

**A Respiratory Disease Program
for Native Americans**

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A Respiratory Disease Program for Native Americans

Introduction

In just the past two decades, Native American respiratory diseases have become an important epidemiological transition issue. Changes in work space, living space and environmental exposure are resulting in rises in the relative diseases rates for asthma and other forms of infectious respiratory disease. Some of the changes in living patterns responsible for these diseases may be preventable, others reduced significantly. For this reason, the incidence of respiratory diseases in Native Americans is the focus of this public health program, plans for which are based on the Chicago Asthma Consortium.¹

Native American Respiratory Disease Issues

Native Americans suffer from a variety of respiratory diseases (TABLE 1).² The most fatal of these diseases, pneumonia, is the fourth common cause for deaths in Native American children. Bronchitis and bronchiolitis are responsible for absence from schools. Asthma is rapidly becoming one of the most serious consequences of this history of pulmonary disease in association with long-lasting socioeconomic issues.

Epidemiological transition is a chief reason given for the development of these new disease patterns.^{3,4,5,6} For Native Americans, this transition is interpreted as a result of a “thrifty genotype”⁷ and the “New World Syndrome.”^{8,9} Recent decreases in infectious respiratory diseases accompanied by increases in other diseases represent just one way

these transitions impact American Indian and Native Alaskan populations. The following serve as well-documented examples of this transition:

- ▶ Whereas the causes for pneumonia and RSVD are known, and to some degree preventable, the exact causes for asthma have yet to be identified.
- ▶ More AI/AN are choosing to reside in urban settings; by residing or spending significant amounts of time in urban settings, one increases the likelihood he/she will develop an asthmatic condition.
- ▶ It has been suggested that a significant number of occupations engaged in by AI/AN may expose the workers to asthmagens.
- ▶ Living habits engaged in by certain family members can increase one's likelihood of developing asthma, such as smoking, pet ownership.
- ▶ Particular living features of the urban and suburban domestic setting typical of low socioeconomic status can increase asthma incidence, for instance, the use of biofuel for home-heating, the presence of cockroaches, mites, and other arthropods and insecta, and the proximity of one's homestead to a major roadway.

Asthma exemplifies this growing Native American epidemiological issue.^{10,11,12}

Whereas several decades ago, infectious respiratory diseases were common and asthma a rare medical problem for American Indians and Alaskan Natives (AI/AN),^{13,14,15,16} recent evidence suggests asthma incidence is increasing.^{17,18,19,20} Even more disconcerting is the strong correlation that exists between socioeconomic status, asthma, and certain forms of infectious respiratory disease experienced by Native Americans.^{21,22,23,24} For this reason, a new public health goal needs to be defined which focuses on the prevention of the development of asthma and other respiratory diseases by Native Americans, relying upon disease monitoring and education programs to reduce these disease rates.^{25,26} Since one of the more important high risk groups for respiratory diseases and asthma is AI/AN children under eighteen years of age, this program focuses on reducing exposure of members of this

age group to 1) domestic, occupation, and local environmental features responsible for asthma and respiratory disease, and 2) pre-asthmatic respiratory diseases like pneumonia, bronchitis and RSVD.

NAIRDP

The Northwest American Indian Respiratory Disease Program (NAIRDP) has been proposed for reaching this goal. By following the general guidelines established by the Chicago Area Consortium for asthma prevention, NAIRDP serves to improve communications between current disease prevention programs underway and provide support for programs and services devoted education and disease prevention (TABLE 2).

Currently, some of the more active AI/AN public health programs focus on common health problems like poor nutrition or malnutrition,^{27,28,29,30,31,32} smoking,^{33,34,35,36} alcohol,^{37,38} obesity,^{39,40,41,42,43,44,45} diabetes,^{46,47,48,49,50,51,52,53} cardiovascular disease,^{54,55,56,57,58} gall bladder disease,^{59,60} tuberculosis, and cancer. A number of these agencies interact with state, tribal, regional, and federal agencies, facilitating the inclusion of experts and administrators from non-Native health care facilities into NAIRDP and improving its effectiveness as an education-surveillance program.

To successfully reach this long-term goal, NAIRDP will document, monitor and reduce or prevent current respiratory disease patterns in the Pacific Northwest. NAIRDP will identify high-risk living conditions and provide more effective education programs to reduce the likelihood for respiratory disease onset. By working with other AI/AN agencies, NAIRDP will hopefully improve other programs already underway regarding disease prevention. In sum, by working as a single agency devoted to a single classification of

diseases, NAIRDP provides cohesion for numerous Native American health programs which deal with respiratory diseases as part of a much larger goal (i.e. child care, maternal care, etc.), but devote little time specifically to this rapidly growing Native American health concern.

Much like the Chicago Asthma Consortium (CAC), NAIRDP engages a variety of participants, including Indian health care providers, educators, clinics and administrators, numerous financiers, and non-tribal health care providers, experts in the field, and administrators. NAIRDP involves specifically those public health programs, planning agencies, and providers with services devoted to respiratory disease and prevention of childhood deaths (FIGURE 1). NAIRDP's educational and supportive efforts target patients with a history of respiratory disease, AI/AN children under 18 years of age, and individuals predisposed to experiencing such a problem due to personal and work-related habits. The following interagency goals define NAIRDP's administrative activities:

- 1) provide support for other Native American health care programs already underway, preventing duplication of services and, if necessary, improving local availability of other services,
- 2) serve as an agency linking Native American programs with other programs and services devoted to health and Native American issues provided by state, regional, and Federal agencies,
- 3) provide support for Native American individuals or families in need of prevention and treatment by organizations devoted to respiratory disease management,
- 4) produce guidelines and protocols for better research and management of respiratory disease problems in Native Americans
- 5) produce recommendations on how to reduce the prevalence of respiratory diseases, emphasizing childhood infectious diseases, asthma and bronchitis.

NAIRDP differs from the Chicago Asthma Consortium (CAC) program in that it engages non-respiratory disease-related health programs already underway, primarily those focused on non-infectious respiratory diseases like childcare, cancer and tuberculosis. Second, NAIRDP is devoted to preventing or reducing asthma incidence in children over 4 year of age by reducing the incidence of childhood infectious respiratory diseases, an approach not included in CAC's agenda. Lastly, this inclusion of infectious disease allows for the possible inclusion of important intervention procedures not provided for by CAC.

If the goals of Healthy People 2000 (FIGURE 2) are applied to NAIRDP's goals, the following disease-specific objectives may be defined, and used to produce a later review of NAIRDP's activities and success:

- 1) Reduce asthma rates
- 2) Reduce infectious disease rates in children
- 3) Reduce pneumonia mortality
- 4) Reduce respiratory disease-related days at home experienced by children
- 5) Reduce the prevalence of tuberculosis cases in Native Americans
- 6) Reduce the number of Native American children who make use of tobacco products for smoking or oral habits
- 7) Reduce and prevent alcohol consumption
- 8) Reduce or prevent occupation-induced asthma onset

To meet these objectives, a number of regular activities will be engaged in by NAIRDP's consortium, involving numerous local and regional health care agencies and professionals (FIGURE 1). In Oregon and the Pacific Northwest, since a number of these public health programs are already on-going, adding NAIRDP to the current public health system may further support and strengthen this system's overall success and producing

important contacts with local hospital facilities where well-known, published experts in asthma employed with Oregon's "Open Airway" asthma-prevention program (FIGURE 3).

Evaluation Criteria

To evaluate NAIRDP, the following seven areas need to be reviewed: effectiveness, efficiency, quality, accessibility, equity, satisfaction and systemness (TABLE 3). These areas are evaluated at both the employee level and the consumer level.

An *effective* NAIRDP program will reduce mortality/morbidity rates and improve health care access. *Efficiency* and cost-effectiveness are the major driving force for this program. Aside from disease-related alterations in morbidity and mortality rates, one major benefit of this program will a reduction in expenditures for dealing with Native American patients suffering from respiratory disease and asthma.

Overall, the *quality* of the health care system produced by NAIRDP should improve, especially programs devoted to children's diseases. By forming a community-based board of overseers/directors and a medical/public health peer review council, concerns pertaining to "best practices", propriety of educational material, and teachings and practices with underlying ethnosensitivity issues can be taken into consideration.

Accessibility to much-needed health care services has long been an AI/AN issue. The development of NAIRDP is in part designed to help further reduce this problem by educating the public about programs already underway. Aside from engaging in its own education activities, NAIRDP will serve as another source for important health education materials, which will be distributed regularly to tribal health care agencies in both rural and urban settings, actions meant to reduce any social *inequity problems* from occurring.

Consumer (AI/AN) *satisfaction* may be defined using a ‘consumer/patient satisfaction’ survey tool. Such tools have been used by other AI/AN agencies for much the same purpose and may be drawn from to produce NAIRDP’s survey instrument. Finally, as a system, the forté of this program will be demonstrated by its ability to bring together numerous health care providers and programs already in place. This *systemness* will serve as a measurement of the program’s success and may be measurable by way of a survey tool sent to the regional health care agencies participating (or refusing to participate) in NAIRDP.

Learning Organization Attributes

A number of important learning organization attributes may be related to NAIRDP’s activities (TABLE 4). The most outstanding feature is its uniqueness and novelty as an AI/AN disease prevention program. This program focuses on an issue which exists in part due to past environmental issues (i.e. domestically-induced infectious respiratory diseases, environmentally-induced asthma), and more importantly, due to SES, urbanization and epidemiological transition issues. Since this program focuses on a new and growing disease problem, it provides workers with a sense of value to their efforts and consists professionally challenging features focused on disease etiology and natural history.

The work environment for NAIDRP is beneficial to its employees because it provides them with opportunity for growth and intellectual development. It provides ample opportunities for students to engage in these activities as well, relying upon NAIRDP staff as possible mentors and coaches. Since NAIRDP makes use of numerous local health care agencies, both formal and informal networks of program assessment are possible, as well as

formal and informal in-house communication processes. Through regularly scheduled peer and staff reviews, group communication can be engaged in to improve particular parts of the administrative and education/health care service programs already underway.

In sum, NAIRDP provides an opportunity to strengthen and further develop public health/health care programs already underway. NAIRDP's primary goals are to reduce AI/AN morbidity and mortality due to infectious respiratory disease and asthma. In addition, NAIRDP hopes to provide additional strength for a multifaceted health care service greatly influenced by governmental-, tribal- and consumer-support.

Conclusion

NAIRDP needs to be implemented for the following reasons:

- ▶ to improve current Native American disease prevention programs
- ▶ to improve our understanding of asthmageneration and other respiratory diseases
- ▶ to reduce morbidity/mortality rates for this population, in particular for children.

Devoted to infectious respiratory disease and asthma issues, NAIRDP's activity improves current health care and public health programs underway. It provides a unique opportunity to engage in reviews and studies of the causes for asthma onset and incidence in relation to other childhood respiratory diseases. NAIRDP's activities also provide further insight into causes for these and other lifelong illnesses. For these reasons, NAIRDP is a much-needed addition to AI/AN disease prevention programs already underway.

TABLE 1

Number of Deaths and Mortality Rates for Selected Respiratory Causes
 American Indian/Alaska Natives (1980-1986); US All Races (1985)
 (Rhoades 1990)

Cause of Death (ICD-9-CM Code)	Number of Deaths		Mortality Rates	
	AI/AN	US	AI/AN	US
Tuberculosis				
Respiratory System (010-012)	122	1,418	1.9	0.6
Other (013-018)	48	361	0.8	0.1
Coccidiomycosis (114)	13	56	0.2	0.0
Histoplasmosis (115)	0	46	0.0	0.0
Blastomycosis (116)	0	16	0.0	0.0
Cryptococcosis (117.5)	7	166	0.1	0.0
Sarcoidosis (135)	10	347	0.2	0.1
 Malignant Neoplasm of lung or bronchus (162.2-162.9)	 959	 115,522	 15.1	 49.4
Pneumonia				
Pneumococcal (481)	91	2,707	1.4	1.2
All	1,267	42,863	20.0	18.3
Emphysema (492)	80	13,293	1.3	5.7
Asthma (493)	0	3,561	0.0	1.5
Chronic Airway Obstruction, not otherwise coded (496)	373	45,018	5.9	19.2
Idiopathic fibrosing alveolitis (516.3)	7	222	0.1	0.1
Respiratory Distress Syndrome (769)	159	3,694	2.5	1.6

TABLE 2

NW American Indian Respiratory Disease Program Activities

Adults:

- Continue monitoring tuberculosis, a major disease problem (this agency).
- Continue monitoring lung cancer and chronic obstructive pulmonary disease (COPD), two problems typically associated with increased tobacco smoking (this agency, in association with another agency).

Children (0-17 yo)

- Develop a reporting agency for childhood respiratory diseases, especially RSV and pneumonia (this agency).
- Develop an information/advocacy agency for childhood diseases, including respiratory diseases (this agency).
- Develop a disease prevention screening program designed to prevent missed inoculations (subagency?).
- Develop an information/advocacy group for obtaining health care (this agency).
- Develop a program designed to prevent and alleviate pregnancy and/or malnourishment-related problems (subagency).
- Develop a program to deal with low income related child abuse-related problems (subagency).

The following Native American programs need to be involved in this program:

- Indian Health Services,
- Northwest Portland Area Indian Health Board,
- various tribal agencies.

The following local providers and administrators should also be involved:

- various local hospitals or hospital consortia administrators (GSH, OHSU, Providence, etc.),
- respiratory disease specialists (esp. Vollmer, see bibliography, next pgs),
- NPOs:

TABLE 3. PROGRAM-RELATED EVALUATION CRITERIA

<i>Evaluation Criteria</i>	<i>Description</i>
Effectiveness	<ol style="list-style-type: none"> 1. further addresses an increasingly important disease issue which in turn is linked to one of the most significant Native American health issues-- epidemiological transition. 2. improves our basic understanding of several disease issues due to combining them together, i.e. the inter-relationships which may exist between respiratory disease and socioeconomic status, and early childhood infectious respiratory disease and later asthma initiation.
Efficiency	<ol style="list-style-type: none"> 1. helps improve overall efficiency of systems and protocols already in place. 2. improves health care efficiency and lowers costs: deals with issues which normally have high costs attached to them due to needs for clinical management (i.e. hospitalization due to pneumonia, bronchitis and asthma). 3. eliminates fragmentation and duplication of services.
Quality	<ol style="list-style-type: none"> 1. utilizes "best practices" by way of developing a protocol recommendation by way of involving local experts. 2. involves several major health care institutes, enabling these practices to be repeatedly updated through professional/ medical and tribal-based peer reviews. 3. monitors current incidence and prevalence, assisting other agencies in the same processes, resulting in an effective back-up system for this knowledge and/or its database(s).
Accessibility	<ol style="list-style-type: none"> 1. improves accessibility to information about asthma and AI/AN childhood diseases, improving recognition of and knowledge about these along the way.
Equity	<ol style="list-style-type: none"> 1. addresses a health issue related to a specific ethnic group, with some built in/published sensitivity issue lessons. 2. provides services where services may be lacking and are much needed.
Satisfaction	<ol style="list-style-type: none"> 1. major satisfaction may be derived from "teamwork" concept and its role in generating "improved" or "up-to-date" protocols and information material.
Systemness	<ol style="list-style-type: none"> 1. depends highly upon an integration of current systems already in place 2. strengthens current smaller, tribal-based clinical settings, integrating these smaller systems with the much larger regional agencies, producing a more holistic management system. 3. meets goals which have been defined quite well and accepted by other agencies devoted to similar causes in other regions, as well as portions of goals defined by other more specialized groups (i.e. maternal/childcare programs; anti-tuberculosis programs; cancer prevention programs).

TABLE 4

Learning Organization Attributes

Modality	Comments
Uniqueness	There is novelty to this program both as a AI/AN program and as a consortium plan not often engaged in, which combines infectious respiratory disease and asthma issues
Mentors/Coaches	AI/AN programs typically have numerous mentor programs and policies. Programs interacted with will have such programs and experience to draw from.
Professional Challenge/learning experience	This research topic is currently in both the development and expansion processes. Deals with the early stages of an important issue.
Self-development/professional training	ditto
All employees developing	Programs interacted with will have these types of programs and experience to draw from.
Formal and Informal networks of communication	Not very well-established, esp. between tribes, and federal-tribal offices; this program in part serves to amend this problem.
Group communication	regularly scheduled communications
Formal education/professional development	develop with the issue being changed, becoming more learned in the issue.
Trainee involvement	Promoted through in-house activities
Cross-training and job-rotation	Exposure to other programs by way of regular meetings will enhance each group's understanding of other group-related work experiences; otherwise, these agencies have limited interactions.
Compete with self, not others	Not well targeted with this program; this remains a more personal issue to deal with.
Provide ongoing feedback, both formal and informal	Interactions with other service agencies within the health care system in various ways help alleviate this problem.
Group/Team rewards	Regional and local versions of employee awards are typically engaged in.
Shared values	Shared philosophies, values and beliefs are inherent to this type of cultural program, especially due to ethnic hiring goals already established. Mutual understanding, acceptance and input of these shared values is on-going.

Implementing a Program to Prevent Respiratory Disease in Native Americans

Figure 1

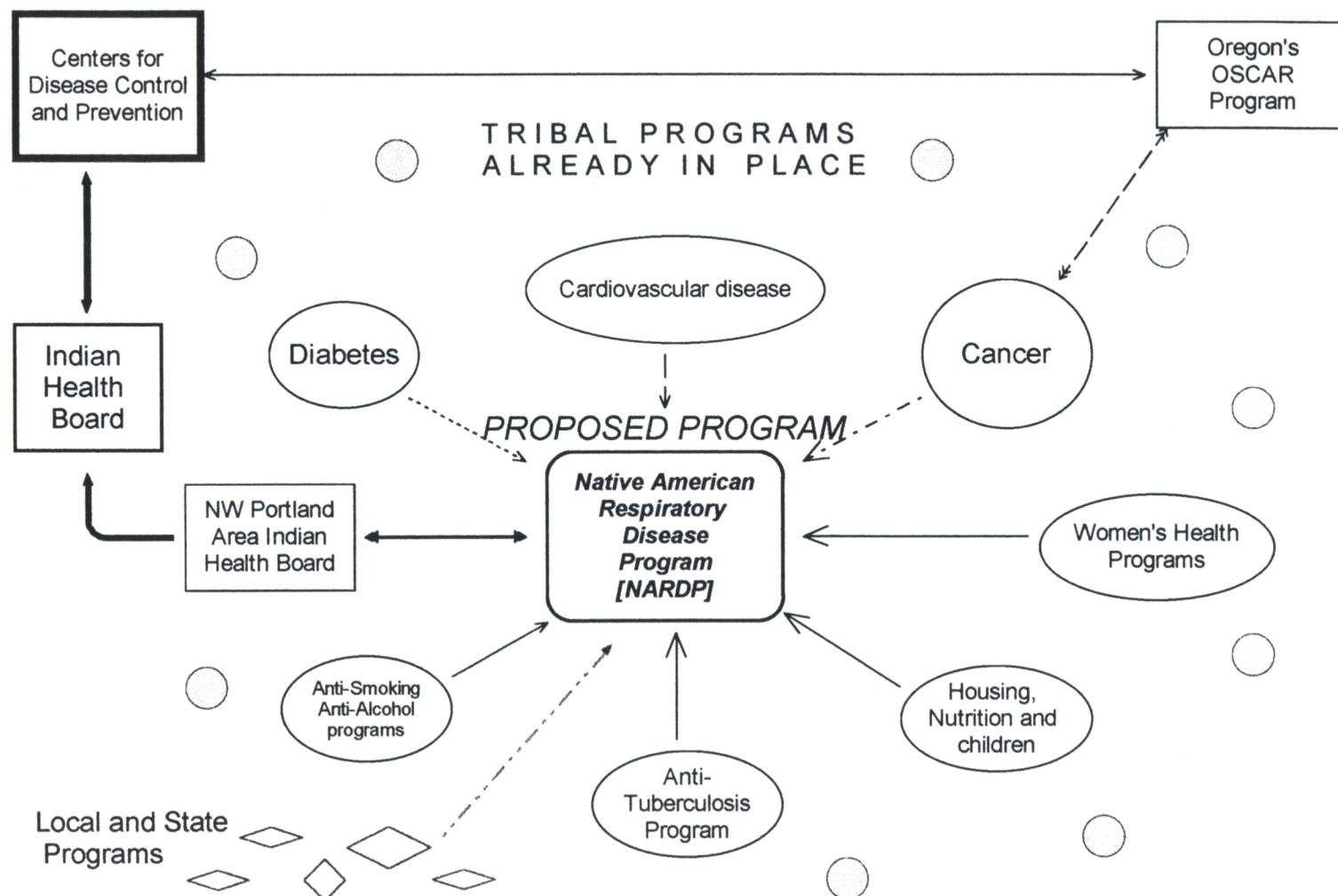


FIGURE 2

HEALTHY PEOPLE 2000 OBJECTIVES

Environmental Health--Health Status Objectives

11.1 Reduce asthma morbidity, as measured by a reduction in asthma hospitalizations to no more than 160 per 100,000 people. (Baseline: 188 per 100,000 in 1987)

11.16 Establish and monitor in at least 35 States plans to define and track sentinel environmental diseases. (Baseline: 0 States in 1990)

Note: Sentinel environmental diseases include lead poisoning, other heavy metal poisoning (e.g., cadmium, arsenic, and mercury), pesticide poisoning, carbon monoxide poisoning, heatstroke, hypothermia, acute chemical poisoning, methemoglobinemia, and respiratory diseases triggered by environmental factors (e.g., asthma).

EXPLANATION: Air pollution levels have been associated with increased respiratory health problems like asthma. According to the Healthy People 2000 report:

- The health costs of human exposure to outdoor air pollutants each year range from \$40 to \$50 billion. An estimated 50,000 to 120,000 premature deaths are associated with exposure to air pollutants.
- People with asthma experience more than 100 million days of restricted activity each year, costs for asthma exceed \$4 billion, and about 4,000 people die of asthma.

1995 Addition--Risk Reduction Objective

11.17 • Reduce to no more than 20 percent the proportion of children aged 6 and younger who are regularly exposed to tobacco smoke at home. (Baseline: More than 39 percent in 1986, as 39 percent of households with one or more children aged 6 or younger had a cigarette smoker in the household)

Note: Regular exposure to tobacco smoke at home is defined as the occurrence of tobacco smoking anywhere in the home on more than 3 days each week.

REF: Summary List of Objectives for the Nation. At DOH, Hawaii Department of Health website entitled http://www.hawaii.gov/doh/resource/Healthy_Hawaii/opd-h140.htm, accessed on November 16, 2001.

FIGURE 3

PORTLAND/OREGON Asthma Research

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