

# **BASIC SCREENING SURVEYS:** *AN APPROACH TO MONITORING COMMUNITY ORAL HEALTH*

## **OLDER ADULTS**



**Association of State and Territorial Dental Directors**  
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## INTRODUCTION

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Recognizing the need for community level oral health status and dental care access data, the Association of State and Territorial Dental Directors (ASTDD) developed the *Basic Screening Survey* (BSS). The development of the initial BSS model in 1999 was led by ASTDD in collaboration with the Ohio Department of Health. Technical assistance was provided by the Division of Oral Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. The primary purpose of the BSS is to provide a framework for obtaining oral health data that is inexpensive and easy to implement; yet always consistent. By collecting data in a consistent manner, communities and states have, for the first time, the ability to compare their data with data collected by other organizations, agencies or states.

The original BSS model provided indicators and training materials for all age groups. Because of substantial differences in terms of sampling strategies and oral health indicators between young children and older adults, the decision was made to develop separate BSS training materials for these two population groups. Developing training materials for the Older Adult BSS involved a number of experts in oral health plus individuals with experience in health policy and oral health surveillance.

Before embarking on a screening survey, it is important to understand its limitations. A dental screening 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 screening survey is at a level consistent with monitoring the national health objectives found in the United States Public Health Service's *Healthy People* 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).

The BSS model has two basic components:

1. *direct observation* of a person's mouth, and
2. *questions* asked of, or about, the individual being screened.

## HOW TO USE THIS MANUAL

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This manual provides general information on how to conduct a Basic Screening Survey in high-risk older adults. It includes the clinical indicators that should, at a minimum, be collected and the diagnostic criteria that all jurisdictions should use when collecting oral health data. In addition to this manual, ASTDD has developed a set of supplemental materials that you should review as you plan your oral health survey. While this set of materials provides you with basic information, we encourage you to obtain technical assistance from your agency's epidemiologist or statistician to assure that you use sound survey methods. If you or your agency have further questions, please contact ASTDD ([www.astdd.org](http://www.astdd.org)).

Supplemental Materials Available from ASTDD:

1. Examiner training video for dental professionals
2. ASTDD monograph: *IRB, HIPAA and BSS*

## BSS PLANNING GUIDE

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A successful Basic Screening Survey requires forethought and planning. Following is a step-by-step guide for planning a BSS; from the preliminary planning to the post-survey phase. You will find more detailed information in the following sections of this manual.

### Preliminary Planning Phase (9-12 months before survey)

1. Develop a survey plan by answering the following questions:
  - What do I want to find out, and for what purpose? Are you interested in just clinical parameters or do you want questionnaire information? Once the data is collected, what will you use it for – program evaluation, advocacy, etc?
  - What population group do I want to include in the survey? For example, do you want information on residents of long-term care facilities or are you interested in community based adults?
  - What level of estimate do I want to obtain? For example, do you want information for the state as a whole, for regions within the state, or county level information? NOTE: The smaller the level of interest, the more expensive the survey becomes.
  - What level of funding is available for this project? Can I obtain funding from other sources such as the state dental association or the state's delta dental provider?
  - Do I want to include a questionnaire with the screening and if yes, what information do I want to obtain?
  - **TIP:** Consider a survey advisory committee that includes representatives from key stakeholder organizations such as the health department, state office of aging, dental and dental hygiene associations, dental school, potential funding organizations, and the local area agencies on aging. If you have a statewide oral health coalition, this group could act as the advisory committee.
2. Determine if IRB approval is necessary.
  - Many states will require that the survey plan be submitted to the appropriate IRB. In most cases, however, the project may obtain a waiver because the survey is considered surveillance rather than research.
  - **TIP:** Submit the survey plan to the IRB at least 6-months before starting the project.
3. Contact your agency's HIPAA coordinator and determine if this survey is impacted by HIPAA.
4. Contact your state's department of aging. Determine if your state has an association that represents the Area Agencies on Aging. Develop a working relationship with both organizations.
  - **TIP:** Have the department of aging designate a specific contact person for this survey who can assist you during the planning and implementation process.

### Implementation Phase (3-9 months before survey)

5. Develop survey data collection forms and data entry programs.
  - Determine information to be collected (clinical data, questionnaire data, etc.).
  - Determine demographic information to be collected (age, race, gender, etc.).
  - Determine if you will use paper forms, scanable forms, or direct data entry.
  - Based on information to be collected – develop forms and/or data entry programs.

- **TIP:** Sample data collection forms and a data entry program using Epi Info are included on the Basic Screening Survey CD/DVD ([www.astdd.org](http://www.astdd.org)).
6. Determine your sampling strategy.
    - Meet with your state epidemiologist or MCH epidemiologist to discuss the sampling scheme. Contact ASTDD for technical assistance.
    - Obtain an electronic list of long-term care facilities and/or congregate meal sites from your department of aging or the Area Agencies on Aging. This information may be available on your state's website. Ideally, the list should include:
      - Long-Term care facilities – name of facility, address, contact information, total number of beds, number of Medicaid beds, and specialty status (Alzheimer's unit, etc.).
      - Congregate meal sites – name of site, address, contact information, average number of meals served per day, days of operation, and population served (if available).
    - Determine your survey population, the specifics of the sample design, the number of sites to be samples and the number of subjects to screen then draw the sample.
    - **TIP:** Contacting ASTDD before or during your initial sampling scheme discussions will make the sampling process much easier.
  7. Develop survey letters.
    - Letter to facility administrators and/or meal site managers. It may be useful to have the letter cosigned by your state's department of health and department of aging.
    - Informational letter for participants or their representative. Make sure to use lay language at an appropriate grade-level along with a font type and size that is suitable for an older population group.
    - Develop informational posters for the meal sites.
  8. Translate letters if necessary.
    - When you contact the facility/meal site managers, ask them if they need materials in languages other than English.
  9. Contact sites.
    - As soon as the sample is selected, send letters to the facilities and/or meal site managers.
    - Follow-up by calling the sites.
    - Identify potential screening dates.
    - Determine if the facility will allow you to screen individuals who have a legal guardian without the guardian's consent. If no, develop a consent form.
    - Schedule dates – make sure that the screening date does not conflict with special events. Discuss the appropriate time of day to conduct the screening. Some meal-sites have a bus system and all individuals may leave on the bus immediately following lunch.
    - If a site refuses, randomly select a replacement site within the same strata or sampling interval (consult with your epidemiologist or ASTDD on appropriate replacement methods).
    - **TIP:** Be flexible. You may need to alter your schedule to accommodate the site's schedule.
  10. Identify and train the dental screeners.
    - Determine who will complete the screenings. Because older adults have complex oral health problems, ASTDD recommends that you use dental professionals. While volunteer screeners are cost-effective, paid screeners tend to be more reliable and better in terms of maintaining standardization of data collection.

- An ideal training session consists of 2-3 hours of didactic training plus 2-3 hour of clinical training.
- Select about 15 adults from a population similar to that being surveyed to help with training. It is best to prescreen the adults to assure that you have a variety of conditions to be assessed in the survey.
- **TIP:** Make sure to provide ample training on how to complete the screening form or enter the data (if direct data entry is used), especially if using numerous volunteers.

11. Identify referral sources for seniors in need of dental care.

- Make sure that all screeners have a list of referral sources that they can give the seniors themselves or the site staff.

12. Order supplies and equipment.

- Toothbrushes and denture brushes.
- Screening supplies – disposable mirrors, gloves, gauze, hand wash, etc.
- Dental equipment if necessary (chairs, lights, etc).

## Screening Phase

13. If necessary, distribute consent forms to facilities for residents with legal guardians. Adults without a legal guardian can provide verbal consent at the time of the screening.

14. Reconfirm screening date.

- One week before screening, call sites to remind them of the screening day/time.
- Reconfirm screening day and time with the screener.

15. Obtain resident/participant count on day of survey.

- In order to determine sampling weights and response rates, you must obtain the following two pieces of information from each site: number of residents or meal site participants at the site on the screening day and the number of number of residents or meal site participants invited to participate (if different).

16. Collect screening data.

- **TIP:** While the actual screening will take about 5 minutes, be prepared to spend several additional minutes talking to each participant.

17. Send data to survey coordinator.

## Post-Survey Phase

18. Data entry, cleaning and analysis.

- If you did not use direct data entry, enter the survey data. Ideally, double entry should be used to check for entry errors and ensure accurate data entry.
- Review the entered data for logic and out-of-bound errors. Clean the data as needed.
- Analyze the data making sure to adjust for the sampling scheme (stratification and cluster sampling effects and weighting to adjust for varying probability of selection and non-response).

19. Report preparation.

- Identify your target audience and develop a report appropriate for the audience. You do not want an overly scientific report if your target audience is legislators.
- Develop a one-page, graphically appealing, executive summary.

20. Disseminate the report.

- Disseminate the report or executive summary to all key stakeholders. Consider a press conference and a series of oral health related “spots” for TV, radio and print.

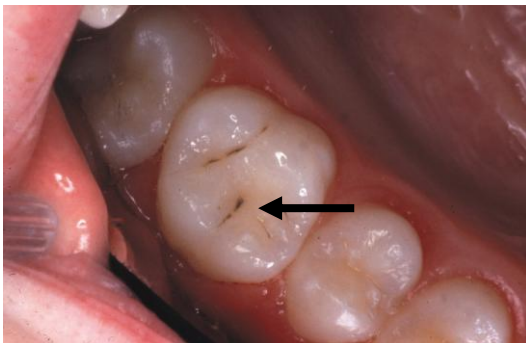
21. Evaluate impact of report.

## DENTAL CARIES OVERVIEW

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Dental caries is a widespread disease caused by acids produced by bacteria in the mouth. The acids lead to loss of calcium and phosphate compounds (demineralization), the building blocks of teeth. Counteracting the effect of demineralization of tooth surfaces are several protective factors in saliva and the oral environment that contribute to the uptake of calcium and phosphate compounds (remineralization).

Dental caries occurs when the balance between the detrimental process of demineralization and the protective process of remineralization shifts towards demineralization. Early signs of dental caries appear when the process of demineralization progresses to the degree that the color and translucency of the tooth surface are altered. At this early stage, the enamel surface is still intact and the lesions are referred to as “precavitated”. For the purpose of the BSS, **precavitated lesions are not coded as untreated decay**.



Precavitated  
Pit & Fissure Caries

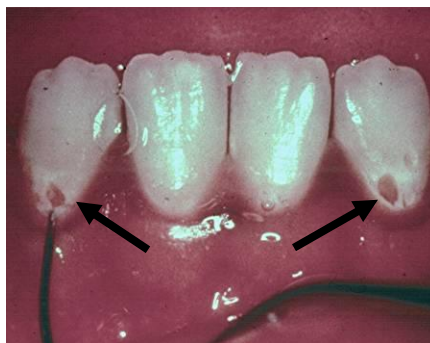


Precavitated  
Smooth Surface Caries

If demineralization continues, the outer tooth structure collapses leading to the formation of a cavitated carious lesion; commonly referred to as a cavity. For the purposes of the BSS model, **teeth are only considered decayed at the point in the caries process when enough enamel has been lost from the surface to create a definitive break in the enamel** or, more simply stated, a hole.



Cavitated  
Pit & Fissure Caries



Cavitated  
Smooth Surface Caries

## POPULATION GROUPS

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To help assure that states collect comparable information, ASTDD suggests that one or both of the following high-risk population groups be included in a Basic Screening Survey of older adults. Because both of these populations are high-risk, the results of the survey will not be generalizable to all older adults.

- ▶ Congregate meal program participants (a.k.a. elderly nutrition programs or senior meal sites)
  - Congregate meals are provided in group settings such as senior centers.
  - Who is eligible for congregate meals? Persons 60 years of age or older and their spouses, regardless of age. Persons with disabilities under the age of 60 who reside in housing facilities where congregate meals are served. Tribal organizations may set a lower age for participation.
- ▶ Residents of long-term care facilities

Older adults who attend senior meal sites are generally alert with little or no cognitive impairment; therefore, they are able to participate in self-administered or interviewer-administered surveys. The BSS for this population group includes two types of indicators – those acquired through a participant questionnaire and those obtained through an in-mouth screening. Organizations/agencies may opt to collect questionnaire data only, in-mouth screening data only or both questionnaire and in-mouth screening data.

A large proportion of older adults residing in long-term care facilities have limited cognitive function; therefore, self- or interviewer-administered questionnaires may have limited value. ASTDD suggests that the BSS for this population group be limited to an in-mouth screening with an option of obtaining some information from the resident, resident's guardian or staff.

## OVERVIEW OF SCREENING INDICATORS

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For older adults there are seven recommended and five optional oral health status indicators included in the in-mouth screening portion of the BSS.

### Recommended Indicators

- ▶ Dentures and denture use
- ▶ Number of natural teeth
- ▶ Untreated decay
- ▶ Root fragments
- ▶ Need for periodontal care
- ▶ Suspicious soft tissue lesions
- ▶ Urgency of need for dental care

### Optional Indicators

- ▶ Functional posterior occlusal contacts
- ▶ Substantial oral debris
- ▶ Severe gingival inflammation
- ▶ Obvious tooth mobility
- ▶ Severe dry mouth

## RECOMMENDED INDICATOR #1: DENTURES AND DENTURE USE

The first screening indicator is the presence and use of full or partial dentures in the upper and/or lower arch. This indicator involves asking the participant for information in addition to the visual examination. Ask the participant “Do you have a removable upper denture?” If yes, ask the participant “Do you usually wear your denture when you eat?” You will then ask the same questions for the lower arch. Record whether or not the individual has dentures (full or partial) regardless of whether or not they actually wear the dentures. When screening long-term care facility residents who are not wearing their dentures, you may need to look for, or ask staff to show you where their dentures are located.



Upper Denture = Yes  
Lower Denture = Yes



Upper Denture = Yes

### Menu of measures for dentures:

Most Basic	Less Basic	More Complex
Maxillary denture (no/yes)	NA	NA
Mandibular denture (no/yes)		

## RECOMMENDED INDICATOR #2: NUMBER OF NATURAL TEETH PRESENT

The second screening indicator is the number of natural teeth present in the upper arch and the number of natural teeth present in the lower arch. When counting the number of natural teeth you should include third molars, retained primary teeth and root fragments. The value for this indicator will range from 0-16 for each arch.



Number of Upper Natural Teeth = 4  
 Number of Lower Natural Teeth = 7

In some cases, adults may have what are commonly called “overdentures”. This type of denture sits on top of either one or more natural teeth, retained roots or dental implants. Adults with overdentures should be classified as having ***no natural teeth***.



Number of Lower Natural Teeth=0  
 Overdenture



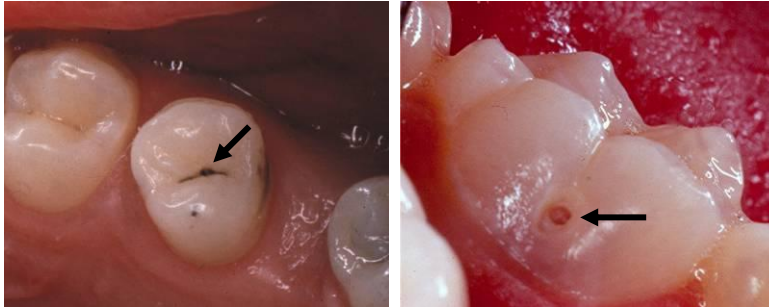
Number of Upper Natural Teeth = 0  
 Number of Lower Natural Teeth = 0

### Menu of measures for number of natural teeth:

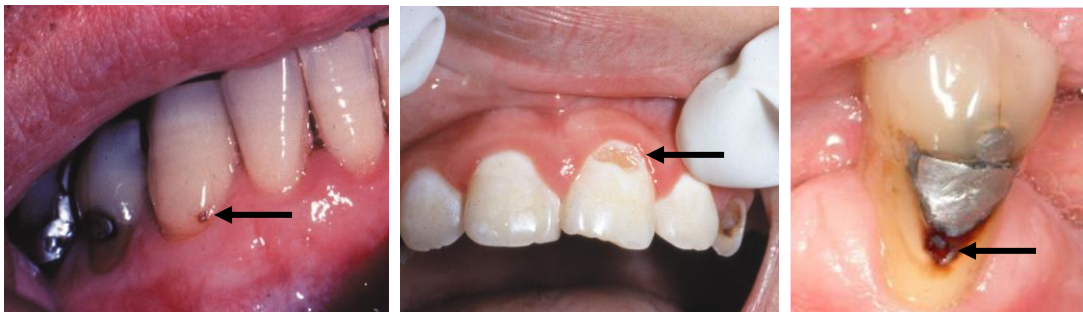
Most Basic	Less Basic	More Complex
# maxillary teeth present	NA	NA
# mandibular teeth present		

## RECOMMENDED INDICATOR #3: UNTREATED DECAY

The third screening indicator is the presence of untreated decay. Untreated decay is detected by visual inspection only – explorers are not used. A tooth is considered to have untreated decay when the screener can readily observe **breakdown of the enamel or cementum**. In other words, only cavitated lesions are considered to be untreated decay. This applies to pits and fissures as well as smooth tooth surfaces. Root fragments, unless otherwise restored, are considered to be untreated decay.



Cavitated Pit & Fissure Caries



Cavitated Smooth Surface Caries

Following are two guidelines that you should remember when classifying untreated decay for a basic screening survey:

1. If a pit or fissure is stained and there is no apparent breakdown of the enamel structure, this is not untreated decay.
2. White spot lesions are not considered to be untreated decay.



**Not** Untreated Decay  
Stained fissures but  
no enamel break



**Not** Untreated Decay  
White spot lesions but no  
enamel break

**A good rule of thumb in a screening survey is — *when in doubt, be conservative*. That means that if you are not sure that a condition is present, assume it is not.**

Broken or chipped teeth are considered sound unless a cavity is found. Similarly, a tooth with a broken filling without recurrent decay does not have untreated decay.



**NOT** Untreated Decay  
Chipped Tooth



**NOT** Untreated Decay  
Broken Filling

**Menu of measures for untreated decay:**

<b>Most Basic</b>	<b>Less Basic</b>	<b>More Complex</b>
Untreated decay (no/yes)	# of quadrants with untreated decay	# of teeth with untreated decay

## RECOMMENDED INDICATOR #4: ROOT FRAGMENTS

The fourth recommended screening indicator is the presence of visible root fragments or teeth where the crown has fractured off at or below the gum line. In most cases these teeth will also be considered as having untreated decay although you will occasionally see root fragments that have been restored.



Root Fragment = Yes  
Unrestored Root Fragment



Root Fragment = Yes  
Restored Root Fragment



Root Fragment = Yes

### Menu of measures for root tips:

Most Basic	Less Basic	More Complex
Has root fragments (no/yes)	NA	# of teeth that are root fragments

## RECOMMENDED INDICATOR #5: NEED FOR PERIODONTAL CARE

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If a participant needs to have their teeth cleaned before their next regularly scheduled dental appointment or needs more advanced periodontal treatment, code them as needing periodontal care. The purpose of this indicator is to identify those individuals that have a definite need for periodontal intervention within the next few months because of substantial problems.



Need for Periodontal Care = Yes



Need for Periodontal Care = Yes



Need for Periodontal Care = No

Menu of measures for need for periodontal care:

Most Basic	Less Basic	More Complex
Need care (no/yes)	NA	NA

## RECOMMENDED INDICATOR #6: SUSPICIOUS SOFT TISSUE LESIONS

The presence of a soft tissue lesion that the examiner feels should be evaluated by a health professional is the fifth recommended screening indicator. This includes red and white lesions plus conditions/infections such as Candidiasis.



Suspicious Soft Tissue Lesion = Yes



Suspicious Soft Tissue Lesion = Yes



Suspicious Soft Tissue Lesion = Yes

Menu of measures for suspicious soft tissue lesions:

Most Basic	Less Basic	More Complex
Has suspicious lesion (no/yes)	NA	NA

## RECOMMENDED INDICATOR #7: URGENCY OF NEED FOR DENTAL CARE

The final suggested screening indicator is urgency of need for dental care. After categorizing a person according to his or her dental caries and suspicious soft tissue lesion status, assign one of three treatment urgency codes to estimate how soon he or she should visit the dentist for clinical diagnosis and any necessary treatment.

Urgent need for dental care is used for those who need dental care within the next week because of signs or symptoms that include pain, infection, or swelling. The most common reasons for being classified as needing urgent care are an abscess or pain although some individuals may be classified as needing urgent care because of Candidiasis or a suspicious soft tissue lesion.

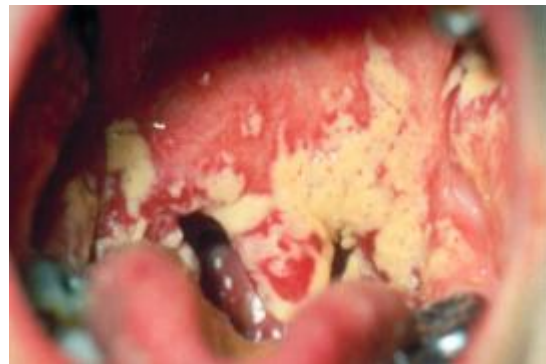
If someone needs to see a dentist because of untreated decay but they do not have pain or an infection they are classified as needing early dental care. For our purposes, early treatment means that they should see a dentist within the next several weeks or before their next regularly scheduled dental appointment. An individual with a broken or missing filling, but no other untreated decay, would be classified as needing early dental care. A participant with an ill-fitting denture that makes it difficult to use can be classified as needing early dental care.

Those with no untreated decay or other dental problems requiring early attention are considered to have no obvious problem, which means that they should receive routine dental checkups.

Category	Recommendation for next dental visit	Criteria
Urgent need for dental care	As soon as possible	Signs or symptoms that include pain, infection, or swelling
Early dental care needed	Within several weeks	Caries without accompanying signs or symptoms or individuals with other oral health problems requiring care before their next routine dental visit
No obvious problems	Next regular checkup	Any patient without above problems



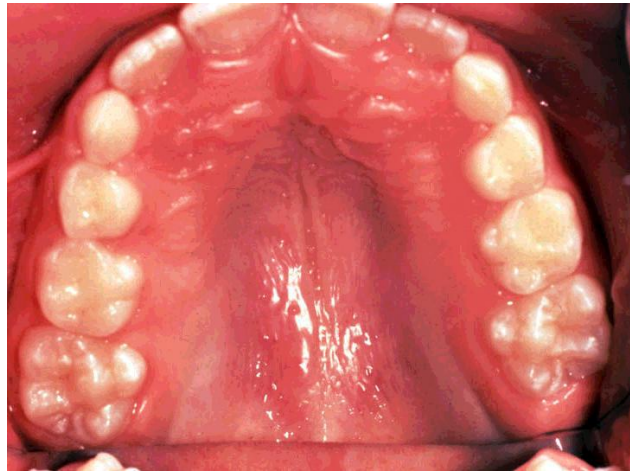
Urgent Care Needed



Urgent Care Needed



Early Care Needed



No Obvious Problem

Adults in need of periodontal therapy or a cleaning, but without other oral conditions needing attention are classified as having no obvious problem.



No Obvious Problem

## OPTIONAL INDICATOR #1: FUNCTIONAL POSTERIOR OCCLUSAL CONTACTS

This optional indicator captures information on whether or not the participant has opposing pairs of natural or non-natural posterior teeth (premolars and/or molars). The purpose of this indicator is to determine if teeth oppose each other and can function properly while a participant is eating. This indicator includes natural teeth plus teeth replaced by a fixed or removable appliance or denture. Have the participant close together normally on the back teeth or dentures. Using a mouth mirror or tongue blade to hold back the cheek, look to see if the participant has any functional occlusal contacts in the premolar or molar teeth.



No



Yes



Posterior Occlusal Contacts = None



Posterior Occlusal Contacts = 1 Side

### Menu of measures for functional occlusal contacts:

Most Basic	Less Basic	More Complex
Functional posterior contacts (none, one side, both sides)	NA	NA

## OPTIONAL INDICATOR #2: SUBSTANTIAL ORAL DEBRIS

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Substantial oral debris, the second optional indicator, is based on the Oral Hygiene Index. If the participant has an abundance of soft or hard matter covering more than 2/3 of any tooth surface they are considered to have substantial oral debris.



Substantial Oral Debris = Yes

**Menu of measures for substantial oral debris:**

<b>Most Basic</b>	<b>Less Basic</b>	<b>More Complex</b>
Substantial debris (yes/no)	NA	NA

### OPTIONAL INDICATOR #3: SEVERE GINGIVAL INFLAMMATION

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This indicator is based on the Gingival Index. If the participant has marked redness and edema, ulceration or a tendency to spontaneous bleeding they are classified as having severe gingival inflammation. Mild or moderate inflammation is not recorded.

Gingival Index Categories:

- Normal gingival
- Mild inflammation – slight change in color, slight edema.
- Moderate inflammation – redness, edema, and glazing.
- Severe inflammation – marked redness and edema, ulceration, tendency to spontaneous bleeding.



Severe Gingival Inflammation = Yes



Severe Gingival Inflammation = No

Menu of measures for severe gingival inflammation:

Most Basic	Less Basic	More Complex
Severe inflammation (yes/no)	NA	NA

## OPTIONAL INDICATOR #4: OBVIOUS TOOTH MOBILITY

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If a participant has one or more teeth that are obviously mobile, code this indicator as yes. If a tooth could possibly be mobile and you want to check to confirm, place a gloved finger on the occlusal or incisal surface and gently wiggle the tooth.



Obvious Tooth Mobility = Yes

### Menu of measures for tooth mobility:

Most Basic	Less Basic	More Complex
Has mobile teeth (no/yes)	NA	# of mobile teeth

## OPTIONAL INDICATOR #5: SEVERE DRY MOUTH

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The last optional indicator is the presence of severe dry mouth. If a participant has dry cracked lips, a dry cracked or fissured tongue, or tissue that sticks to the teeth because of lack of saliva, classify them as having severe dry mouth.



Severe Dry Mouth = Yes

### Menu of measures for severe dry mouth:

Most Basic	Less Basic	More Complex
Severe dry mouth (yes/no)	NA	NA

## LOGISTICAL QUESTIONS

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As you plan the direct observation portion of your screening survey, there are a number of questions you will have to answer. This section provides additional information to help you make the necessary decisions.

### Lighting

#### *What type of lighting do I need?*

Although screening for very obvious cavities can be done with good available light, screening for soft tissue lesions and smaller cavities cannot. The BSS assumes that natural and/or overhead lighting will be available but requires an additional light source that can be focused on the teeth. Lighting options include:

- **Head lamp:** Using a head lamp may be the best lighting option when working with older adults because two hands are often needed during the screening process. Good quality LED head lamps are available at many camping/outdoor equipment suppliers for a reasonable price (\$20-\$30).
- **Flashlight/penlight:** Small LED flashlights and penlights provide a good quality light for a dental screening but may be inconvenient if both hands are required for the screening.
- **Portable dental light:** A dental light that requires an electrical outlet is not practical in a long-term care facility where you will be examining participants in their rooms.

If your choice is to use portable dental lights, non-dental exam lights or head lamps, you can contact local dental suppliers, portable equipment manufacturers, or camping/outdoor equipment suppliers.

### Retraction/Visualization

#### *How can I get a “good look” in the mouth?*

The choices you make about how to help screeners visualize the mouths that they are screening will depend largely on what resources are available to you and, to some extent, on personal preference. All of the alternatives that follow are acceptable, but some clearly allow superior visualization. Local clinics, health departments or private dental offices may be willing to loan or donate some of the items.

- **Tongue blades** are a relatively inexpensive and common choice for retracting lips and cheeks to gain visual access to the teeth. The cost per tongue blade is approximately \$0.01-\$0.02.
- **Dental mirrors** provide much better visibility than tongue blades, particularly for the backmost upper teeth. Dental mirrors are sold as either disposable or reusable (sterilizable) items.
  - Disposable mirrors simplify infection control procedures but add cost, approximately \$0.30-\$0.40 each.
  - It may be possible to borrow reusable mirrors from local clinics, state health departments or local dental offices. The cost of reusable mirrors will depend on the material they are constructed from and can range from \$1.50-\$17.00 each. Fiberglass is less expensive than stainless, but may not last as long.

## Removing Food Debris from Teeth

### *How do I find cavities when teeth are covered by food, plaque or calculus?*

If tooth surfaces cannot be visualized because debris obscures the view, a 2x2 gauze or a toothbrush are the most effective for cleaning away the soft debris. Alternatively, a toothpick or the wooden end of a cotton-tipped applicator may be used to dislodge debris. If you are collecting Optional Indicator #2: Substantial Oral Debris, make sure to evaluate this indicator before removing debris.

## Instrumentation

### *Do I need to use a dental explorer for the screening?*

No, dental explorers are not standard equipment for this screening model and their use for determining the presence of caries is discouraged.

## Infection Control

### *Do I need to wear and change gloves?*

The guidelines for infection control in dental health care settings published by CDC should be your minimum standard during any screening survey.<sup>1</sup> With older adults, there is a high likelihood that you will come in contact with saliva or oral soft tissues so gloves should always be worn. If a gloved hand touches mucus membranes, lips, or saliva, the glove must be removed and hands washed or rubbed with an alcohol-based hand rinse before putting on new gloves. ***ASTDD recommends that you always wear gloves and always change gloves for each participant.***

Since a screening survey does not produce aerosols, wearing eyewear, a mask, and a gown are optional.

## Consent

### *Do I need to have participants sign a consent form?*

If the participant is a competent adult, they can give verbal consent and do not need to sign a consent form for a non-invasive dental screening. Adults are presumed to be competent, unless a Court rules and has reasonable evidence to determine that they cannot understand the nature and consequences of their actions and that they cannot care for themselves or their property.

Some residents of long-term care facilities may have a conservator and/or a guardian because a Court has determined that they are incapacitated or incompetent. A conservator is an individual who has obtained legal authority to manage the estate and financial affairs of an incapacitated adult. A guardian is an individual who is appointed by the Court to be responsible for the personal affairs of an incapacitated adult, including responsibility for making decisions regarding the person's support, care, health, safety, habilitation, education, therapeutic treatment, and residence. If a resident has a conservator or guardian, the facility will probably require that written or verbal permission for a screening be obtained from the conservator or guardian. You should work with the facility's manager to determine the best way to obtain consent for dental screenings for residents with a conservator/guardian.

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<sup>1</sup> Kohn WG, Collins AS, Cleveland JL, et al. Guidelines for infection control in dental health-care settings-2003. MMWR Recomm Rep 2003; 52:1-61. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a1.htm>

## STEP-BY-STEP SCREENING INSTRUCTIONS

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Now that you are familiar with the oral health indicators and the logistical issues, let's review the individual steps in the screening process. These steps are in the order in which they should be performed and assume that you will be collecting both the recommended and optional indicators. If you are not collecting an optional indicator, simply skip that step.

1. Introduce yourself to the participant and briefly describe the purpose of the screening.
  - Many participants will want to chat about their oral health and problems they may be experiencing. Be patient and polite.
  - Although the actual screening may take only 1-2 minutes, you should anticipate spending about 10 minutes with each individual.
2. **Upper denture assessment – all participants:** Ask the participant if they have a removable upper denture or “plate”. If yes, ask if they usually wear the denture while they eat.
  - At this point, many participants will start to remove their dentures. If you are going to assess posterior occlusal contacts, have them keep their denture in place.
  - In long-term care facilities you may have to look for, or ask staff if the participant has a denture.
  - If the participant has limited cognitive function they may not be able to tell you if they usually wear their denture. You may have to ask staff.
3. **Lower denture assessment – all participants:** Ask the participant if they have a removable lower denture or “plate”. If yes, ask if they usually wear the denture while they eat.
4. **Functional posterior occlusal contacts – all participants:** With the participant's removable dentures in place, have the participant bite together on their back teeth. Pull back the cheek with a tongue blade or mirror to determine if there are any posterior contacts on both sides of the mouth.
5. If a participant has a removable denture or appliance, ask them to remove it.
  - TIP: Give the participant a paper plate for them to set their denture on.
  - Some participants may not want to remove their dentures, especially if the screening is taking place in a public area. If they do not want to remove their denture, go ahead and complete the screening with the denture in place.
  - Some participants may have a very difficult time removing their denture because they use large amounts of denture adhesive. If they are unable to remove their denture, go ahead and complete the screening with the denture in place.
6. **Substantial oral debris – dentate participants only:** Evaluate the participant to determine if they have substantial oral debris.
7. **Severe gingival inflammation – dentate participants only:** Evaluate the participant to determine if they have severe gingival inflammation.
8. If the participant has soft debris that makes it difficult to assess for the presence of dental caries, remove the debris with 2x2 gauze or a toothbrush.
9. **Number of upper natural teeth – all participants:** Count the number of upper natural teeth including root fragments.

10. **Number of lower natural teeth – all participants:** Count the number of lower natural teeth including root fragments.
11. **Untreated decay – dentate participants only:** Evaluate the participant's teeth for untreated decay.
12. **Root fragments – dentate participants only:** Evaluate the participant to determine if they have any root fragments.
13. **Obvious tooth mobility – dentate participants only:** Evaluate the participant for teeth that are obviously mobile.
14. **Need for periodontal care – dentate participants only:** Evaluate the participant to determine if they need periodontal care before their next regularly scheduled dental appointment.
15. **Severe dry mouth – all participants:** Evaluate the participant to determine if they have severe dry mouth.
16. **Suspicious soft tissue lesions – all participants:** Evaluate the participant to determine if they have any suspicious soft tissue lesions.
17. **Urgency of need for dental care – all participants:** Assign each participant a treatment urgency code.
18. Inform the participant and/or long-term care facility staff of any problems that you identified. Remind participants that you conducted a visual assessment only and that they should continue to see their dentist on a regular basis.

## Screener Training

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Before the actual screening, prospective screeners should come together for a training and practice session. The purpose of the training is to assure consistency between screeners. Screeners may watch the BSS video individually before the session or they can view it as a group and do their best to answer each others' questions. Following the group review of the video, prospective screeners will use their new skills and discuss potential differences in interpretation of screening criteria under field conditions. This will provide practical experience using the BSS model and increase everyone's level of confidence that the screening results are reliable.

In the practice session, each screener will have a recorder and a visibly numbered station, such as a small table or a school desk, to hold her/his screening supplies. The recorder either may be another trainee who will later alternate positions with the screener, or someone who has not been trained to screen. A sample format for recording screening codes for multiple screening trainees is found in the Appendix. These can be printed as cards or on paper. We recommend that each screener see enough participants to be comfortable with the consistency of their interpretation of the screening criteria compared with the other screeners in their group. When screeners reach the point where their calls on the vast majority of participants are in agreement with each other, they have practiced enough. At a minimum, screeners should look at 10-20 participants in the age range that they will be screening. Ideally, participants would have been prescreened by a dentist or dental hygienist who understands the BSS model to assure a good variety of clinical situations. If prescreening is not possible, a larger number of participants should be screened for practice in order to assure a reasonable representation of those to be screened in the survey. This could require as many as 50 practice screenings, depending on levels of agreement as the training progresses.

The screening stations may be arranged in a circle or semi-circle, far enough apart so that the screeners cannot hear the calls of the adjacent screeners. Each subject being screened in the practice session carries her/his score sheet to each station, consecutively, so that all screeners see each subject. The screener "calls" her/his screening code decisions for the subject and the recorder writes them in the appropriate spaces on the score sheet. Care is needed to assure that the screener is not able to see the scores of the other screeners before making her/his decision. After the person being screened goes to the last station, someone is charged with identifying the participants for whom screeners were not unanimous on all scores. These participants are retained for discussion after all the screenings have been completed. At that time, the group of trainees gets together to discuss and resolve their disagreements by mutually deciding the "best call" for each situation, using the screening criteria.

Questions about conducting training can be directed to ASTDD or the Division of Oral Health, Centers for Disease Control and Prevention.

## Human Subjects Clearance

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Survey planners must determine if the survey protocol requires human subjects review by an Institutional Review Board (IRB) within their agency. Agencies will vary in their decision of whether a review is needed. In some agencies, an oral screening survey is perceived as public health practice rather than research and not subject to review. In other instances, the survey is considered research and a review will be required.

If required, approval of the survey protocol should be obtained before making initial contact with meal sites or long-term care facilities. The review process within an agency can take months to complete, so planners should begin the process well in advance of the anticipated start of the survey.

Additional information on human subjects clearance is available in the ASTDD publication *IRB, HIPAA and BSS*. Following is the guidance recommended by ASTDD.

**Guidance:** Oral health programs planning an oral health survey should always review the agency's policies regarding IRB review. Prior to implementation of an oral health survey, dental programs should consider obtaining one of the following:

1. A waiver from the agency director.
2. A waiver from the IRB. Submit a letter to the agency's IRB outlining the survey as public health practice; reiterate the fact that public health practice is outside the scope of the IRB, and ask the IRB to consider waiving the survey.
3. Approval from the IRB.

## HIPAA

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The Administrative Simplification standards adopted by the Department of Health and Human Services (HHS) under the Health Insurance Portability and Accountability Act of 1996 (HIPAA) apply to any entity that is:

- a health care provider that conducts certain transactions in electronic form
- a health care clearinghouse
- a health plan

Before beginning the process of planning your survey, you should contact your agency's HIPAA coordinator to determine if your agency is a covered entity. More information on HIPAA can be found at the HHS, Office for Civil Rights website ([www.hhs.gov/ocr/privacy/](http://www.hhs.gov/ocr/privacy/)).

## Participant Questionnaire (Optional)

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Older adults who attend senior meal sites are generally alert with little or no cognitive impairment; therefore, they are able to participate in self-administered or interviewer-administered surveys. Because of this, organizations/agencies may opt to collect questionnaire data only, in-mouth screening data only or both questionnaire and in-mouth screening data.

Following are a list of tested questions that have been used in national surveys. The questions are grouped by domain allowing you to select the type of information you wish to collect. ASTDD recommends that you also collect basic demographic information including (1) age, (2) gender and (3) race/ethnicity. Race and ethnicity can either be asked on the questionnaire or observed and recorded at the time the individual presents for the screening. The categories for race and ethnicity are: white, black/African American, Hispanic/Latino, Asian, American Indian/Alaska Native, and Native Hawaiian/Pacific Islander. Detailed definitions of each race category are located in the Appendix. For simplicity, the data entry form with this manual includes one field for race/ethnicity that includes a separate code for multi-racial adults. If you want to collect more detailed information on race and/or ethnicity, contact CDC or ASTDD for technical assistance.

### **Tooth Loss (Include this domain only if you are not doing an in-mouth screening)**

- How many of your permanent teeth have been removed because of tooth decay or gum disease? Include teeth lost to infection, but do not include teeth lost for other reasons, such as injury or orthodontics.
  - Responses: 1 to 5 / 6 or more but not all / All / None
  - Source: BRFSS 2010

### **Self-Reported Oral Health**

- How would you describe the condition of your mouth and teeth – including false teeth or dentures?
  - Responses: Excellent / Very good / Good / Fair / Poor
  - Source: NHANES 2003-2006
- How often during the last year have you had painful aching anywhere in your mouth?
  - Responses: Very often / Occasionally / Hardly ever / Never
  - Source: NHANES 2005-2006
- How often during the last year have you avoided particular foods because of problems with your teeth, mouth or dentures?
  - Responses: Very often / Occasionally / Hardly ever / Never
  - Source: NHANES 2005-2006

### **Dental Insurance**

- Do you have any kind of insurance coverage that pays for some or all of your routine DENTAL CARE, including dental insurance, prepaid plans such as HMOs, or government plans such as Medicaid?
  - Responses: Yes / No / Don't Know
  - Source: BRFSS 2001
- Do you have insurance that helps pay for any routine dental care including cleaning, x-rays and examinations?
  - Responses: Yes / No / Don't Know
  - Source: National Survey of Children's Health 2003-2004

### **Time Since Last Dental Visit / Frequency of Dental Visits**

- How long has it been since you last visited a dentist or a dental clinic for any reason? Include visits to dental specialists, such as oral surgeons.

- Responses: Within the past year (anytime less than 12 months ago) / Within the past 2 years (1 year but less than 2 years ago) / Within the past 5 years (2 years but less than 5 years ago) / 5 or more years ago / Never
- Source: BRFSS 2010
- About how long has it been since you last visited a dentist? Include all types of dentists, such as, orthodontists, oral surgeons, and all other dental specialists, as well as dental hygienists.
  - Responses: Within the past year (anytime less than 12 months ago) / Within the past 2 years (1 year but less than 2 years ago) / Within the past 5 years (2 years but less than 5 years ago) / 5 or more years ago / Never
  - Source: NHANES 1999
- What was the main reason you last visited the dentist?
  - Responses: Went in on own for check-up, examination, or cleaning / Was called in by the dentist for check-up, examination, or cleaning / Something was wrong, bothering or hurting me / Went for treatment of a condition that dentist discovered at earlier check-up or examination / Other
  - Source: NHANES 1999
- During the past 3 years, have you been to the dentist for routine check-ups or cleanings?
  - Responses: Yes / No / Don't Know
  - Source: NHANES 1999
- During the past 3 years, how often have you gone to the dentist for routine check-ups or cleanings?
  - Responses: 2 or more times a year / once a year / less than once a year / whenever needed, no regular schedule
  - Source: NHANES 1999

#### **Access to Dental Care**

- Is there a particular dentist or dental clinic that you usually go to if you/ need dental care or dental advice?
  - Responses: Yes/ No / Don't Know
  - Source: NHANES 1999
- During the PAST 12 MONTHS, was there any time when you needed dental care (including checkups) but didn't get it because you couldn't afford it?
  - Responses: Yes/ No / Don't Know
  - Source: NHIS 2007
- What is the main reason you have not visited the dentist in the past year.
  - Responses: Fear, apprehension, nervousness, pain, dislike going / Cost / Do not have/know a dentist / Cannot get to the office/clinic (too far away, no transportation, no appointments available) / No reason to go (no problems, no teeth) / Other priorities / Have not thought of it / Other
  - Source: Modified NHIS 1999

#### **Dry Mouth**

- Do you sip liquids to aid in swallowing any foods?
  - Responses: Yes/ No / Don't Know
  - Source: NHANES 1999
- Does the amount of saliva in your mouth seem to be too little, too much, or do you not notice it?
  - Responses: Too little / too much / don't notice it
  - Source: NHANES 1999
- Do you have difficulties swallowing any foods?
  - Responses: Yes/ No / Don't Know
  - Source: NHANES 1999

- Does your mouth feel dry when you eat a meal?
  - Responses: Yes/ No / Don't Know
  - Source: NHANES 1999

### **Oral Cancer Screening**

- Have you ever had a check for oral cancer in which the doctor or dentist pulls on your tongue, sometimes with gauze wrapped around it, and feels under the tongue and inside the cheeks?
  - Responses: Yes/ No / Don't Know
  - Source: NHIS 1998
- IF YES: When did you have your most recent oral cancer exam?
  - Responses: A year ago or less / More than 1 year but not more than 2 years / More than 2 years but not more than 3 years / More than 3 years, but not more than 5 years / Over 5 years ago
  - Source: NHIS 1998

## SAMPLING

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**When it comes to the question of sampling, there is a short answer and a long answer (which circles back to the short answer). The short answer is: “Get Help!”**

At this point in time, the National Oral Health Surveillance System (NOHSS) does not report data for high-risk older adults, although it may in the future. When NOHSS does accept data for high-risk older adults the data must be from a **statewide probability sample** of either congregate meal sites or long-term care facilities. In addition, if a complex sampling scheme is used, submitted data must be appropriately weighted, and analysis should account for sampling design elements, i.e. stratification and clustering. For this reason, we are only providing information on probability sampling. If you want information on conducting an oral health survey using some form of non-probability or convenience sampling, one possible source to refer to is the publication, WHO Oral Health Surveys: Basic Methods, Fourth Edition. This publication provides a WHO recommended method of conducting surveys using convenience sampling methods with some protocol features designed to improve representation of a population in situations where resources and access to survey methodology expertise are limited.

### How do I decide who to screen?

The first step in planning a screening survey for older adults is to determine the population to be assessed (target population). ASTDD recommends the following target populations:

- Older adults who attend congregate meal sites
- Residents of long-term care facilities

Unless the size of the target population is very small, a sample of people representative of the target population will need to be selected for screening. Typically in surveys of meal sites and long-term care facilities, the sampling process involves selection of sites (e.g., meal sites or long-term care facilities), and then selection of individuals at the sites. The goal of sampling is to select and screen a sufficient number of individuals at selected sites that are representative of the target population. From the data collected on the sample, estimates of oral health indicators are extrapolated to the target population you wish to describe.

This section should provide enough background information on sampling to give you an appreciation of the questions you should consider and, hopefully, the wisdom to consult someone knowledgeable about sampling to discuss your situation.

### What are some approaches to probability sampling for older adult surveys?

In probability sampling, every member of the population has a known, or determinable, non-zero, chance of being selected into the sample, and there is some form of random selection in the sampling process. Using analysis weights derived from the chance of selection of sampled elements and designating certain aspects of the sample design, statistical estimates of population parameters (e.g. oral health indicators) and estimation of the precision of these population estimates are generated. Estimating precision of the population estimates gives us a statistical assessment of how confident we are that the population estimate derived from the survey data is close to the true population parameter we are trying to estimate. Brief descriptions of some basic probability sampling approaches follow:

**Simple Random Sampling:** A simple random sample is one in which each member of the population has an equal and known probability of being selected. Each element is selected randomly from the population one at a time. Details on the simple random sampling process and random numbers table that may be used for sample selection are found in most standard statistics textbooks. Simple random sampling can also be conducted using available computer software packages.

Simple random sampling, however, is relatively inefficient and rarely used for larger surveys. In simple random sampling, some elements of sample design that improve sampling efficiency and enhance representativeness of the target population are not used. This method carries some risk of generating bad samples that are not representative of the target population and/or inadequately represent various population subgroups. It is also difficult to employ because a complete list of the target population (e.g., every long-term care facility resident in the state) must be obtained in order to select the sample; this list may not be readily available and would likely be impractical to generate. Furthermore, and probably most importantly, to conduct a survey using this type of sample design does not use resources efficiently. For example, a simple random sampling of long-term care facility residents in a state might well require going to a different site for almost every individual selected into the sample.

**Stratified Random Sampling:** Stratification is used to ensure that the sample represents the target population and subpopulations of interest as to population variables considered important, and to increase precision of population estimates. Selections are made from every stratum, ensuring that all strata in the target population are represented in the sample. For example, in an oral health survey of meal site participants, sites might first be stratified by geographic region, with selection of sites from each region, so that a good cross section of sites across all regions of the state is obtained in the sample. This strategy would improve population estimates at the state and regional levels.

Factors often considered when stratifying the target population include: geographic location (e.g., state health regions or urban/rural/suburban community setting) or socioeconomic status (as indicated, for example, by the percentage of Medicaid beds).

**Cluster Sampling:** Sampling of naturally occurring clusters in a population is a method used to increase the efficiency of conducting a sample survey. For a given sample size, cluster sampling would actually almost always result in loss of precision of survey estimates. But this loss of precision is more than offset by the increase in efficiencies of conducting the survey, making a much larger sample size with a set amount of resources possible. The target population is divided into clusters of associated elements which can be surveyed more efficiently. Cluster sampling differs from stratified sampling where all strata are sampled in that not all population clusters are sampled. For example, a state might be divided into regions (strata) with a random sample of senior centers (clusters) selected from within each region. Whereas stratification is used to enhance representativeness of a sample and to improve the precision of generated population estimates, cluster sampling is used for logistical efficiencies in sampling, with the hope that clusters are heterogenous within and homogenous between clusters and thus selected clusters will be representative of clusters not selected.

Cluster selection is used to reduce time and effort required to select and recruit participants, and to travel to and between screening sites. In most large surveys, both stratification and clustering are employed in the sample design, such as in:

**Probability Proportional to Size Sampling:** Probability Proportional to Size (PPS) sampling refers to the approach of selecting clusters in proportion to their size in the early stages of sampling, and ultimately selecting a set number of elements from each final sampled cluster in the last stage of sampling, so that each element in the population ends up with an equal probability of selection. Typically, it involves both stratification and clustering in a multi-stage design. This approach can best be explained through an example involving a survey of long-term care facilities. With a PPS design, facilities would be selected with probability proportional to bed size; larger facilities would have a greater chance of being selected in the first stage of sampling. A set number of adults (e.g., thirty) are then selected from within each selected facility. In this stage residents in a larger facility would have a smaller chance of selection than residents in a smaller facility (e.g., 30/100 vs. 30/50). The result is that the probabilities of selection even out. Larger facilities have a higher probability of selection in the first stage of sampling, but this is offset by the smaller probability of selection of the individual residents from within the larger facilities at the subsequent stage of selection. With this design, all individuals in

the target population end up with the same probability of selection. The sampling for this design involves the use of lists of clusters with their sizes, in which stratification can be incorporated easily. For example, lists of facilities (with their bed sizes) can be sorted by region and by percent of Medicaid beds within regions. A systematic PPS selection of facilities through this sorted list would ensure proportional representation by region and by Medicaid eligibility in the survey sample. This is a very effective design to ensure that a representative sample of the target population is selected, while maintaining a stable number of selected elements at each survey site for survey logistical efficiency.

### **How large of a sample do we need?**

Perhaps the most frequently asked question in survey research, sample size is a very important consideration for planners. Surveying more participants than needed will result in unnecessary expenditure of time and resources for little additional information. An insufficient sample size may yield survey findings that lack enough precision to be of value because the information is not collected on enough clusters or people to minimize the effect of variation within the population.

Unfortunately, there is not a simple answer to the question of adequate sample size. Several factors must be considered in determining the number of individuals to examine. First, the sample size will depend on the variability of the measure of interest in the target population. For example, if the percent of individuals with untreated decay is thought to vary significantly from facility to facility within a state, surveying a larger number of facilities and individuals helps to minimize the effect of this variation. The survey planner will then have increased confidence (i.e. improved precision of population estimates) that the findings among survey participants are reflective of the target population.

The required sample size largely depends on how precise the surveyor wishes the measures of interest to be (i.e., within what interval or bounds of error does the survey planner wish the true value of the measure to fall?). Generally, the larger the acceptable bounds of error around the population estimate, the smaller the sample can be. For example, if the surveyor wishes a survey estimate to be within 5% in either direction of the true population value, a smaller sample size will be required than if a more precise value is desired, e.g., within 2% of the true population value.

Statistical issues aside, most survey planners find the need to consider a number of practical issues when determining sample size. For example, available resources for conducting the survey will greatly influence the number of sites that can be visited and participants that can be screened. Questions to ask include, "How much time do I have for conducting the survey?" "How many screeners are available to work on the project?" "How much money do I have for travel, supplies, and other costs?" The answers to these and other pragmatic questions may have a greater impact on sample size determination than statistical issues. Usually, a balance will need to be struck between statistical rigor and fiscal/time constraints.

Sample size determination should be done with the assistance of a biostatistician or epidemiologist.

### **Can we use the data in their raw form or does a statistician need to adjust them?**

The scope, budget and objectives of your survey will help you decide whether or not to adjust your data, statistically. If you have the budget and value greater precision and confidence in your estimates, adjusted data are preferred. If you do not have the need or the resources for a biostatistician, yours will not be the first survey to report unadjusted results. You should, however, make this clear in the methods section of your survey report.

Proper analysis of data collected on a sample, which accounts for the sample design, will increase the validity of population estimates and standard errors. For example, sample data (e.g., percent of older adults with untreated decay) may be adjusted statistically using weights to provide a better estimate for

the population. The standard error reflects the precision of a calculated population estimate. Generally, standard errors increase with increasing variance of sample data, and decrease with increasing sample size, but are also influenced by other factors in the sample design, e.g. stratification and cluster sampling, as mentioned in previous sections. The smaller the standard error, the greater the confidence that the estimate calculated from the sample is close to the actual findings had you surveyed the whole target population.

### Where can I get sampling help?

Sampling help may be available from faculty at schools of public health or community health, community dentistry departments at colleges of dentistry, or biostatisticians/ epidemiologists in a state health department. As with other aspects of the BSS model, ASTDD will provide states and communities either direct technical assistance or will coordinate referrals for assistance with sampling.

## DATA MANAGEMENT

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In general, data may be recorded in three ways: 1) on paper forms, 2) on scan forms or 3) electronically, using direct data entry software and a portable computer. Each system has its benefits and pitfalls, but the primary determinants of the data collection method used often are the availability of scan form software or a portable computer and the comfort of screeners in using electronic data entry. While using paper forms is often an “easier” method for screeners in the field, it is more time consuming for administrative staff that are usually responsible for subsequently entering the data into an electronic format for analysis.

Method	Pros	Cons
Paper Forms	<ul style="list-style-type: none"> <li>• easy for exam staff</li> <li>• does not require computer in field</li> <li>• can be used if electricity is a problem</li> </ul>	<ul style="list-style-type: none"> <li>• requires collection of forms</li> <li>• no method to check for valid values at the time of data collection</li> <li>• time consuming data entry</li> </ul>
Scan Forms	<ul style="list-style-type: none"> <li>• easy for exam staff</li> <li>• does not require computer in field</li> <li>• can be used if electricity is a problem</li> <li>• quick data entry</li> </ul>	<ul style="list-style-type: none"> <li>• requires scan form software</li> <li>• no method to check for valid values at the time of data collection</li> </ul>
Direct Data Entry	<ul style="list-style-type: none"> <li>• limits data entry to allowable values</li> <li>• can automatically enter certain variables such as date of exam</li> </ul>	<ul style="list-style-type: none"> <li>• requires a computer</li> <li>• staff must be comfortable using a computer</li> </ul>

*Data collection using paper forms:* Sample data collection forms are located in the Appendix. When collecting oral health information on paper, it is essential that all data boxes contain an appropriate entry. If you use paper forms, be sure to review forms at the end of each day for:

- correct screening date
- correct site code
- completeness (all boxes should contain an entry)

After data are recorded on paper, the forms should be sent to a designated data coordinator who will be responsible for data entry using appropriate computer software.

*Data collection using scan forms:* If your agency or organization has scan form software this is a good option for data collection. Data are recorded on specially created paper forms and the forms are scanned (or faxed) for data entry. Data entry is relatively quick if the forms are completed properly.

Scan forms generally use predefined “bubbles” for recording data, thereby reducing the number of data recording errors.

*Data collection using portable computers and data entry software:* If portable computers are available and your screeners are comfortable using them, the most efficient way to record oral health information is to use direct data entry. The primary benefit of direct data entry is that it forces the recorder to enter appropriate data in every field. For example, if the allowable codes for untreated decay are 0 or 1, the data entry program does not allow the recorder to enter 2 by mistake.

## **DATA ANALYSIS**

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**As with sampling, the short and long answer to the data analysis question is “Get Help!”**

How you analyze your data is partially dependent on how you selected your sample and whether or not the data should be adjusted for the sampling scheme. If you have access to a statistician or epidemiologist, you should talk to them about the appropriate way to analyze your data. If you do not have resources for a statistician, however, yours will not be the first survey to report unadjusted results. You should, however, make this clear in the methods section of your survey report.

For those who do not have access to a statistician or epidemiologist, ASTDD may be able to provide technical support.

## **CONTACTS/TECHNICAL ASSISTANCE/OTHER RESOURCES**

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### **Association of State and Territorial Dental Directors, Sparks, NV**

ASTDD will provide states and territories with technical assistance in the various aspects of using the BSS model including assistance with sampling and survey design. In addition, a detailed model for conducting needs assessments, *Assessing Oral Health Needs: ASTDD Seven-Step Model*, is available for downloading from the ASTDD website. Contact ASTDD at:

Phone: (775) 626-5008

Fax: (775) 626-9268

<http://www.astdd.org>

### **Division of Oral Health, Centers for Disease Control and Prevention, Atlanta, GA**

The Division of Oral Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention will provide states and communities with either direct technical assistance in various aspects of using the BSS model or will make referrals for assistance. If you need assistance in any aspect of data collection, contact the Division at:

Phone: (770) 488-6054

Fax: (770) 488-6080

<http://www.cdc.gov/oralhealth>

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# APPENDIX

## RACE CATEGORIES AND DEFINITIONS

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ASTDD recommends using the race/ethnicity definitions developed by the Office of Management and Budget (OMB) and published in the Federal Register on October 30, 1997. More detailed information can be found at the following website: <http://www.whitehouse.gov/omb/fedreg/1997standards.html>.

**American Indian or Alaska Native.** A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

**Asian.** A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

**Black or African American.** A person having origins in any of the black racial groups of Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American."

**Hispanic or Latino.** A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race. The term, "Spanish origin," can be used in addition to "Hispanic or Latino."

**Native Hawaiian or Other Pacific Islander.** A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

**White.** A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

## Sample Oral Health Screening Form #1 Recommended Indicators Only

### SITE INFORMATION

Site ID Code <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> <input style="width: 20px; height: 20px;" type="checkbox"/>	Screen Date <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> / <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> / <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> <input style="width: 20px; height: 20px;" type="checkbox"/>	Screener ID Code <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> <input style="width: 20px; height: 20px;" type="checkbox"/>
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### DEMOGRAPHIC INFORMATION

Age <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> <input style="width: 20px; height: 20px;" type="checkbox"/>	Gender <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Male 2 = Female	Race/Ethnicity <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = White      5=AI/AN 2 = Black      6= Pacific Islander 3 = Hispanic    7=Multi-racial 4 = Asian       9=Unknown
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### ORAL SCREENING INFORMATION

Do you have a removable upper denture? <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes	<b>If Yes</b> →	Do you usually wear your upper denture when you eat? <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes
Do you have a removable lower denture? <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes	<b>If Yes</b> →	Do you usually wear your lower denture when you eat? <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes

**Ask participant to remove dentures and remove excess oral debris if necessary.**

# of Upper Natural Teeth <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> Range: 0-16    Include root fragments	# of Lower Natural Teeth <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> Range: 0-16    Include root fragments
Untreated Decay <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 9 = Edentulous	Root Fragments <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 9 = Edentulous
Need for Periodontal Care <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 9 = Edentulous	Suspicious Soft Tissue Lesions <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes
Treatment Urgency <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0=No obvious problem – next scheduled visit <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1=Early care – within next several weeks <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 2=Urgent Care – within next week – pain or infection	Comments:

NOTE: If you are collecting information on age, gender and race using a questionnaire, you can delete those fields from this form.

## Sample Oral Health Screening Form #2 Recommended and Optional Indicators

### SITE INFORMATION

Site ID Code <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/>	Screen Date <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> / <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> / <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/>	Screener ID Code <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/>
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### DEMOGRAPHIC INFORMATION

Age <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/>	Gender <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Male <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 2 = Female	Race/Ethnicity <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = White <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 2 = Black <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 3 = Hispanic <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 4 = Asian <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 5 = AI/AN <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 6 = Pacific Islander <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 7 = Multi-racial <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 9 = Unknown
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### ORAL SCREENING INFORMATION

Do you have a removable upper denture? <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes	<b>If Yes</b> 	Do you usually wear your upper denture when you eat? <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes
Do you have a removable lower denture? <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes	<b>If Yes</b> 	Do you usually wear your lower denture when you eat? <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes
Functional Posterior Occlusal Contacts <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = None <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = 1 side only <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 2 = Both sides <span style="margin-left: 20px;">Assess with removable dentures in place.</span>	<b>Ask participant to remove partial/full dentures.</b>	
Substantial Oral Debris <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 9 = Edentulous	Severe Gingival Inflammation <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 9 = Edentulous	

**Remove excess oral debris if necessary.**

# of Upper Natural Teeth <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> Range: 0-16    Include root fragments	# of Lower Natural Teeth <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> <input style="width: 30px; height: 20px; margin-right: 5px;" type="text"/> Range: 0-16    Include root fragments
Untreated Decay <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 9 = Edentulous	Root Fragments <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 9 = Edentulous
Obvious Tooth Mobility <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 9 = Edentulous	Need for Periodontal Care <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 9 = Edentulous
Severe Dry Mouth <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes	Suspicious Soft Tissue Lesion <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0 = No <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1 = Yes
Treatment Urgency <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 0=No obvious problem – next scheduled visit <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 1=Early care – within next several weeks <input style="width: 20px; height: 20px; margin-right: 5px;" type="checkbox"/> 2=Urgent Care – within next week – pain or infection	Comments:

NOTE: If you are collecting information on age, gender and race using a questionnaire, you can delete those fields from this form.



