Oral Health Surveillance Plan 2011 – 2020

Indian Health Service
Division of Oral Health
Rockville, Maryland

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Introduction

History

The Indian Health Service (IHS) Division of Oral Health continuously monitored oral health of the American Indian/Alaska Native (AI/AN) population from 1957 to 1978. After 1978, the IHS began periodic oral health surveys: in 1984, in 1991, and in 1999. Each of these surveys was similar in data collected and methodology, using dental patients presenting to IHS, tribal and urban dental clinics as survey participants. In early March 2010, the Chief Dental Officer of the U.S. Public Health Service, who also served as the Director of the IHS Division of Oral Health, along with the IHS Dental Public Health Consultant attended the "National Oral Health Surveillance: Gaps, Priorities, and Future Strategies" workshop sponsored by the National Institute of Dental and Craniofacial Research (NIDCR) and the Centers for Disease Control and Prevention (CDC). One product of this workshop was the resolve of the Chief Dental Officer to establish an IHS-specific oral health surveillance plan.

Purpose

The purpose of the IHS Oral Health Surveillance Plan is to establish a system that can be used within the IHS Division of Oral Health to measure the prevalence and severity of oral diseases, the oral disease burden on the (AI/AN) population, and the impact that our efforts in prevention, education, and early intervention and treatment has made on the population. Moreover, the Plan establishes the core health indicators which will be measured, the frequency of measurement, and comparability with other national oral health surveillance systems. This plan indirectly addresses the Healthy People 2020 (HP 2020) goal to "Increase the number of States and the District of Columbia that have an oral and craniofacial health surveillance system (OH-16)."

Strategic Partners

The IHS Division of Oral Health is comprised of 322 dental programs spread across 35 states. These dental programs consist of Direct programs administered by the Indian Health Service, Tribal Programs administered by Tribes under Title I and Title V of P.L. 93-638, and Urban Programs. Many of these programs will partner with the IHS to carry out the nationwide surveillance of oral diseases in the AI/AN population.

Additional partners in establishing the oral health surveillance system, assisting in maintaining the database, and assisting in the publication of results will include the CDC, NIDCR, and the Association of State and Territorial Dental Directors (ASTDD).

Comparability

The 1999 Oral Health Survey of American Indian and Alaska Native Dental Patients, like its predecessors in 1984 and 1991, used trained dentists in the IHS dental programs to conduct dental examinations on a sample of their existing patients. Because only patients presenting to the dental clinics were examined, the 1999 Oral Health Survey may have had significant *sampling bias* (meaning that perhaps the patients with the most severe disease, especially in the younger age cohorts, were examined). This makes it difficult to use the 1999 Oral Health Survey data to compare to other surveys such as the National Health and Nutrition Examination Survey (NHANES) or state or local surveys using the Basic Screening Survey (BSS) protocol. At the same time, however, the IHS is able to look at historical trends in oral disease burden across the 1984, 1991, and 1999 Oral Health Surveys which were conducted essentially in the same way. NHANES provides estimates for the U.S. population but usually cannot support estimates for the AI/AN population. That is why an IHS survey is so important – it fills a critical gap in data for a population not represented well in other surveys, and over time can monitor trends in the oral health of the AI/AN population. Although the estimates for any given year are not directly comparable to estimates from these other surveys, comparisons of trends over time should provide useful information. Below is a comparison between the indicators for these three survey designs.

Table 1. Comparison of Survey Indicators

Indicator	IHS 1999 OHS	BSS/NOHSS	NHANES 2010
Caries experience	X (2-14, 15-19)	X (3rd graders)	X (2+ years)
DMFT/dmft	X (2-19, 35-44, 55+)	X (optional)	X
DMFS/dmfs	X (2-19, 35-44, 55+)		
Incisor dmft	X (2-5 years)		
Untreated tooth decay	X (2-14, 35-44, 55+)	X (3rd graders)	X
Severe ECC	X (2-5 years)		
Denture status and use		X (older adult)	X
Edentulism	X (35-44, 55+)	X (self-reported, 65+)	X
Fluorosis			X
Gingivitis			X
Loss of periodontal attachment	X (35-44, 55+)		X
CPITN	X (15-19, 35-44, 55+)		
Perceived oral health status			X
Preventive care/oral hygiene		X (self-reported, 18+)	X
Sealants		X (molars, 3rd graders)	X
Smoking	X (15-19, 35-44, 55+)		X
Tooth count		X (older adult)	X
Diabetes	X (35-44, 55+)		
Dental visit		X (self-reported, 18+)	X
Loss of 6 or more teeth		X (self-reported, 65+)	
Fluoridation status		X	

Similar in all 3 survey designs | **Similar between IHS OHS and NHANES** | **Similar between the BSS and NHANES**

Surveillance Design

Surveillance System Design

In order to compare surveillance data with the 1999 Oral Health Survey, state BSS data, and NHANES, the surveillance system must contain key data elements that are easily measurable. There are several drawbacks to repeating the protocol of the 1999 Oral Health Survey. One of the biggest drawbacks of comprehensive surveys such as the '99 IHS Oral Health Survey or NHANES is the cost required. A second drawback is the amount of time it takes each examiner to accurately record the data from the examination provided. A third drawback is the length of time from data collection to the release of the results (the 1999 Oral Health Survey, for example, did not conclude data collection until 2000 and the results of the Survey were not published until 2001).

Consequently, the survey designs that will form the foundation of future IHS surveillance will be the BSS and the IHS Electronic Dental Record (EDR) Survey. The BSS is used by over 40 states to assess oral health status. Developed by the Association of State and Territorial Dental Directors (ASTDD), in collaboration with the Centers for Disease Control and Prevention (CDC), this survey can be done in schools and other community-based settings. For certain population groups it can also be conducted in the dental clinic and through a retrospective chart review.

The BSS, however, does have limitations. A dental screening, upon which the BSS is based, is not a thorough clinical examination and does not involve making a clinical diagnosis resulting in a treatment plan. A screening is intended to identify gross dental or oral lesions, and is conducted by dentists, dental hygienists, or other appropriate health care workers, in accordance with applicable state law. The information gathered through a survey is at a level consistent with monitoring the national health objectives found in the United States Public Health Service's Healthy People 2020 document. Surveys are cross sectional (looking at a population at a point in time) and descriptive (intended for determining estimates of oral health status for a defined population). [From the ASTDD BSS Manual, 2003]

The IHS will use the BSS to gather oral health-related data as part of this surveillance plan. Most of the data we have on the prevalence of oral disease are either old or unreliable: (1) the last IHS Oral Health Survey was completed in 1999 (reported in 2001), so those data are over 10 years old; (2) Resource and Patient Management System (RPMS) data, which is the software program used by the majority of IHS programs for patient data entry, are not very reliable in assessing population oral health status because they only include patients presenting to the dental clinic, most dental clinics were not consistent in using established tracking codes in the past, and these codes were removed in early 2009 from the Dental Data System (DDS) package, one of many packages in RPMS.

The BSS is important in two ways. First, it will allow IHS dental programs to measure the extent of oral disease in their community similar to how states collect data reported in the National Oral Health Surveillance System -

http://www.cdc.gov/nohss/index.htm. Second, the survey can be used to track the effectiveness of IHS health promotion/disease prevention (HP/DP) activities or special initiatives (such as the 2010-2015 IHS ECC Initiative). The severity of tooth decay in this population suggests that use of the expanded BSS to collect the number of teeth with treated and untreated decay will be important to the IHS oral health surveillance system, although this measure is not tracked in NOHSS or Healthy People.

Although the BSS that will be used in the IHS is similar to other national and state surveys, the BSS may not allow for comparisons to previous Oral Health Status Surveys conducted by the IHS. For that reason, a secondary surveillance system could provide valuable data to show trends in disease prevalence within the IHS. The IHS Electronic Dental Record (EDR) has been installed in over 80 dental programs as of 2011, and within the next few years, it is expected that as many as half of all IHS dental programs will be utilizing the EDR. The EDR will be able to capture valuable clinic data that can be used to compare disease burden to previous oral health surveys, especially the 1999 Oral Health Status Survey. For the two EDR surveys planned, selected sites will receive training using similar protocols from the 1999 Oral Health Status Survey. Examinations for target groups will receive a unique code to input into the EDR and data will be mined based upon this unique code identifier. In other words, not all examinations conducted during the specified EDR Survey period will count; only those with the unique survey code will be counted.

Targeted Groups and Rationale

The groups that will be targeted for community-based surveillance are those that relate directly to Healthy People 2020 Objectives or national IHS Initiatives, while the clinic-based surveillance will be based on both Healthy People 2020 Objectives and target groups previously chosen for the 1991 and 1999 Oral Health Status Surveys.

Table 2: Oral Health Surveillance Indicators – Community-Based

Indicator	HP 2020 Objective	Data Source	1-5 years	6-9 years	13-15 years
Population Base			Community Sample	School Sample	School or Clinic
Caries experience (%)	OH-1	Screening	X	X	X
Untreated decay (%)	OH-2	Screening	X	X	X
Severity (dmft/DMFT)*	NA	Screening	X	X	X
Dental clinic utilization	OH-7	Screening/EDR	X	X	X
Preventive dental services	OH-8	Screening/EDR	X	X	X
Dental sealants (%)	OH-12	Screening	X	X	X
Surveillance years			2010, 2013, 2015	2011-12, 2017-18	2015,2020

The EDR survey will provide more detail than the BSS in more age groups. This will allow comparisons to be made between the EDR survey and previous IHS Oral Health Status Surveys. Table 3 below provides details on the indicators and age groups for the EDR survey.

Table 3: Oral Health Surveillance Indicators – Clinic-Based

Indicator	HP 2020 Objective	Data Source	2-5 years	6-14 years	15-19 years
Population Base			Clinic Sample	Clinic Sample	Clinic Sample
Caries experience (%)	OH-1	EDR	X	X	X
% with caries experience on 1-4 maxillary incisors	NA	EDR	X		
% with caries experience $\geq$ 1 maxillary incisor or dmft $\geq$ 6 (severe ECC)	NA	EDR	X		
Untreated decay (%)	OH-2	EDR	X	X	X
Untreated decay, permanent teeth only (%)	NA	EDR/Screening		X	X
dmft/DMFT, dmfs/DMFS	NA	EDR	X	X	X
Mean dmfs for maxillary incisors and posterior teeth	NA	EDR	X		
%with dmfs > 0 with max. incisor decay only, posterior decay only; posterior & incisor decay	NA	EDR	X		
Dental clinic utilization	OH-7	EDR	X	X	X
Dental sealants (%)	OH-12	EDR	X	X	X
% with dental sealants on 1st molars, 2nd molars, or both	NA	EDR		X	X
Mean number of sealed teeth	NA	EDR		X	X
% with fluorosis	NA	EDR		X	X
% using tobacco	NA	EDR		X	X
% with highest CPITN of 0, 1, 2, 3, 4	NA	EDR			X
% with perio pockets (< 4 mm, $\geq$ 4 and < 6 mm, $\geq$ 6 mm) for comparison with previous surveys	NA	EDR			X
% with loss of attachment (3 mm, $\geq$3 and < 5mm, $\geq$ 5mm) for comparison with previous surveys	NA	EDR			X
Surveillance years			2015, 2020	2015, 2020	2015, 2020

With the adult population, surveillance will be entirely based on clinical examinations. The BSS will not be used for the EDR surveys; rather, the IHS standard examination record will be used to record hard and soft tissue findings on patients. In Table 4 below, a description of indicators is listed.

Table 4: Oral Health Surveillance Indicators – Adults

Indicator	HP 2020 Objective	Data Source	35-44 years	45-54 years	55+
Population Base			Clinic Patients	Clinic Patients	Clinic Patients
Untreated decay (%)	OH-3	EDR	X	X	X
Severity (DMFT)*	NA	EDR	X	X	X
Tooth loss	OH-4	EDR	X	X	X
Destructive periodontal disease (%)	OH-5	EDR	X	X	X
Dental clinic utilization (%)	OH-7	EDR	X	X	X
Tobacco cessation (%)	OH-14.1	EDR	X	X	X
Oral cancer screening (%)	OH-14.2	EDR	X	X	X
Glycemic control (%)	OH-14.3	EDR	X	X	X
% with dental sealants on 1st molars, 2nd molars, or both	NA	EDR	X	X	X
% with fluorosis	NA	EDR	X	X	X
% using tobacco	NA	EDR	X	X	X
%with highest CPITN of 0, 1, 2, 3, 4	NA	EDR	X	X	X
% with perio pockets (< 4 mm, ≥ 4 and < 6 mm, ≥ 6 mm	NA	EDR	X	X	X
% with loss of attachment (3 mm, ≥3 and < 5mm, ≥ 5mm)	NA	EDR	X	X	X
% with diabetes	NA	EDR	X	X	X
% that need biopsy	NA	EDR	X	X	X
% will all 28 teeth	NA	EDR	X	X	X
% with 20 or more teeth	NA	EDR	X	X	X
% with no natural teeth	NA	EDR	X	X	X
% with root caries	NA	EDR	X	X	X
Surveillance years			2015, 2020	2015, 2020	2015, 2020

*Caries severity is not a HP 2020 objective but because of the high level of severity among the AI/AN population, it is important to monitor severity.

Sampling Design

The sampling frame that will be used for the 0-5 year-old BSS will be based on IHS service units and tribal facilities and the current fiscal year official user population. A stratified cluster sample design will be used, where the strata are IHS Areas and clusters are determined by state, urban vs. rural, or IHS vs. tribal facility. For the 6-9 year-old (Kindergarten through 3rd Grade) and 13-15 year-old (8th through 10th Grades) BSS samples, all schools funded by the Bureau of Indian Education (BIE) will be surveyed, as well as public and private schools with greater than 50% AI/AN enrollment (greater than 40% AI/AN enrollment in the Oklahoma City Area).

For the EDR survey, sites will be chosen by a random sample based upon Area and user population.

Training, Standardization, and Calibration

For the BSS each year, calibration of BSS examiners will not be performed due to the wide geographic diversity of the 322 dental programs in the IHS and the expense of bringing sites and examiners together for calibration. Training will be conducted through WebEx (online) trainings by the survey coordinator, and all participating sites will have at least one trained examiner.

For the EDR surveys in 2015 and 2020, training and standardization of examiners will be conducted at one or more locations throughout the IHS if funds permit.

Implementation

The IHS Division of Oral Health, in consultation with its strategic partners, will procure the services of a contract epidemiologist who will (1) create the BSS form to be used for surveillance of the different indicators for each age group; (2) provide training to Areas (Area Dental Officers and Dental Support Centers) on conduction of the BSS and the EDR surveys; (3) collect data from participating dental programs; (4) analyze data, making comparisons where appropriate between the survey and state BSS data, NHANES data, and past IHS surveys; and (5) prepare an aggregate report, Area reports, and participating program reports.

Future Considerations

Since comparisons will be made not only between the BSS/EDR surveys and previous IHS Oral Health Status Surveys but also with state and national data, the IHS could benefit from data gathered through these surveys

being part of the NOHSS. Data on the oral health of the AI/AN population could then be made publicly available, which could lead to increased collaborations with states and dental organizations that regularly use the NOHSS.

Additionally, the NOHSS may change over time (the National Public Health Surveillance System is in the midst of updating their surveillance recommendations), with new oral health indicators added to state surveys. The IHS surveillance plan can be revisited and updated throughout the 10-year period as new indicators are added. This flexibility may allow for better comparability between IHS data and state and national data.

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The following IHS staffed formed the IHS Oral Health Surveillance Plan Workgroup and contributed to this Plan:

- Timothy L. Ricks, DMD, MPH, Chair
  IHS Dental Public Health Consultant
  Area Dental Officer, Nashville Area IHS
  711 Stewarts Ferry Pike
  Nashville, TN 37214
  (615) 467-1508
  Tim.Ricks@ihs.gov
- Timothy Lozon, DDS
  Director, IHS Division of Oral Health
  Suite 300, 801 Thompson Ave.
  Rockville, MD 20852
  (301) 443-4320
  Timothy.Lozon@ihs.gov
- Patrick Blahut, DDS, MPH, ABDPH Diplomate
  Deputy Director, IHS Division of Oral Health
  Health Promotion / Disease Prevention
  Medical Claims Review, Public Health Affairs
  Suite 300, 801 Thompson Ave.
  Rockville, MD 20852
  (301) 443-4323
  Patrick.Blahut@ihs.gov
- Richard Champany, DDS
  Acting Area Dental Officer, Navajo Area IHS
  PO Box 160, Hwy 491 North
  Shiprock, NM 87420
  (505) 368-6455
  Richard.Champany@ihs.gov
- George Chiarchiaro, DDS
  Deputy Director, IHS Division of Oral Health
  Dental Informatics
  8704 Deerland Grove Drive
  Raleigh, NC 27615
  (919) 900.8039
  george.chiarchiaro@ihs.gov
- Clay Crossett, DMD
  Director, Alaska Native Medical Center Dental
  4315 Diplomacy Drive
  Anchorage, AK 99508
  (907) 729-2044
  ccrossett@scf.cc
- Woody Crow, DDS, MPH
  Area Dental Officer, Portland Area
  Portland Area Indian Health Service
  1414 NW Northrup Street, Suite 800
  Portland, OR 97209
  (503) 414-5594
  Woody.Crow@ihs.gov
- Joseph Hosek, DDS, MPH
  Deputy Chief Dental Officer
  Sells Service Unit, Tucson Area Indian Health Service
  7900 South J Stock Road
  Tucson, AZ 85746
  (520) 295-2577
  Joseph.Hosek@ihs.gov

The following strategic partners assisted in the review of this document.

- Laurie Barker
  Statistician, Division of Oral Health
  Centers for Disease Control and Prevention
  KOGR Bldg RHODE Rm 2151MS F10
  Atlanta, GA 30341
  (770) 488.5961
  lub2@cdc.gov
- Eugenio Beltran
  Epidemiologist, Division of Oral Health
  Centers for Disease Control and Prevention
  Building:KOGR, Room:NCCDPHP
  Atlanta, GA 30329-4018
  (770) 488-6069
  edb4@cdc.gov
- Isabel Garcia, DDS, MPH
  Director, NIDCR
  National Institutes of Health
  MSC 2290, 31 Center Dr
  Bethesda, MD 20892
  (301) 496.9469
  GarciaI@od31.nidr.nih.gov
- Christopher G. Halliday, DDS, MPH
  Chief of Staff, Office of the Surgeon General
  Office of the Surgeon General
  5600 Fishers Lane, Room 18-66
  Rockville, MD 20857
  (202) 690-7511
  Christopher.Halliday@hhs.gov
- William Kohn, DDS
  Director, Division of Oral Health
  Centers for Disease Control and Prevention
  MS F-10 4770 Buford Highway
  Atlanta, GA 30341
  (770) 488-6071
  Wak8@cdc.gov
- Kathy Phipps, DrPH
  Data and Surveillance Coordinator
  Association of State and Territorial Dental Directors
  255 Bradley Avenue
  Morro Bay, CA 93442
  (805) 776-3393
  Kathyphipps1234@gmail.com