Using 1990 National MCH Objectives To Assess Health Status and Risk in an American Indian Community

BRUCE C. CAMPBELL, BA
ERNEST H. KIMBALL, MPH
STEVEN D. HELGERSON, MD, MPH
ISOLDE L. ALEXANDER, BA
HOWARD I. GOLDBERG, PhD

Mr. Campbell is Director, Yellowhawk Indian Health Center, Indian Health Service (IHS), Pendleton, OR. Mr. Kimball is Chief of the Research and Evaluation Branch, Portland Area IHS, Seattle, WA. Dr. Helgerson is the IHS Senior Epidemiologist with the Office of Health Program Research and Development, IHS, Tucson, AZ. Ms. Alexander is a Research Analyst with the Center for Health Statistics, Oregon Health Division, Portland, OR. Dr. Goldberg is a Demographer with the Division of Reproductive Health, Centers for Disease Control (CDC), Atlanta, GA. The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the IHS, CDC, and Oregon Health Division.

Tearsheet requests to Mr. Campbell, Director, Yellowhawk Indian Health Center, P.O. Box 160, Pendleton, OR 97801.

Synopsis

The authors used data from birth records to assess changes in health risks and health status of American Indians (AI) living in Umatilla County, OR, from 1973 to 1986. They compared the AI health risks and health status with those of other persons (non-AI) living in Umatilla County, and assessed the progress of both AI and non-AI populations toward selected 1990 national health objectives. This AI population is likely to achieve the 1990 national health objective calling for less than 5 percent of births to be low birth weight (LBW); the LBW rate decreased from 5.0 percent in 1977–80 to 4.1 percent in 1984–86. However, the population is not likely to achieve the 1990 objective calling for at least 90 percent of women to begin prenatal care during the first trimester, even though the proportion of AI women who began prenatal care in the first trimester increased from 42.3 percent in 1973–76 to 62.6 percent in 1984–86.

The Yellowhawk Indian Health Center began offering clinical services to AI in Umatilla County in 1976. Compared with non-AI women, AI women closed large gaps in key health risk and health status indicators during the period from 1973 to 1986. For example, from 1973 to 1976, 14.6 percent of AI mothers compared with 6.3 percent of non-AI mothers began prenatal care in the last trimester. By 1984 to 1986, only 9.0 percent of AI and 7.9 percent of non-AI mothers began prenatal care in the last trimester. Several other desirable health indicators improved more for AI than for non-AI from 1973 to 1986. These indicators included receiving at least one prenatal care visit during pregnancy, beginning prenatal care before the last trimester, and a larger proportion of mothers more than 18 years of age.

Data from vital records can be used to monitor the health status of minority populations in small areas, such as counties. Clinic personnel serving minority groups can incorporate national and local health objectives into their strategy for improving community health.

THE 1990 HEALTH OBJECTIVES for the nation provide desired health status measures that can be used to monitor the health of population groups in the United States (*1*). Many of these health status measures can be applied to minority populations in small areas, such as counties, as well as in State and national aggregates. Some health status measures for small areas could be used in community outreach programs. Applying the 1990 health objectives in this way is consistent with community-oriented primary care (COPC) (*2*).

The Indian Health Service (IHS) has stressed the importance of striving for the 1990 health objectives as a key step toward attaining the primary IHS goal: to raise the health of American Indians and Alaska Natives to the highest possible level. Recently, as one IHS clinic celebrated its 10th anniversary, the clinic staff and American Indian (AI) community leaders wanted to know if the health of the AI in the vicinity of the clinic had improved during those years. To respond to this question, we established an investigating team consisting of representatives from the IHS, the Oregon Health Division, and the Centers for Disease Control. For the investigation, we decided to use selected 1990 health objectives and data that de-

Figure 1. Site of the Yellowhawk Indian Health Center in northeast Oregon

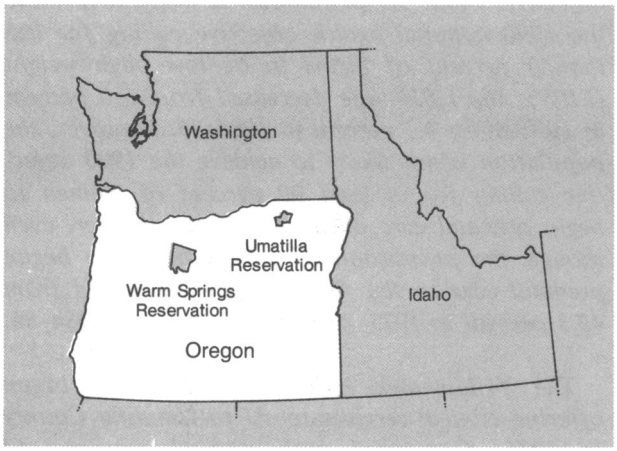


Table 1. Population served, number of outpatient visits and staffing at the Yellowhawk Indian Health Center (OR), 1976–86

Characteristic	*1976*	*1980*	*1986*
Population served (estimated from U.S. census)	1,290	1,670	1,832
Outpatient visits	709	10,088	12,710
Clinical staff:			
Physician (physician assistant)	1 (1 PA)	1 (1 PA)	1 (1 PA)
All clinical staff	6	6	6
Total clinic staff	27	25	24
Total Tribal Health and Welfare staff	23	17	14

scribed both AI and non-AI people in the vicinity of the clinic. The results are the subject of this paper.

Background

The Yellowhawk Indian Health Center is located on the Umatilla Indian Reservation in Umatilla County, northeast Oregon (fig. 1). The Umatilla Indian Reservation is under the jurisdiction of the Confederated Tribes of the Umatilla Reservation. The Confederation is composed of the Cayuse, Umatilla, and Walla Walla Tribes. In 1988, the health center provided direct services to a population of approximately 2,000 AI.

Community planning for this health center began in the late 1960s. At that time, the health services for the AI in this vicinity were administered by the IHS Service Unit on the Warm Springs Reservation, approximately 230 miles southwest of the Umatilla Reservation (fig. 1). All medical services provided then were through contractual arrangements with local health care providers in Umatilla County. Limited public health services were provided by the Umatilla County Health Department through contract with the IHS.

In 1970, the Confederated Tribes made application to the Economic Development Administration for funds to construct a health center. Funding was approved and the health center was completed in 1972. Concurrently, tribal representatives and the IHS began planning for staffing the facility. A staffing request was submitted directly to Congress and, with the support of the Oregon congressional delegation, the IHS received a special appropriation to staff the Yellowhawk Indian Health Center in 1974. Because of other administrative delays, the actual complement of staff did not begin their duties until 1976. Further expansion of the health center occurred in 1978. At that time, the Tribal Health and Welfare Department and IHS staff were combined in the same facility.

Probably more important than the development of the physical aspects of the facility and staffing was the philosophical development of the health delivery system. The health care model that developed was referred to as an ecological view of health. That model emphasized personal health care services and prevention activities.

While not intentionally following the community-oriented primary care model, in reality the center developed into exactly that—a community-oriented primary care clinic. Environmental, mental health, health education, and community health representative staff were all on board before the clinical staff. The outpatient clinical component was the last addition, with full clinic services beginning late in 1976. A strong partnership developed between the Yellowhawk clinic and the Tribal Health and Welfare Department staffs. This partnership contributed tremendously toward strengthening the COPC approach and goals.

From 1976 to 1986, the estimated population served annually by the Yellowhawk clinic grew by 42 percent—from 1,290 to 1,832. The number of outpatient visits to the clinic increased from 709 to 12,710, while the health professional staff decreased from 27 to 24. Because of funding limitations, the Tribal Health and Welfare Department staff also decreased from 23 to 14 during this time (table 1). In 1987, after the clinic's 10th anniversary, tribal and clinic leaders wished to determine if the health of their service population had improved since the clinic was established.

Method

For this investigation, we wanted to identify data that met three criteria: (*a*) the data on AI in Umatilla County had been collected consistently during the years since the clinic was established, (*b*) comparable data about non-AI in Umatilla County would be available, and (*c*) the data would be pertinent to at least one of the 1990 health objectives for the nation. Birth records provided data that met these criteria. The 1990 maternal and infant health objectives that we used for this assessment were

- By 1990, low birth weight babies (2,500 grams and under) should constitute no more than 5 percent of all live births,
- By 1990, the proportion of women in any county or racial or ethnic groups who obtain no prenatal care during the first trimester of pregnancy should not exceed 10 percent (*1*).

The Center for Health Statistics, Oregon Health Division, provided birth record data, without personal identifiers, for all births recorded for residents of Umatilla County, both AI and non-AI births, for the period 1973 to 1986. The birth record data included the age of the mother, the birth weight of the baby, the number of months since the mother last gave birth, and information about the use of prenatal care services.

The data were aggregated into four periods: period 1 (1973-76)—the period before full clinic staffing; period 2 (1977-80)—the early years of full clinic services; period 3 (1981-83)—the years of maturation; and period 4 (1984-86)—the time of the 10th anniversary. By arraying the birth record data into these periods, we were able to compare AI and non-AI maternal and infant health risks and health status indicators over time, as well as assess progress toward the selected 1990 national health objectives. The SAS statistical package was used to do the analysis.

Results

During the period 1973 to 1986, there were 14,596 births recorded to residents of Umatilla County; 571 (3.9 percent) of these births to AI and more than 95 percent of the remaining births were to whites. From period 1 (1973-76) to period 4 (1984-86), the proportion of low birth weight babies decreased from 5.8 percent (8 ÷ 137) to 4.1 percent (5 ÷ 123) for AI, while this proportion

Figure 2. Proportion of infants weighing less than 2,500 grams born to American Indian and non-Indian women in Umatilla County, OR, 1973–86

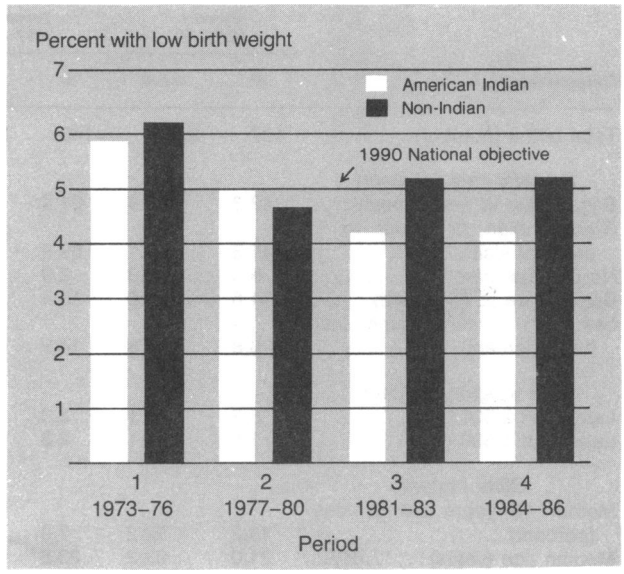
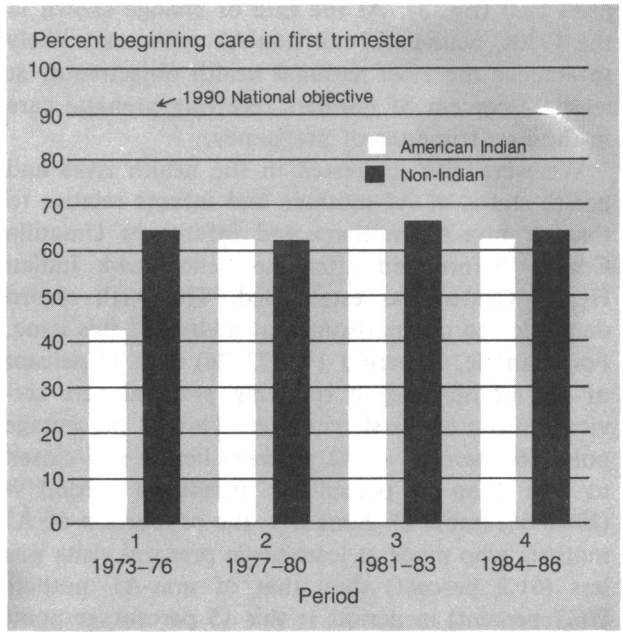


Figure 3. Proportion of American Indian and non-Indian women who began prenatal care in the first trimester of pregnancy, Umatilla County, OR, 1973–86.



decreased from 6.1 percent (178 ÷ 2,918) to 5.0 percent (145 ÷ 2,909) for non-AI in Umatilla County (fig. 2). For the non-AI population, there was very little change in the proportion of women who began prenatal care in the first trimester, 63.9 percent (1,864 ÷ 2,918) in period 1 and 65.7 percent

Table 2. Use of prenatal care services and selected birth data for American Indians (AI) and non-AI during four periods, Umatilla County, OR, 1973–86

Characteristic	Period 1 (1973–76)		Period 2 (1977–80)		Period 3 (1981–83)		Period 4 (1984–86)		Percentage point difference in—	
	AI	non-AI	AI	non-AI	AI	non-AI	AI	non-AI	1973–76	1984–86
Total births (number)	137	2,918	140	3,956	171	4,242	123	2,909	...	...
Prenatal care (percent)										
Began care in first trimester	42.3	63.9	61.4	61.6	64.9	65.3	62.6	65.7	21.6	3.1
Greater than or equal to 7 prenatal visits	61.3	76.7	69.9	78.9	77.2	77.9	77.2	81.6	15.4	4.4
No prenatal care	5.8	0.8	2.9	1.3	2.3	1.5	3.3	1.8	5.0	1.5
Began care at 7th month	14.6	6.3	15.4	7.4	12.3	8.1	9.0	7.9	8.3	1.1
Less than 15 months since last birth (percent)	26.8	7.8	14.9	9.8	15.4	10.7	11.6	9.7	19.0	1.9
Birth weights (percent)										
Less than 2,500 g	5.8	6.1	5.0	4.5	4.1	5.0	4.1	5.0	0.3	0.9
Less than 1,500 g	1.5	1.1	2.3	0.6	0.6	1.0	2.4	1.0	0.4	1.4
Other factors										
Mother 18 years old or less (percent)	18.2	12.2	7.9	9.8	11.1	9.4	12.4	8.6	6.0	3.8
Median age (years)	21.0	23.2	23.5	23.7	22.8	24.1	23.0	24.7	...	...

NOTE: The percentage point difference in each period is the proportion of AI mothers or infants with a characteristic subtracted from the corresponding proportion for non-AI mothers or infants.

(1,911 ÷ 2,909) in period 4. The proportion of AI women receiving care in the first trimester increased from 42.3 percent (58 ÷ 137) to 62.6 percent (77 ÷ 123) (fig. 3). At the rate of change shown in the 1980s, neither AI nor non-AI women are likely to achieve the 1990 national health objective of at least 90 percent of mothers receiving prenatal care in the first trimester of pregnancy.

We were also interested in the health risks and health status of AI mothers and infants relative to that of non-AI mothers and infants in Umatilla County before and after the Yellowhawk Indian Health Center was established. The birth record data allowed comparisons that addressed this issue. For example, in period 1 (1973–76) only 42 percent of AI mothers began receiving prenatal care services during the first trimester. This 22 percentage point (64 percent – 42 percent) health gap closed to less than 4 percentage points in period 4 (1984–86) (table 2). Similarly, the proportion of AI mothers who made at least seven prenatal visits was less (61.3 percent) than that of non-AI mothers (76.7 percent) in period 1; this 15 percentage point health care gap shrunk to less than 5 percentage points by period 4.

Proportionally fewer AI women had no prenatal care visits, made their first prenatal visit during the last trimester, had their baby within 15 months of a previous birth, and gave birth when less than 19 years old in period 4 compared with period 1. The gaps for AI compared with non-AI women decreased from 5 percentage points to 1.5 for no prenatal care visits, from 8.3 to 1.1 for the first prenatal visit during the last trimester of pregnancy, from 19.0 to 1.9 for having a baby within 15 months of a previous birth, and from 6.0 to 3.8 for births to women younger than 19 years (table 2).

Discussion

The results reported in this paper represent an initial step toward establishing and maintaining community preventive health services standards for a clinic serving a minority population. In response to a request from tribal and clinic leaders, we used vital record data to assess whether the health of an AI community had improved since the clinic had been established. At the same time, we were able to assess progress toward selected 1990 national health objectives for both the AI and non-AI populations in one county. National public health organizations have urged State and local groups to tailor model public health standards to local conditions (*3*). States such as Oregon have actively pursued this goal by establishing statewide objectives (*4*). We are confident that this process can be done by local communities, too.

What other health objectives could be used in local communities? For this investigation, we selected two 1990 national health objectives related to maternal and infant health that allowed assessment of both AI and non-AI health indicators in a

county. Other national MCH health objectives that could be used in this way include objectives to reduce infant and maternal mortality rates (*1*). Because of the small number of births occurring in Umatilla County, even during a 14-year period, the significance of these measures would be difficult to interpret. Still other national health objectives could be used for AI communities, although comparable data for the non-AI population may not be readily available. As an example, the IHS is establishing surveillance systems to estimate the proportion of AI women who smoke or use alcohol during pregnancy. The surveillance will allow local AI communities to set and measure public health objectives designed to protect fetuses, as well as mothers. IHS area offices will be able to monitor progress on these objectives in several local AI communities and evaluate the efficacy of public health intervention efforts to achieve the objectives.

We conclude that (*a*) vital record data can be used to assess changing health patterns in small areas for both minority and majority populations, (*b*) additional risk data should be collected and used to focus preventive health care programs in local areas, and (*c*) vital record and behavioral risk data together can be used to monitor achievement of public health objectives. The IHS, in collaboration with State health departments, plans to pursue this strategy in the 1990s.

References

1. Public Health Service: Promoting health, preventing disease. Objectives for the nation. U.S. Government Printing Office, Washington, DC, 1980.
2. Community-oriented primary care: from principles to practice, edited by P. A. Nutting. U.S. Government Printing Office, Washington, DC, 1987.
3. American Public Health Association: Model standards: a guide for community preventive health services. Ed. 2. Washington, DC, 1985.
4. Oregon Health Division: Health objectives for the year 2000. Report of the Oregon health 2000 project. Portland, OR, 1988.

Preventing Baby Bottle Tooth Decay in American Indian and Alaska Native Communities: A Model for Planning

BONNIE BRUERD, MPH, DrPH Cand.
MARY BETH KINNEY, RDH, MPH
ERIC BOTHWELL, DDS, MPH, PhD

Ms. Bruerd worked as a Prevention Coordinator for the Indian Health Service from 1983 to 1988 and is now self-employed as a health policy consultant in Salem, OR. Ms. Kinney is a Dental Education Specialist with the Dental Disease Prevention Activity of the Centers for Disease Control. She also coordinates the Head Start interagency agreement with the Indian Health Service's Dental Branch. Ms. Kinney is stationed in Salem, OR. Dr. Bothwell is Director of Dental Research and Program Communications for the Indian Health Service, Dental Services Branch, at the Field Support and Program Development Section in Albuquerque, NM. The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the Indian Health Service.

Tearsheet requests to Mary Beth Kinney, Chemawa Indian Health Center, 3750 Hazelgreen Road, NE, Salem, OR 97305.

Synopsis

Baby bottle tooth decay (BBTD) is a preventable dental disease which surveys have shown affects more than 50 percent of Native American children. An experimental program to prevent BBTD was implemented in 12 Native American communities. The project represented a cooperative effort by three Department of Health and Human Service agencies: Administration for Children, Youth, and Families, Head Start Bureau; Indian Health Service, Dental Program; and Centers for Disease Control, Dental Disease Prevention Activity.

Intervention strategies included the training of parent volunteers, health professionals, and the tribal employees who counseled caretakers of young children and made group presentations. There was also a media campaign in each community that ran for a 3-year period. Numerous educational materials were developed including training manuals, counseling booklets, tippee cups, posters, and bumper stickers. The BBTD project's planners encouraged tailoring the education materials and