment (34.6%).

Conclusion: The prenatal setting represents a missed opportunity to link TST-positive non-US-born women with LTBI treatment and support for treatment completion.

Sackoff JE, et al. Tuberculosis prevention for non-US-born pregnant women. *Am J Obstet Gynecol.* 2006 Feb;194(2):451-6

Features

AHRQ

Results raise doubts about the value of the bimanual pelvic exam in routine screening

The evidence report on the management of adnexal masses – enlargements in the area of the ovaries and fallopian tubes that are sometimes a sign of ovarian cancer — has recently been released. The report concludes that based on current evidence, it is not possible to estimate the effectiveness of different diagnostic strategies. In particular, the common bimanual pelvic exam does not succeed very well in detecting adnexal masses or distinguishing benign from malignant masses. These results raise doubts about the value of the bimanual pelvic exam in routine screening.

AHRQ Evidence Report/Technology Assessment Number 130, *Management of Adnexal Mass.*

Breastfeeding: Suzan Murphy, PIMC

Breastfeeding as a pain reliever

Most of us can manage the momentary discomfort from minor invasive medical procedures. Just a little pinch for an injection, venopuncture, or finger stick is quickly forgotten as a small price for the knowledge or benefit that the procedure provides. However, when the "little pinch" is happening to newborns, parents and providers have a bigger struggle. Neonates experience pain, possibly more profoundly than older babies. Therefore, finding ways to reduce the level of pain that a newborn experiences from necessary, minor, invasive medical procedure is important to neonatal care.

Traditionally, there have been few options for newborn pain management. Pharmaceutical tools have not been commonly used due to questionable effectiveness and potential adverse effects. But with new tools such as sweet solutions, pacifier use, and breastfeeding being explored, there are possibly new minor pain management options to use.

Expanding on work done by L. Gray, et al at Boston University School of Medicine, R. Carbajal, et al at Poissy-Saint Germain Hospital in France explored the effectiveness of infant pain relief during a routine, invasive, medical procedure. One hundred and eighty term, well infants were divided into four groups of 45 infants each, to be monitored during a venopuncture. The variable groups were breastfeeding, being held in their mother's arms (not breastfeeding), receiving sterile water, and receiving 30% glucose followed by a pacifier. During the venopuncture procedure, infants were monitored for response to pain using videoed observations of facial, eye, and limb movements, vocal response such crying, and clinical indicators of heart rate and oxygen saturation. The results were consistent with L. Gray, et al's research of slightly older infants (5 - 7 wks). Breastfeeding was effective in reducing indicators of pain response during a common invasive medical procedure. There was no variation in sucking reported by mothers who breastfed during the venipuncture. This suggests that there was no negative maternal impact, such as nipple chomping/biting, while the infant experienced the venopuncture. It was noted that using glucose followed by a pacifier was equally as effective as breastfeeding. The variables of holding an infant or offering sterile water were not found to effectively reduce the pain response.

Breastfeeding during a minor medical procedure could be easily achieved in the clinic environment. It could also ease procedures, benefiting the staff, patient, and family.

Medical Mystery Tour

As seen on TV's Desperate Housewives: wandering spleen

If you, or any of your family members, happened to inadvertently watch Desperate Housewives on 2/12/06, you might have wondered what a 'wandering spleen' really is. If by chance you happen to have missed just this one particular episode, one of the characters on the program had recently

been diagnosed with a wandering spleen and was trying 'desperately' to get married quickly so she could get health insurance.

Comments about our health insurance system and the increasing number of uninsured Americans aside (see below), the character related that she was told that her spleen could crash into her heart at any time. It has been a month since that episode and I presume you have been on the edge of your seat since then, so here, finally, is the rest of the story.

Congenital wandering spleen is a very rare, randomly distributed, birth defect characterized by the absence or weakness of one or more of the ligaments that hold the spleen in its normal position in the upper left abdomen. The disorder is not genetic in origin. Instead of ligaments, the spleen is attached by a stalk-like tissue supplied with blood vessels (vascular pedicle). If the pedicle is twisted in the course of the movement of the spleen, the blood supply may be interrupted or blocked (ischemia) to the point of severe damage to the blood vessels (infarction). Because there is little or nothing to hold it in place the spleen "wanders" in the lower abdomen or pelvis where it may be mistaken for an unidentified abdominal mass.

Symptoms of wandering spleen are typically those associated with an abnormally large size of the spleen (splenomegaly) or the unusual position of the spleen in the abdomen. Enlargement is most often the result of twisting (torsion) of the splenic arteries and veins or, in some cases, the formation of a blood clot (infarct) in the spleen. "Acquired" wandering spleen may occur during adulthood due to injuries or other underlying conditions that may weaken the ligaments that hold the spleen in its normal position (e.g., connective tissue disease or pregnancy).

OB/GYN CCC editorial comment

Yes, on the one hand, the character was correct that her spleen may be loosely tethered in its current location, but it would not have 'crashed' into her mediastinum. On the other hand, another term for this phenomenon is 'pelvic spleen,' so we should be aware of this as a possible cause of an unknown pelvic mass. Other terms for this phenomenon are: displaced spleen, drifting spleen, floating spleen, splenic ptosis, splenoptosis, and systopic spleen.

The wandering spleen syndrome is also a rare cause of acute abdominal pain that is most typically seen in younger adolescents and children, although it can occur in adults. Patients typically present with acute left upper quadrant pain associated with an abdominal mass. CT imaging confirms the diagnosis. The treatment of choice is splenopexy; splenectomy may be required if the spleen is infarcted and there is torsion and absence of splenic blood flow.

Fun facts about wandering spleens aside, the real issue here is the extent to which this character, and many patients in the US, have to go to get adequate health care. Unfortunately, due to economic factors, there are increasingly more uninsured patients. While this may not directly effect our AI/AN patients, it will affect their partners, if their partner is non-Native, and hence our greater tribal family systems. It also has downstream Indian health funding effects on AI/ANs as the uninsured patients stress an already stressed Medicaid and Medicare system. As health professionals we should continue to educate our colleagues, the public, and our legislative representatives that health care is an important investment for a productive society.

Resource

The Uninsured. ACOG Committee Opinion No. 308. American College of Obstetricians and Gynecologists. Obstet Gynecol 2004;104:1471–4. This is an insightful document from the ACOG Committee on Health Care for Underserved Women.

Midwives Corner: Rosemary Bolza, CNM and Marsha L. Tahquechi, CNM

Should we continue to draw rubella titers as part of the prenatal panel?

I remember having rubella. It wasn't too bad. We had a trip planned so my mother went ahead and took me on the Greyhound bus. I got to wear dark glasses and thought I was pretty cool. However, my children never had this experience because of the development of vaccinations for rubella and measles (rubeola).

In my midwifery program in 1981, documenting immunity to rubella was important for both the midwife and the prenatal patient, even though rubella was very rare at that time. The devastating consequences of congenital rubella meant that health care providers needed to be sure they were immune and that pregnant women who were not immune needed to take precautions if there were an outbreak of rubella. However, I believe that today the rubella titer gives us a false sense of security and we would give better care by concentrating on documenting and updating immunizations.

Several years ago the CDC put out news releases that rubella was not present in the United States. The disease that is still sometimes seen is the measles (rubeola). In the early 90s it became apparent that two MMRs are needed to give good protection against the measles. I often see providers who look only at the rubella immunity and do not take the time to check if the patient has had two MMRs. Rubella immunity does not assure immunity to rubeola. Even if a person is rubella nonimmune, if they have had two MMRs there is no recommendation to continue to give more MMRs, so the routine drawing of the rubella titer is not necessary. The time and money spent on rubella titers for prenatal patients would be better spent documenting and updating all of the recommended adult immunizations for the prenatal patient.

OB/GYN CCC Editorial comment

Special thanks to Rosemary Bolza for bringing up this subtle, but important issue. Rosemary's point goes with a long line of obstetric practices that consume energy, but have no

'value added'; e.g., there is no role for routine urine dipstick testing in return prenatal visits.

Roz Singleton

Should all pregnant women have serology screening for rubella and varicella?

No. Serologic testing for varicella should be considered only for women who do not have evidence of immunity (reliable history of chickenpox or documented vaccination). Rubella serologic testing is only necessary for women who cannot provide written documentation of rubella vaccination. Once a person has been found to be seropositive, it is not necessary to test again in the future.

If an employee has two documented MMRs but has negative titers for one or more of these diseases, should I give an additional MMR dose?

The Advisory Committee on Immunization Practices (ACIP) does not routinely recommend more than two doses of MMR. A negative serology after two documented doses of MMR probably represents a false negative (i.e., antibody titer too low to detect with commercial tests). However, it is theoretically possible to have true two-dose vaccine failure. If a person is found to have a negative serology after two documented doses of MMR, it may be prudent to administer one additional dose of MMR. You should also cease doing postvaccination serologic testing if an employee has two documented doses of MMR, which is the ACIP definition of "immune."

Acceptable documentation of immunity for rubella in childbearing women include: documentation of one dose of MMR (or other rubella containing vaccine) or lab evidence of immunity. However, measles immunity requires two doses of MMR. I agree with you that it is important to ensure immunity to both measles and rubella; titers could prevent someone from getting a second dose of MMR. The second MMR right now is only required in school-aged children, some colleges, and in hospital care workers, so it's not universal, but it's a good idea

Do birth certificate data reflect the number of CNM-attended births?

The number of midwife attended births has been steadily increasing since the 1970s. This growth has been primarily attributed to the growth in the CNM population. In 2002, 8.1% of all births were attended by a midwife. Still, despite the increase, there is evidence that midwife attended births are under-reported. This small study at a Michigan practice from June to August 1999 reviewed 899 births for accuracy in reporting birth data.

Conclusions: There was an over-reporting of CNM attended births at the hospital level. However the state vital statistics records showed a 10.9% under-reporting of CNM attended births. The under-reporting of CNM attended births, while unclear in origin, has been attributable to a variety of possible errors. Recommendations were made to improve the accuracy in the reporting of CNM attended births. CNMs are encouraged to learn about the birth registration process at the local, state, and federal levels to ensure accuracy in reporting CNM attended births.

Walker DS, et al. Do birth certificate data accurately reflect the number of CNM-attended births? An exploratory study. *J Midwifery Womens Health.* 2004 Sep-Oct;49(5):443-8.

Navajo News: Jean Howe, Chinle

VZIG No longer available; CDC suggests temporary unlicensed solution . . . yet another reason to protect non-pregnant non-immune women against chickenpox

Inevitably, at 5pm on Friday, the patient says, "I'm pregnant, my four-year-old has chicken pox, and my mother says that I never had it when I was a child. Should I be worried?"

Thankfully, with increasing use of varicella vaccine in children and non-immune adults, this scenario is becoming much less common. But varicella exposure of non-immune pregnant women still occurs and is now more challenging to manage since the company that manufactured varicella zoster immune globulin (VZIG) has recently discontinued production.

Varicella zoster virus is transmitted by respiratory droplets and close contact, and is highly contagious, with 60-90% of susceptible people becoming infected after contact. The period of infectivity is from 48 hours before the rash appears until the last vesicles crust over. The incubation period is from 10 to 20 days (average 14 days). Infection with varicella confers life-long immunity. Because of the high prevalence of immunity in adults, varicella infection in pregnancy is quite rare. Although the disease course is often mild in children, affected adults may become gravely ill, with complications including pneumonia and encephalitis. If acquired in the first 20 weeks of pregnancy, there is a small (<2%) risk that the fetus will develop congenital varicella syndrome. Infection around the time of delivery is also especially risky for the neonate; if a mother develops chicken pox from five days before until two days after giving birth, the neonate will lack protective maternal antibodies and is especially at risk.

If a pregnant woman describes a recent possible exposure to varicella, careful questioning will usually elicit a history of chickenpox infection in the past. Of women who do not recall a history of chickenpox, 70-90% will still have detectable antibodies. If antibody testing is available in a timely manner, this will often confirm that no further intervention is needed. If antibody testing is unavailable or indicates that the patient is susceptible to varicella, then administration of VZIG within 72 hours of exposure is recommended.

With VZIG now unavailable, the CDC has recommended consideration of the use of VariZIG, which is only available under an "Investigational New Drug Application Expanded Access Protocol" from a sole U.S. distributor. VariZIG is a

purified human immune globulin preparation prepared from plasma with high levels of anti-varicella antibodies. It is very similar to VZIG but is lyophilized. Because it is only available under IND protocols, informed consent must be obtained prior to use. ACIP has recommended that the following groups of non-immune exposed patients receive VariZIG:

- Immunocompromised patients.
- Pregnant women.
- Neonates whose mothers have signs and symptoms of varicella infection from five days before to two days after delivery.
- Premature infants born at ≥28 weeks gestation and exposed in the neonatal period, whose mothers are non-immune.
- Premature infants born at <28 weeks (or <1000g) and exposed in the neonatal period, regardless of maternal immune status

Treatment should be given as soon as possible; efficacy more than 96 hours after exposure is unknown. If VariZIG cannot be obtained, administration of intravenous immune globulin may be considered. If no treatment is undertaken, close observation and early treatment with acyclovir for any resulting infection is indicated. Post-exposure prophylaxis for those not included in the above high risk groups can be accomplished with prompt varicella vaccination.

ACOG recommends vaccination of nonpregnant women of childbearing age if no history of previous chickenpox infection is elicited. The loss of ready access to VZIG only increases the utility of this intervention. Procuring VariZIG in a timely manner is likely to be difficult for even large urban facilities; getting post-exposure prophylaxis to a woman seeking care at a rural site such as those served by many Indian Health Service facilities will be especially challenging.

CDC. A new product (VariZIG) for postexposure prophylaxis of varicella available under an Investigational New Drug Application Expanded Access Protocol, *MMWR Early Release*. February 24, 2006, Volume 55.

American College of Obstetrics and Gynecology, Perinatal Viral and Parasitic Infections, ACOG Practice Bulletin #20, September 2000. *Int J Gynaecol Obstet.* 2002 Jan;76(1):95-107.

American College of Obstetrics and Gynecology, Immunization During Pregnancy, ACOG Committee Opinion #282. *Obstet Gynecol.* 2003 Jan;101(1):207-12.

OB/GYN CCC Editorial comment

Dr. Howe raises an excellent point. Here are a few additional thoughts. As chickenpox is becoming relatively less frequent, one would have to vaccinate a relatively larger number of women to prevent one perinatal case. Moreover, many women without a history of chickenpox will have antibodies from non-clinical infection, so we should screen for varicella antibody titers in all women without a history of chicken pox before immunizing them. Finally, as we don't want to vaccinate pregnant women, we should perform antibody testing when possible.

Oklahoma Perspective from Greggory Woitte, Hastings Indian Medical Center

Metformin and polycystic ovarian syndrome

Polycystic ovarian syndrome is present in approximately 5 - 7% of women and is defined as hyperandrogenism and chronic anovulation. Women with PCOS have an 11-fold increased risk in the prevalence of metabolic syndrome. Metformin combined with clomiphene citrate increases the likelihood of successful ovulation and pregnancy rates. Metformin has been shown to decrease insulin resistance and cause weight loss in obese women.

Metformin for the treatment of polycystic ovary syndrome (Barbieri RL).

Results: Three clinical trials reported that for the treatment of anovulatory infertility caused by PCOS, metformin plus clomiphene is more effective than clomiphene alone in inducing ovulation. For the treatment of irregular menses caused by PCOS in women not attempting conception, metformin therapy may restore ovulatory menses in the majority of women. However, most women will require 4 - 6 months of metformin therapy before they achieve ovulatory menses. In obese women, metformin plus a low-calorie diet may be associated with more weight loss than a low-calorie diet alone.

Conclusion: Polycystic ovary syndrome is a common gynecologic endocrine disorder. Obstetrician-gynecologists should be familiar with the indications and contraindications for the use of metformin in their practice.

OB/GYN CCC Editorial comment

Thanks to Dr. Woitte for reminding us about the high frequency of PCOS. We should maintain a high index of suspicion, especially because PCOS is highly amenable to medical therapy. Metformin has other beneficial uses in the treatment of glucose intolerance and in the prevention of type II DM seen during the Diabetes Prevention Program (Knowler et al, 2002).

Another common question is, what is the role of metformin in lactation?

The official notation is, "Excretion in breast milk unknown/not recommended," but please also review the following case series published in the June 2005 CCC Corner by Briggs.

Metformin was excreted into breast milk, and neither hypoglycemia nor other adverse effects were observed in three nursing infants.

Conclusion: Metformin is excreted into breast milk, but the amounts seem to be clinically insignificant. No adverse effects on the blood glucose of the three nursing infants were measured. LEVEL OF EVIDENCE: III.

Briggs GG, et al. Excretion of metformin into breast milk and the effect on nursing infants. *Obstet Gynecol*. 2005 Jun;105(6):1437-41.

Resources

Polycystic ovary syndrome. ACOG Practice Bulletin No. 41. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2002; 100:1389–402.

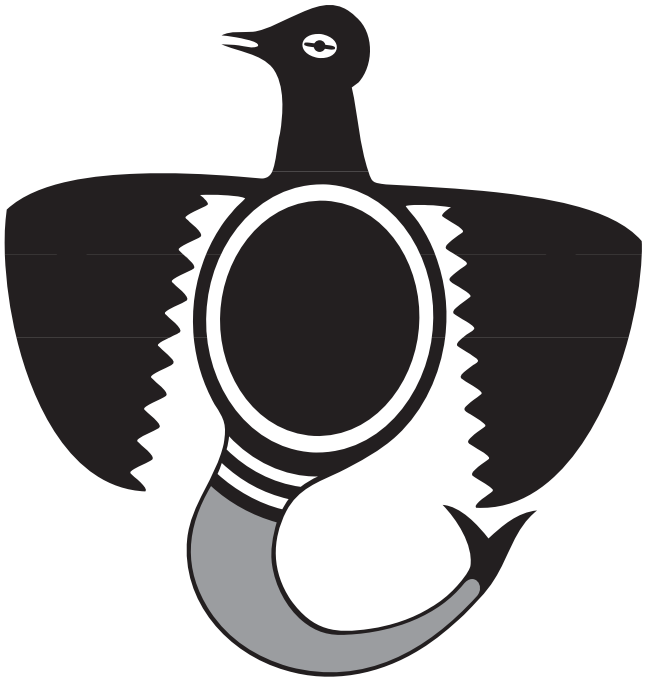
Barbieri RL. Metformin for the treatment of polycystic ovary syndrome. *Obstet Gynecol*. 2003 Apr;101(4):785-93.

Knowler WC, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med.* 2002 Feb 7;346(6):393-403.

STD Corner - Lori de Ravello, National IHS STD Program
Incorrect use of condoms, not product failure, may account for the lack of effectiveness

Assessing the correct and consistent use of condoms is important in evaluating condom effectiveness. Incorrect use of condoms and not product failure may account for the lack of effectiveness when condoms are used to reduce the risk of contracting STDs.

Paz-Bailey G, et al. The effect of correct and consistent condom use on chlamydial and gonococcal infection among urban adolescents. *Arch Pediatr Adolesc Med*. June 2005;159:536-42.



This is a page for sharing "what works" as seen in the published literature, as well as what is being done at sites that care for American Indian/Alaskan Native children. If you have any suggestions, comments, or questions, please contact Steve Holve, MD, Chief Clinical Consultant in Pediatrics at *sholve@tcimc.ihs.gov*.

IHS Child Health Notes

Quote of the month

"It ain't what people don't know that's so dangerous, it's what people know that just ain't so."

Will Rogers

Articles of Interest

Hearing thresholds and tympanic membrane sequelae in children managed medically or surgically for otitis media with effusion. *Arch Pediatr Adolesc Med*. 2005 Dec;159(12):1151-6.

Long-term sequelae of ventilating tubes: implications for management of otitis media with effusion**.** *Arch Pediatr Adolesc Med.* 2005 Dec;159(12):1183-5.

- A 10 year follow-up of children who were randomized to either medical or surgical treatment for persistent otitis media with effusion (OME)
- Surgical treatment was with ventilating tubes that were removed after 12 months
- Medical treatment was with low dose sulfisoxazole for six months
- The risk of long term tympanic membrane abnormalities (sclerosis, retractions, perforations) was 4.4 times higher in the group that had ventilation tubes placed
- Hearing thresholds were 2.1 to 8.1 dB higher in children who had undergone placement of tubes
- The risk of mild permanent hearing loss (>15dB) was 3.3 times higher in the group that received ventilating tubes
- Parental reports of hearing and speech and school success were equal in both groups

Editorial Comment

Ventilating tubes (VT) have long been considered an acceptable treatment for persistent OME. The AAP Clinical Guidelines on otitis media with effusion published in 2004 list OME > 4 months as one possible indicator for surgical placement of VT. This recommendation is based on a decrease in the number of days with effusion and improved hearing levels of 6 to 12 dB in children while VT remain in place.

VT may provide the short term physiologic benefits described above but they do not demonstrate any long-term benefit in terms of functional outcomes in normal children with OME. Children with OME followed to age five years have similar outcomes in hearing and speech whether they have had medical therapy or surgical therapy in their younger years. Unfortunately, as the above study shows, VT placement is likely to result in a much greater risk of permanent tympanic membrane damage and functional hearing loss in children.

The 2004 AAP guideline does stress in other sections that "watchful waiting" may be an acceptable plan for asymptomatic children with OME. Given the potential harm of VT, it seems prudent to recommend surgical treatment only for children with high risk conditions (Down syndrome or cleft lip), documented speech delay, or significant hearing loss, which is usually defined as > 40dB. In these groups the risk/benefit ratio will favor surgical intervention in spite of the documented long-term risks.

Recent literature on American Indian/Alaskan Native health; Doug Esposito, MD

Redeeming hollow promises: the case for mandatory spending on health care for American Indians and Alaska Natives. *Am J Public Health*. 2006 Feb 28; [Epub ahead of print] *http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16507732&query_hl=1&itool=pubmed_DocSum*

The authors describe in detail the federal funding process for Indian health programs as compared to other government health programs. They discuss the "discretionary" funding structure of AI/AN programs, and compare that with "mandatory" spending for Medicare and Medicaid, presenting the shocking (but not surprising) statistics of under-funding. In 1999, according to the Level of Need Funded Workgroup of the IHS, funding occurred at 54% of what was needed. Several recommendations are made that, if enacted, would, in the authors' opinions, significantly narrow the funding gap and, by extension, allow for meaningful reductions in AI/AN health disparities. These include treating funding for AI/AN health programs as "mandatory" rather than "discretionary," automatically adjusting funding for inflation in order to preserve purchasing power, and making funding rates for AI/AN programs comparable to other government programs. Caution is offered, reflecting pessimism surrounding the present political climate and the will and ability of Congress to address this problem in any meaningful or productive way.

Editorial Comment

I believe that this is a landmark paper, written by lawyers with health policy backgrounds, who appear to be motivated by a passion for social justice. Although the data are not new or earth shattering, a uniquely cogent, well organized, and logical argument calling for changes in the funding structure for Indian health is made that even I can follow! Hopefully, this article will find its way into the hands of the right people, and help to change the minds of

our legislators. Please read this article, and pass it along. Everyone associated, even loosely, with AI/AN Health should have an opportunity to become familiar with the content of this report.

Endemic iron deficiency associated with *Helicobacter pylori* infection among school-aged children in Alaska. *Pediatrics*. 2006 Mar;117(3):e396-404. Epub 2006 Feb 1. *http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16452320&query_hl=9&itool=pubmed_DocSum*

Arctic populations are known to have high rates of iron deficiency that approximate those seen in the developing world, despite subsistence diets relatively high in iron and low levels of intestinal parasitosis. High rates of *H. pylori* infection are also reported in these same regions.

In this study, the authors confirm a high prevalence of iron deficiency (38%), iron deficiency anemia (7.8%), and active *H. pylori* infection (86%) among approximately 700 school-age Yupik children residing in remote western Alaska. They link as an independent variable active *H. pylori* infection with iron deficiency and iron deficiency anemia in these children. Although causality could not be definitively established due to the cross-sectional study design, they conclude that *H. pylori* infection might be an important risk factor for iron deficiency in this population of children who should otherwise be at low risk for this micronutrient deficiency.

Strengths of the study are large subject numbers, a high participation rate, and a population-based, cross-sectional design. Additionally, a validated method was used to diagnose active *H. pylori* infection, in contrast to most other studies in children that have relied on a serologically derived case definition. The authors point out that serologic testing is insensitive and non-specific in children, in addition to having an inability to differentiate between active and past infection.

Editorial Comment

Yet again, an important study reporting interesting and relevant data with broad implications for those of us serving AI/AN populations emerges, thanks to the CDC Artic Investigations Program in Anchorage, Alaska. What is the prevalence of active *H. pylori* infection among the specific population of children served in your practice? I searched PubMed briefly to find out, and identified only a couple of reports dealing with groups other than those residing in Arctic regions. All of these reports employed either serologic or stool antigen derived case definitions, with the associated limitations, and had variable study objectives. Active infection rates unfortunately were not the objective of any of these studies. Two of these papers are cited below for the interested reader.

It is unfortunate that few *H. pylori* investigations have been done in other Native communities in the US. Given comparable levels of poverty, crowding, sanitation, etc., that occur in the populations we all serve, one might presume similarities in *H. pylori* epidemiology and its association with iron deficiency. Our collective clinical experience serves to further strengthen these suspicions. Alas, we will just have to wait for additional studies to be done to confirm these concerns.

The authors make an important side point worth reiterating. The diagnosis of active *H. pylori* infection in children is difficult and fraught with significant challenges. The gold standard for diagnosis is biopsy-proven evidence of the bacterium on stained tissue samples obtained from endoscopic examination of the stomach and proximal duodenum. Serologic testing is frequently used in clinical practice as a surrogate for this invasive procedure due to its relative ease of collection and low cost. Unfortunately, serology is highly inaccurate in this setting. Cautious use and interpretation of results obtained from this increasingly popular and potentially misused method are certainly warranted.

Will treatment of *H. pylori* infected iron deficient children result in improvement in their iron status? Two reports have been published by the Arctic Investigations Program reporting the results of this arm of their study, although I could not properly review them on short notice. I was able to communicate briefly with Dr. Baggett, a co-author of both of these reports (cited below) and learned that no effect on iron deficiency was found after treatment of *H. pylori*. A whole host of explanations can be posited for this finding, but the details will have to wait until the next installment of this column. Can you wait that long? Drum roll, please!

Additional Reading

Helicobacter pylori infection in children: recommendations for diagnosis and treatment. *J Pediatr Gastroenterol Nutr.* 2000 Nov;31(5):490-7. *http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11144432&query_hl=32&itool=pubmed_docsum*

Age at acquisition of *Helicobacter pylori* in a pediatric Canadian First Nations population. *Helicobacter*. 2002 Apr;7(2):76-85. *http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11966865&query_hl=34&itool=pubmed_docsum*

Transient and persistent *Helicobacter pylori* colonization in Native American children. *J Clin Microbiol*. 2003 Jun;41(6):2401-7. *http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12791856&query_hl=36&itool=pubmed_docsum*

A controlled, household-randomized, open-label trial of the effect that treatment of *Helicobacter pylori* infection has on iron deficiency in children in rural Alaska. *J Infect Dis*. 2006 Feb 15;193(4):537-46. Epub 2006 Jan 12. *http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16425133&query_hl=38&itool=pubmed_docsum*

A randomized trial of triple therapy for pediatric *Helicobacter pylori* infection and risk factors for treatment failure in a population with a high prevalence of infection. *Clin Infect Dis*. 2005 Nov 1;41(9):1261-8. Epub 2005 Oct 4. *http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16206100&query_hl=38&itool=pubmed_docsum*

Clinical Reporting System (CRS) Update

Stephanie Klepacki, CRS Project Coordinator, Office of Information Technology, Albuquerque, New Mexico

CRS Training Goes WebEx

This year, Clinical Reporting System (CRS) training is available by 1) having the instructors come to the site, 2) live via the Internet (i.e., WebEx), or 3) a combination of both. One-half of the 12 IHS Area Offices chose to receive their training via WebEx, and it has proven to be extremely successful. With WebEx training, participants can attend the class from their own computer at their office or in a conference room with other attendees. The WebEx training has enabled more people to attend the training than ever before since they do not need to spend time and money traveling to the training. This is very beneficial for clinicians, since their time away from their facility is limited. Over 120 people received training in the Aberdeen Area alone, which is equivalent to 72% of *all* the people trained on CRS in 2005! Here are a few comments from students who attended the WebEx training:

> *"I think WebEx is a super great teaching tool. It saved me ten hours of driving and a day away from work, and it was a VERY effective learning strategy. I learned a lot, thanks."*
>
> – Leslye, Winnebago Hospital, Nebraska

> *"I love WebEx and can't wait until the voice feature is installed so that we can record the sessions with the discussion."*
>
> – Nicholas, American Indian Health & Services, California

> *"The WebEx session was totally convenient for our clinic. Much better than traveling to the Area Office for a training."*
>
> – Louise, Lassen Indian Health Center, California

> *"This will be very useful. Having it brought to us rather than traveling to another site enabled more people to participate here."*
>
> – Joanne, Rosebud Comprehensive Health Care Facility, South Dakota

Requirements for WebEx training include pre-registering online for the class, a one-time installation of the WebEx software, a computer, and a phone. Instructions for registering and attending the class are sent out several weeks before the training and include a contact name and number if additional information is needed.

Due to the success of this type of training, the IHS is purchasing equipment that will enable a session to be recorded, which could then be viewed by an attendee at his/her convenience. In addition, next year's training will include even more WebEx sessions, and multiple types of training sessions will be offered that will be tailored to the audience.

If you would like more information on CRS training, please contact Stephanie Klepacki by e-mail at *Stephanie.Klepacki@ihs.gov* or by phone at (505) 821-4480.

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