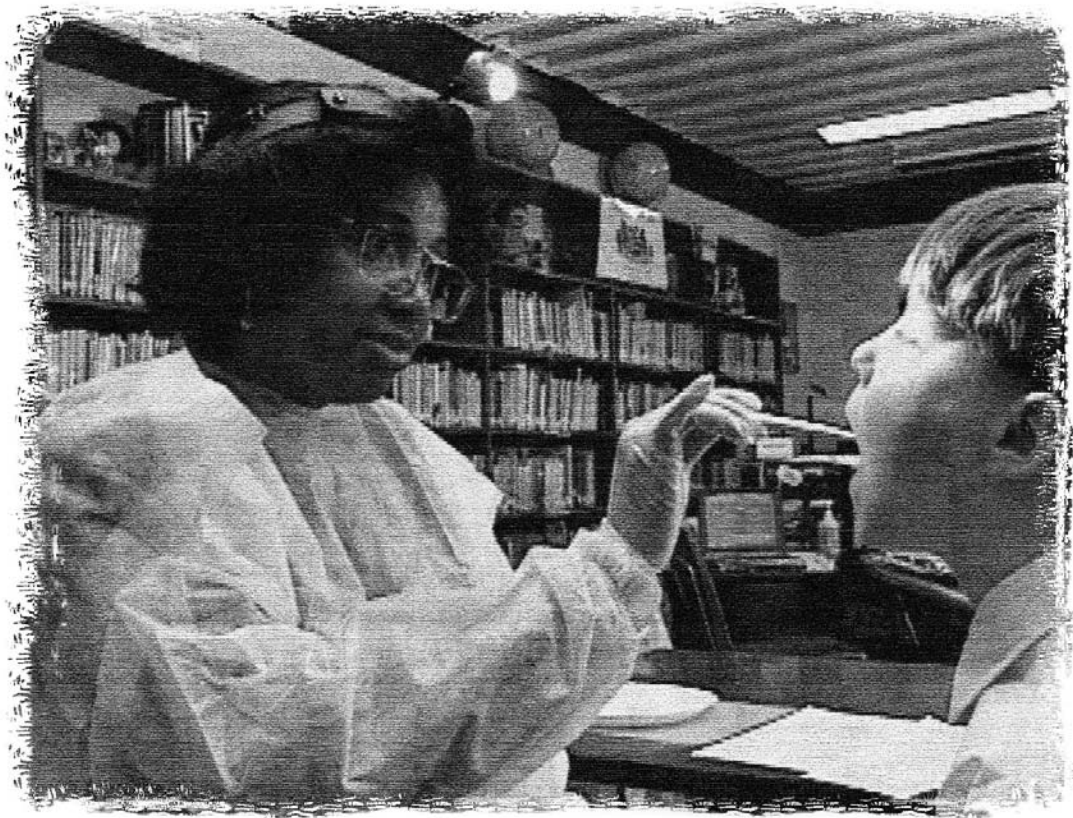


**BASIC SCREENING SURVEYS:**  
*AN APPROACH TO MONITORING  
COMMUNITY ORAL HEALTH*

PRESCHOOL & SCHOOL CHILDREN



**Association of State and Territorial Dental Directors**  
1999, Revised September 2003 and December 2008

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Two advisory committees, whose members are listed in the Appendix, made essential contributions to the project. The members of the Policy/Content Advisory Committee determined what items were included in both the direct observation and the questionnaire components. Drs. Deborah Winn and Clemencia Vargas played a major part in developing the questionnaire. The Technical/Criteria Advisory Committee determined the screening criteria for the direct observation portion. In several instances, committee members drafted sections of the manual and of the video script. Their comments on multiple drafts shaped both documents.

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## SUMMARY OF REVISIONS

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As states and local health jurisdictions used the Basic Screening Survey, their experiences provided insight into ways in which the BSS could be improved. The 2003 version of *Basic Screening Surveys: An Approach to Monitoring Community Oral Health* included several minor and one major revision. The major revision was an update on the method for collecting information regarding race and ethnicity. The 1999 version had one data element for race and another for ethnicity. Field-testing found two problems with the 1999 method – missing data and the inability to code multi-racial children. The 2003 version combined race and ethnicity into one question (to reduce the amount of missing data) and included a code for multi-racial children.

The 1999 version of *Basic Screening Surveys: An Approach to Monitoring Community Oral Health* included “untreated decay” and “caries experience” as two of the screening indicators. Using these two indicators, however, did not allow states to determine which children had actually received previous treatment for caries. In 2007 the ASTDD Executive Committee approved changing the indicator “caries experience” to “treated decay”. It is recommended that caries experience, which is still an indicator for the National Oral Health Surveillance System (NOHSS), be calculated from untreated decay and treated decay.

As states have developed their oral health surveillance infrastructure, some have voiced an interest in collecting information on disease severity in addition to prevalence data. The 2008 version of *Basic Screening Surveys* includes a set of options for each indicator ranging from a simple no/yes to the more complex. Regardless of which option you select, your data will allow you to calculate the NOHSS indicators.

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## HOW TO USE THIS MANUAL

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This manual provides general information on how to conduct a Basic Screening Survey in preschool and school age children. 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 techniques. 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. Examiner training video for nurses
3. Sample PowerPoint for examiner training
4. Laminated cards showing diagnostic criteria
5. Epi Info data entry and analysis program (includes instructions)
6. ASTDD monograph: *IRB, HIPAA and BSS*
7. Access to care questions translated into multiple languages

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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 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 or agencies.

Developing training materials for the BSS involved a number of experts in oral health and individuals with experience in health policy. The training materials were designed so that they could be used by screeners with or without dental backgrounds. This approach was taken because non-dental health professionals, such as school nurses, sometimes have direct access to some population groups and because some states and communities have few public health dental professionals to assist in screening surveys.

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.

The direct observation portion of the model is required while the questionnaire portion is optional.

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## BSS PLANNING GUIDE

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A successful Basic Screening Survey requires planning and forethought. 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 age groups and/or grades do I want to include in the survey? For example, do you want information on preschool children, kindergarten, and/or 3<sup>rd</sup> grade children? NOTE: The National Oral Health Surveillance System encourages states to obtain information on at least 3<sup>rd</sup> grade children.
  - 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, department of education, dental and dental hygiene associations, dental school, potential funding organizations, and the school nurses association. 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.
  - Determine the appropriate consent process (passive vs. positive).
  - Some school districts have internal research review committees that must also review and approve a survey of this type. Obtain a list of districts with internal review boards from your state's department of education.
  - **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. If you are planning on screening children in a school setting, contact your state's department of education. For a school survey to be successful, it is very important to have the full support of the department of education.
  - Discuss the appropriate consent process (passive vs. positive) with the department. Some school districts will require positive consent, while others may allow passive consent.
  - Determine whom letters regarding survey participation should be sent to – school principals or the district superintendent? Should a copy of the letter be sent to the school nurse?

- Obtain an approval letter from the department of education or have a department representative co-sign the letter to schools
- **TIP:** In some cases it helps to contact the school nurse's association and the nurses at the selected schools for their support. Often, a principal will not want to participate but the nurse will convince them to take part.
- **TIP:** Have the department 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, free/reduced lunch, 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:** Standard data entry forms using Epi Info may be downloaded from the ASTDD website ([www.astdd.org](http://www.astdd.org)). Paper copies of the data entry forms are included in the BSS manual ([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. NOTE: For oral health status information to be included in the National Oral Health Surveillance System it must be from a probability sample representative of the state.
  - Obtain an electronic list of schools with target grades from the department of education. Ideally, the list should include the following:
    - District ID number, school ID number, district name, school name, county
    - School contact information: address, phone number, principal's name
    - Number of children in target grade(s)
    - Percent eligible for free/reduced lunch program – at the school rather than the district level
    - Nice to have but not mandatory: Minority enrollment at the school or grade level if available, or other data related to subpopulations that you are particularly interested in
  - 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 schools – cosigned by department of education
  - Informational letter and consent form for parents
  - Survey result letter to parents
8. Translate letters if necessary
  - When you contact the schools, ask them if they need parent materials in languages other than English.

## 9. Contact schools

- As soon as the sample is selected, send letters to schools (determine if letters should be sent to principals, superintendents, school nurses).
- Follow-up by calling schools. You may want to talk to both the principal and the school nurse.
- Identify potential screening dates
- Schedule dates – make sure that the screening date does not conflict with field trips or special school events
- If a school refuses, randomly select a replacement school within the same strata or sampling interval (consult with your epidemiologist or ASTDD on appropriate replacement methods).
- Ask the school to provide 1-2 older students or parent volunteers as assistants. The assistants can help “move” the students from classroom to the screening site and may be able to assist with data entry.
- **TIP:** Be flexible. You may need to alter your schedule in order to accommodate the school's schedule.

## 10. Identify and train the dental screeners

- Determine who will screen the children. Most states use dental hygienists. At least two states have used volunteer dentists. 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 20 children from the same grade levels to be surveyed to help with training. It is best to prescreen children and have children with 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. Order supplies and equipment

- Toothbrushes
- Screening supplies – disposable mirrors or tongue blades, gloves, gauze, hand wash, toothpicks or disposable explorers to check for the presence of sealants, etc.
- Dental equipment if necessary (chairs, lights, etc)
- **NOTE:** If you plan to ship supplies to schools, make sure to include a shipping line item in your budget.

## Screening Phase

### 12. Distribute consent forms to schools

- Photocopy consent forms and letters to parents
- Send letters and consent forms to schools for distribution. Make sure to include translated materials for schools with non-English speaking parents.
- **TIP:** Talk to each school about the best method for distribution. If you plan early enough, you may be able to have the consent form included in the enrollment packet sent to each parent.

### 13. Reconfirm screening date

- One week before screening, call schools to remind them to send consent forms home with children.



- Reconfirm screening date and time with the school and the screener

#### 14. Obtain enrollment information

- In order to determine sampling weights and response rates, you must obtain the following two pieces of information from each school: number of children enrolled in each of the target grades and the number of children invited to participate in each of the target grades

#### 15. Collect screening data. The following are screening day protocols that one state used with their screeners. This is an example that you may use if you wish.

- Arrive at the screening site at least 30 minutes before the first scheduled screening.
- Check-in at the school's office then set up your supplies for the screening. Ask the office for a list of the appropriate classrooms and when each class has recess and lunch. Obtain a class roster for each classroom that will be screened.
- Each school has been asked to provide one or two assistants (parent volunteers or older students). Ask the office who will be available to assist you. Introduce yourself to the assistant(s) and briefly tell them what you want them to do. In general, the assistants will be your "runners" bringing students to the screening site (about 10 at a time works well). The assistants may also be able to help you with data entry – but make sure they understand the concept of confidentiality.
- Have the children bring their consent form with them to the screening (each child should have their own consent form). Review the demographic data on the consent form and complete missing items if possible (birth date, race, etc). If you are required to use positive consent, make sure that the parent has provided positive consent before screening the child.
- Complete the direct observation portion of the survey. Enter the results on the screening form. Fill in each bubble completely and only use block style letters and numbers. DO NOT LEAVE ANY FIELD BLANK.
- If a child needs dental treatment, complete the appropriate referral letter for the parent. Give the child the referral letter and a toothbrush (or other items as appropriate). Send the child back to their classroom.
- When finished for the day, stop by the office and thank the staff for helping with the survey. Ask staff where you can throw away your garbage (staff may ask you to take it with you). Depending on your state's HIPAA requirements, you might want to consider developing a protocol for consulting with the school nurses regarding children with urgent needs.

#### 16. Send data to survey coordinator

### **Post-Survey Phase**

#### 17. 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 (cluster sampling effects and varying probability of selection) and non-response

#### 18. 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

19. 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

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## 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.***

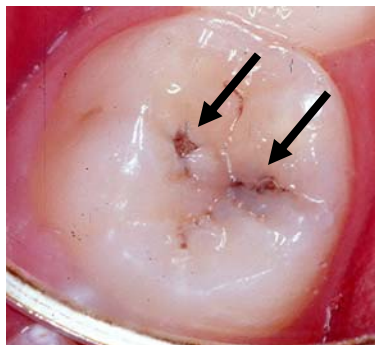


**Precavitated  
Pit & Fissure Caries**



**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**

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## OVERVIEW OF SCREENING INDICATORS

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For children and adolescents there are five oral health status indicators included in the direct observation portion of the BSS. Some are only applicable to specific age groups and others apply to all age groups. Your screening survey should include, at minimum, the following indicators according to the age groups shown:

### **Preschool Children**

- ▶ Untreated decay
- ▶ Treated decay
- ▶ One or more upper front teeth with treated and/or untreated decay (Early Childhood Caries)
- ▶ Urgency of need for dental care

### **School Children (Kindergarten to 12<sup>th</sup> grade)**

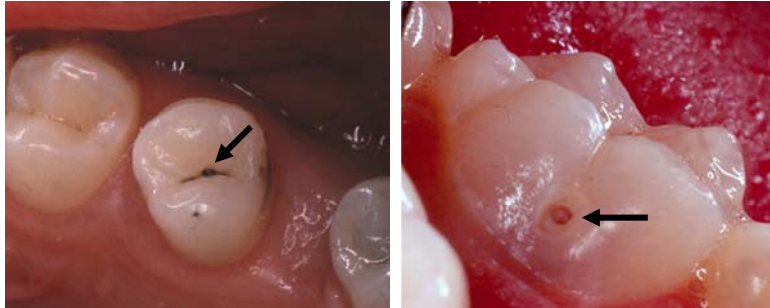
- ▶ Untreated decay
- ▶ Treated decay
- ▶ Dental sealants on permanent molars
- ▶ Urgency of need for dental care

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## INDICATOR #1: UNTREATED DECAY

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



**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

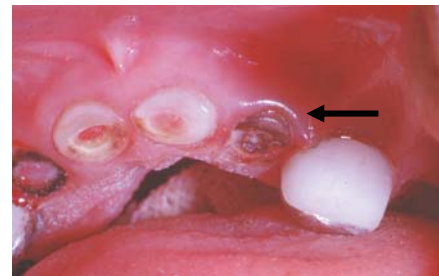


**Not Untreated Decay**  
White spot lesions but no  
enamel break

**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 is considered to have treated decay rather than untreated decay.

If the screener notices a retained root, assume that the whole tooth was destroyed by caries and code the individual as having untreated decay.



Retained Roots

**Options for Coding Untreated Decay:** For untreated decay, states may opt to collect just prevalence data (no/yes) or they may collect a measure of severity. The following table lists a “menu” of untreated decay measures that can easily be obtained using the BSS format. Each of the severity measures may be collapsed to determine the percent of children with untreated decay – the National Oral Health Surveillance System indicator variable for untreated decay.

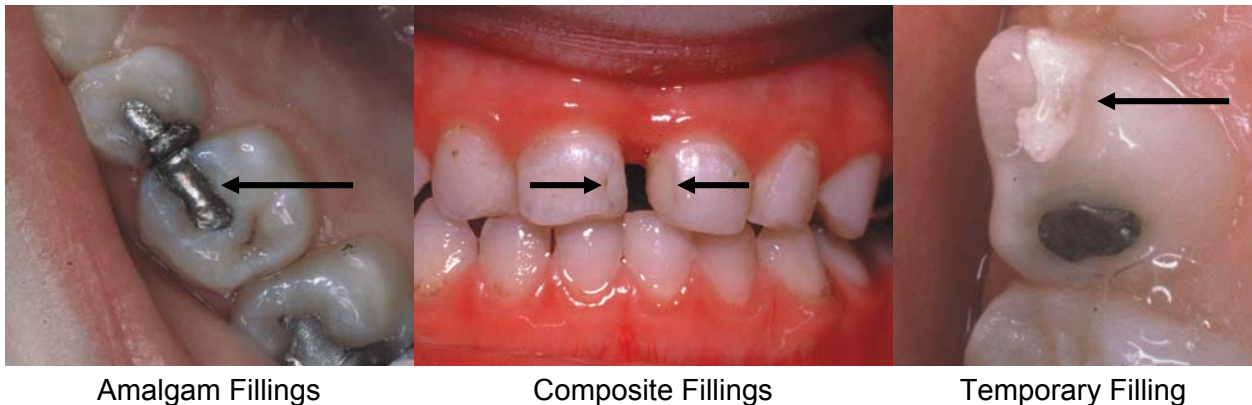
**Menu of Measures for Untreated Decay**

Most Basic	Less Basic	More Complex	Most Complex
No/Yes	None Primary only Primary & Permanent Permanent only	# decayed teeth	# decayed primary teeth # decayed permanent teeth <i>Other Options:</i> # decayed permanent molars #decayed permanent 1 <sup>st</sup> molars #decayed permanent 2 <sup>nd</sup> molars

## INDICATOR #2: TREATED DECAY

The second screening indicator, treated decay, is determined by the presence of any type of filling, including a temporary filling or a tooth that is missing because it was extracted as the result of tooth decay. The BSS records this measure for children only, because few individuals reach adulthood without having experienced dental caries.

There are three basic types of fillings that may be seen during a screening: amalgam (silver), composite (tooth-colored) and temporary.



Amalgam Fillings

Composite Fillings

Temporary Filling

For the purpose of the screening, crowns, which cover the whole tooth or most of the tooth, are akin to fillings. The presence of at least one will categorize the child as having treated decay. The most common type of crown seen in children is a stainless steel crown, usually found on the back primary teeth. Tooth colored crowns, however, may be seen on the front teeth of young children with ECC. The other two types of crowns, gold and tooth-colored, may be seen in adolescents, but only rarely. Tooth-colored crowns often have metal on the back of the tooth.

A crowned front tooth in an adolescent may be the result of injury rather than caries. Therefore, you should question the adolescent about their recollection of injury and code the child accordingly. If a tooth is crowned for trauma rather than decay, then the tooth is considered to be sound.

The same scenario is true for teeth that are missing because of orthodontics; they are not considered treated decay.

**Options for Coding Treated Decay:** For treated decay, states may opt to collect just prevalence data (no/yes) or they may collect a measure of severity. The following table lists a “menu” of treated decay measures that can easily be obtained using the BSS format. Each of the severity measures may be combined with the untreated decay measures to obtain the percent of children with caries experience – one of the National Oral Health Surveillance System indicator variables.

### Menu of Measures for Treated Decay

Most Basic	Less Basic	More Complex	Most Complex
No/Yes	None Primary only Primary & Permanent Permanent only	# treated teeth	# treated primary teeth # treated permanent teeth <i>Other Options:</i> # treated permanent molars # treated permanent 1 <sup>st</sup> molars # treated permanent 2 <sup>nd</sup> molars

## INDICATOR #3: DENTAL SEALANTS (SCHOOLCHILDREN)

The third screening indicator, sealants on permanent molars, is collected only for elementary, middle and high school children. Children will be coded as having sealants if they have at least one sealant on a **permanent molar tooth**, whether or not the sealant covers all or part of the pits or fissures or is partially lost. Do not record sealants on primary teeth.

Dental sealants are either transparent or opaque. While opaque white sealants are rather easy to identify visually, other shades, including transparent sealants, may be very difficult to identify. To help you identify the presence of a dental sealant, you can use an adjunct such as a toothpick or a long-handled cotton tipped applicator to gently feel the surface. When feeling for sealants, a distinction is made between a smooth area and an area made rougher by the pits and fissures. The BSS model does not recommend that adjuncts be used by non-dental screeners.

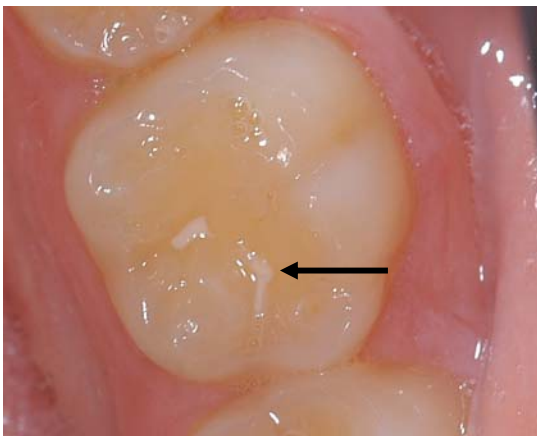


Transparent Sealant



Opaque Sealant

Even a partially retained sealant will cause an individual to be categorized as having sealants.



Partially Retained Sealant



Fully Retained Sealant

**Options for Coding Sealants:** For sealants, states may opt to collect just prevalence data (no/yes) or they may collect the number of permanent molars with sealants.

### Menu of Measures for Dental Sealants

Most Basic	Less Basic	More Complex	Most Complex
No/Yes	NA	NA	# perm molars with sealants



## INDICATOR #4: EARLY CHILDHOOD CARIES (PRESCHOOL)

The fourth screening indicator, early childhood caries, is only used for preschool children; this indicator is not used for children in kindergarten or higher grades. For this indicator, you will most likely be screening children in a setting such as an Early Start or Head Start classroom. In order to see the upper front teeth, someone will have to “lift the lip.” With cooperative children, you can ask them to push up their lip with their finger or to “smile big” to show you their teeth. Otherwise, you will have to either retract the lip with a mirror or tongue blade or use your finger, necessitating regloving and hand cleaning between children.



Early Childhood Caries

Any preschool child with **one or more** of their six maxillary anterior teeth decayed, filled, or missing because of decay is considered to have early childhood caries. Missing front teeth in this age group are most likely due to caries or to traumatic injuries. Therefore, the cause of missing front teeth must be identified by questioning the parent or guardian, if present, or including a question on the consent form.

If you are screening one or two year olds you may need assistance and a knee-to-knee approach with the child reclining in the parent’s lap with the child’s head in your lap. You will have to retract the lip with your gloved fingers in this instance.



Knee-to-Knee Position

**Options for Coding Early Childhood Caries:** For ECC, states may opt to collect just prevalence data (no/yes) or they may collect the number of maxillary anterior teeth with treated and/or untreated decay.

### Menu of Measures for Dental Sealants

Most Basic	Less Basic	More Complex	Most Complex
No/Yes	NA	NA	# maxillary anterior teeth with treated and/or untreated decay

## INDICATOR #5: URGENCY OF NEED FOR DENTAL CARE

The final screening indicator is urgency of need for dental care. After categorizing a child according to his or her caries 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 24 to 48 hours because of signs or symptoms that include pain, infection, or swelling. In children, the most common reason for being classified as needing urgent care is an abscess.

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.

Children 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.

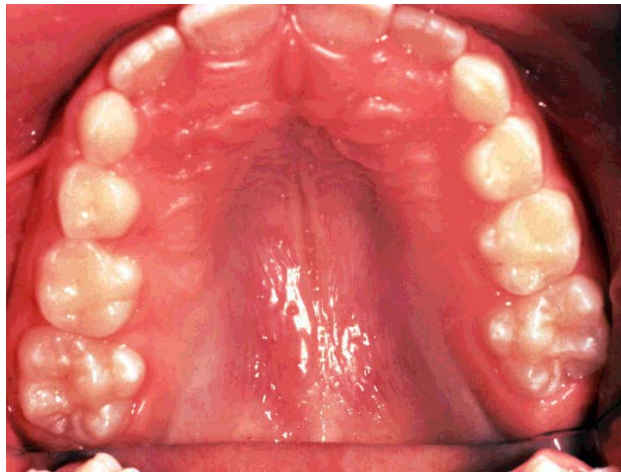
Category	Recommendation for next dental visit	Criteria
Urgent need for dental care	As soon as possible	Signs or symptoms that include pain, infection, or swelling
Early dental care needed	Within several weeks	Caries without accompanying signs or symptoms or individuals with other oral health problems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



Urgent Care Needed



Early Care Needed



No Obvious Problem

If a child has untreated decay on a primary tooth that is about to exfoliate, they would be classified as having untreated decay but no obvious problem.



No Obvious Problem  
Primary tooth with untreated decay  
about to exfoliate

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## OPTIONAL INDICATORS: MEASURES OF DISEASE SEVERITY

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Some health jurisdictions have collected information for indicators relating to disease severity. These indicators are not included in the National Oral Health Surveillance System and have not been standardized. We have included these as “optional” indicators that you might find useful.

**Rampant Decay:** Individual has 7 or more teeth with untreated and/or treated decay (no or yes)

**Number of Quadrants with Untreated Decay:** Record the number of quadrants with untreated decay (0, 1, 2, 3, or 4)

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## 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 and fillings can be done with good available light, screening for sealants and smaller cavities can not. 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:

- Flashlight/Penlight
- Portable dental light
- Non-dental exam light
- Head lamp

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 and for detecting sealants. Dental mirrors are sold as either disposable or reusable (sterilizable) items. Screeners may opt to have a limited number of mirrors available for use in situations where visualization is otherwise inadequate.
  - 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 or sealants when teeth are covered by food?*

If tooth surfaces cannot be visualized because debris obscures the view, a toothbrush is most effective for cleaning away the food. Alternatively, a toothpick or the wooden end of a cotton-tipped applicator may be used to dislodge debris. Contact of gloves with mucosa or saliva requires hand cleaning and regloving.

For teeth that are too wet to see the tooth surfaces, screeners can use a long handled cotton-tipped applicator, cotton roll or gauze square to soak up saliva.

## 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, especially in newly erupted teeth with pits and fissures, is discouraged.

If your examiners are dentists or hygienists, however, it may be useful to provide a way that they can **gently** feel fissured surfaces to determine the presence of dental sealants. For this purpose, you can use a long-handled toothpick, periodontal probe or dental explorer.

***If you use explorers, they should NEVER be used to determine a “stick” or “tugback” in a suspected carious lesion.***

## 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> In general, the basic screening survey procedures assume that you will not touch the child directly with your hands during the screening. Based on this assumption, the CDC infection control guidelines do not require use of examination gloves; however we do recommend that all screeners wear gloves in the event you inadvertently come in contact with saliva or oral soft tissues.

According to CDC guidelines, if there is no physical contact, it is not necessary to change gloves between children. If, however, 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 child.*** This recommendation is made because school staff and parents are not familiar with infection control guidelines and may perceive the screening to be unprofessional if gloves are not changed.

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

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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>

The following table summarizes the levels of infection control recommended when there is **no anticipated examiner contact** with mucous membranes, blood and/or saliva contaminated with blood.

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**Principles Of Infection Control When There Is  
No Anticipated Examiner Contact With Oral Tissue Or Blood**

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**I. Take action to stay healthy**

- |                        |  |
|------------------------|--|
| A. Immunizations       |  |
| 1. HBV immunization    | As required by state law or regulation   |
| 2. Other immunizations | As necessary   |
| B. Hand washing        | Strongly suggested after each patient when hands are in close proximity to the mouth |

**II. Avoid contact with blood**

- |                         |                   |
|-------------------------|-------------------|
| A. Protective coverings |                   |
| 1. Gloves               | Optional          |
| 2. Facial protection    | Optional          |
| 3. Protective clothing  | Optional          |
| B. Avoid injuries       |                   |
| 1. Handling sharps      | Not anticipated   |
| 2. Written policy       | Available on site |

**III. Limit the spread of blood**

- |                             |  |
|-----------------------------|--|
| A. Control of contamination | Contamination with blood not anticipated |
| B. Waste handling           | Follow state and local regulations       |

**IV. Make instruments and equipment safe for use**

- |                       |  |
|-----------------------|--|
| A. Instruments        | Single-use tongue blade or dental mirror, disposed of promptly |
| B. Covered surfaces   | Change coverings as necessary                                  |
| C. Uncovered surfaces | Clean as necessary   |
- 

## Consent

### Do I need parental permission to screen children?

Unless your state requires dental screenings for school admission, parents must provide consent for a screening survey. There are 2 basic types of consent – passive and positive. With passive consent, all children are screened unless a parent specifically says no. If positive consent is used, only those children who returned a consent form with parent agreement may be screened.

The standards and traditions of the schools with which you are working will determine which approach you will use. Please note that your approach to parental consent will influence participation rates – positive consent will diminish participation. Sample cover letters and consent forms are located in the Appendix.

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## 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.



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## 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 school officials. While uncommon, some school officials may question whether a review of the protocol was conducted, and it is to the survey planner's advantage to be able to report that the protocol was approved. 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.

In addition to your agency's IRB, some school districts and communities have internal or independent review boards. Surveyors should find out in advance if there are such district and/or community IRBs in the areas they plan to survey and what their expectations are with respect to reviewing this type of 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.

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## 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/hipaa](http://www.hhs.gov/ocr/hipaa)).

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## Access to Care Questionnaire (Optional)

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The following questions may be included on a consent form (refer to the Appendix). Coupled with the oral health status information obtained through the direct observation portion of the screening survey, the questions about access provide more data for use in needs assessment.

The questionnaire is the best place for collecting demographic information about the people you screen. Such information is useful in stratifying your findings for reporting. Typical items collected are; 1) age, 2) gender, and 3) eligibility for the free and/or reduced price meal program (schoolchildren).

In addition, 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 and software provided with this manual includes one field for race/ethnicity that includes a separate code for multi-racial children. If you want to collect more detailed information on race and/or ethnicity, contact CDC or ASTDD for technical assistance.

## Recommended Questions

1. During the past 6 months, did your child have a toothache more than once, when biting or chewing? [Source: National Health Interview Survey (NHIS), 1989]
  1. No
  2. Yes
  3. Don't know/don't remember
2. About how long has it been since your child last visited a dentist? Include all types of dentists, such as, orthodontists, oral surgeons, and all other dental specialists, as well as dental hygienists. [Source: NHIS, 1997]
  1. 6 months or less
  2. More than 6 months, but not more than 1 year ago
  3. More than 1 year ago, but not more than 3 years ago
  4. More than 3 years ago
  5. Never have been
  6. Don't know/don't remember
3. What was the main reason that your child last visited a dentist? (Please check one) [Source: NHIS, 1986]
  1. Went in on own for check-up, examination or cleaning.
  2. Was called in by the dentist for check-up, examination or cleaning.
  3. Something was wrong, bothering or hurting.
  4. Went for treatment of a condition that dentist discovered at earlier check-up or examination.
  5. Other
  6. Don't know/don't remember
4. During the past 12 months, was there a time when your child needed dental care but could not get it at that time? [Source: NHIS, 1994]
  1. No
  2. Yes
  3. Don't know/don't remember

5. The last time your child could not get the dental care he/she needed, what was the main reason he/she couldn't get care? (Please check one) [Source: NHIS, 1994]
  1. Could not afford it
  2. No insurance
  3. Dentist did not accept Medicaid/insurance
  4. Not serious enough
  5. Wait too long in clinic/office
  6. Difficulty in getting appointment
  7. Don't like/trust/believe in dentists
  8. No dentist available
  9. Didn't know where to go
  10. No way to get there
  11. Hours not convenient
  12. Speak a different language
  13. Health of another family member
  14. Other reason
  15. Don't know/don't remember
  
6. Do you have any kind of insurance that pays for some or all of your child's MEDICAL OR SURGICAL CARE? Include health insurance obtained through employment or purchased directly as well as government programs like Medicaid.
  1. No
  2. Yes
  3. Don't know/don't remember
  
7. Do you have any kind of insurance that pays for some or all of your child's DENTAL CARE? Include health insurance obtained through employment or purchased directly as well as government programs like Medicaid.
  1. No
  2. Yes
  3. Don't know/don't remember

**Additional questions for survey planners to consider:**

8. During the past 12 months, was there a time when you felt that your child needed MEDICAL CARE OR SURGERY but could not get it at that time? [Source: Modified from NHIS, 1994]
  1. No
  2. Yes
  3. Don't know/don't remember
  
9. The last time your child could not get the MEDICAL CARE OR SURGERY he/she needed, what was the main reason he/she couldn't get care? [Source: NHIS, 1994]
  1. Could not afford it
  2. No insurance
  3. Doctor did not accept Medicaid/insurance
  4. Not serious enough
  5. Wait too long in clinic/office
  6. Difficulty in getting appointment
  7. Don't like/trust/believe in doctors
  8. No doctor available
  9. Didn't know where to go
  10. No way to get there
  11. Hours not convenient

12. Speak a different language
13. Health of another family member
14. Other reason
15. Don't know/don't remember

**For all questions, refused/no response is a coding option but is not listed as a choice on the questionnaire. For one digit variables, 9 is coded, for two digit variables the refused/no response code is 99.**

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## 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!”**

To submit preschool or elementary school data to the National Oral Health Surveillance System, data must be from a **statewide probability sample** of either Head Start centers or public elementary schools. 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 preschool or elementary school children is to determine the population to be assessed (target population). ASTDD recommends the following target populations:

- Preschool: Children enrolled in Head Start
- Elementary School: Third grade children in public elementary schools

Aspects of the target population will need to be considered in defining your survey population, i.e. the actual children to be sampled and screened. For example, in a survey of 3<sup>rd</sup> grade children, do you want your target population to be typical children from traditional public schools with a designated minimum size, or do you want your sample to include children from magnet schools or schools for “gifted” children, children in special education programs, or children from extremely small schools (e.g. schools with less than 10 3<sup>rd</sup> graders), etc?

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 Head Start and 3<sup>rd</sup> grade children, the sampling process involves selection of sites (e.g., schools or Head Start centers), and then selection of children at the sites. The goal of sampling is to select and screen a sufficient number of children 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 school 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 school-aged child 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 schoolchildren in a state might well require going to a different school for almost every child 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 schoolchildren, school districts might first be stratified by geographic region, with selection of school districts and schools from each region, so that a good cross section of districts 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: age (or grade for school-based surveys); geographic location (e.g., state health regions or urban/rural/suburban community setting); socioeconomic status (as indicated, for example, by the percentage of children eligible for free and reduced cost meals at school); and ethnic origin and/or race.

**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 city may be divided into regions such as tracts or blocks; a random sample of blocks (clusters) is chosen and information is collected on elements within the selected clusters. 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 heterogeneous within and homogeneous between clusters and thus selected clusters will be representative of clusters not selected.

A common example of cluster sampling is seen in school-based oral health surveys. A sample of schoolchildren in a state might involve selection of school districts at the first stage, schools within districts at the second stage, classes within schools at the third stage, and – perhaps – students within classes. In this example, cluster selection is used to reduce time and effort required to select

and recruit children, and to travel to and between schools. Not all schools are sampled, so it is advantageous if children within selected schools vary and represent children from the schools that weren't selected into the sample. 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, again involving a survey of schoolchildren. With a PPS design, schools would be selected with probability proportional to enrollment size of the schools; larger schools would have a greater chance of being selected in the first stage of sampling. A set number of children (e.g., thirty) are then selected from within each selected school. In this stage children in a larger school would have a smaller chance of selection than children in a smaller school (e.g., 30/1000 vs. 30/150). The result is that the probabilities of selection even out. Larger schools 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 children from within the larger schools at the subsequent stage of selection. With this design, all children 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 schools (with their enrollment sizes) can be sorted by region and by percent of children eligible for free/reduced lunch programs (as a proxy for socio-economic status) within regions. A systematic PPS selection of schools through this sorted list would ensure proportional representation by region and by free/reduced lunch 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 children 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 children with one or more dental sealants is thought to vary significantly among children and from school to school within a state, surveying a larger number of schools and schoolchildren 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.

### **In school surveys, how do I decide which schools and classrooms to survey?**

As mentioned previously, in a survey of schoolchildren, randomly selecting individual students across a large geographic region is usually not feasible or desirable. Rather, schools are usually selected, followed by a selection of children to be screened in the selected schools. State and local boards of education can usually provide directories or data files of school districts and schools in the geographic area(s) of interest. It may be possible to draw down the information from the agency’s website. School health, immunization, and health education programs within state and local health agencies may also be sources of school listings.

Once schools are selected, a standardized process for selecting individual students must be employed. Entire classrooms within the desired grade level(s) may be randomly selected for inclusion, or students may be selected randomly from rosters organized by grade. To avoid introducing bias, classrooms and students selected should not be systematically different from remaining classrooms or students. For example, honors or accelerated learning classrooms should not be selected, nor should classrooms of students who are medically compromised or developmentally delayed, unless the surveyor is interested in knowing more about the oral health status of these children, as well. Information on such small subgroups of schoolchildren may be best obtained through a separate project/survey specific to the subgroup of interest.

### **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 eight and 14 year olds with dental sealants) 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.

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## 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>

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*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 (such as the data entry system available from ASTDD).

*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.

ASTDD has developed data entry files for the BSS. This software can be used for direct data entry at the examination site or for data entry subsequent to recording on paper forms. While there are commercial database software packages that will do the job very nicely, the BSS has opted to use Epi Info, a free public access program developed by the Centers for Disease Control and Prevention (CDC) and the World Health Organization. The BSS data entry files, along with detailed instructions are located on the BSS CD available from ASTDD ([www.astdd.org](http://www.astdd.org)).

Epi Info, along with its manual, can be downloaded from the “Publications, Software, and other Products” area of the CDC website: (<http://www.cdc.gov/epiinfo/>). The advantages of Epi Info are that it is free, it is relatively easy to use and understand, and it allows for direct exportation of the data sets to other software programs such as SAS and SPSS.

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## 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, ASTDD has developed data analysis files for the BSS using Epi Info (refer to the data management section of this manual).

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## NATIONAL ORAL HEALTH SURVEILLANCE SYSTEM

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The National Oral Health Surveillance System (NOHSS) is a collaborative effort between CDC's Division of Oral Health and ASTDD. For clinical data (caries experience, untreated decay, and dental sealants) to be included in NOHSS it must meet the following criteria.

- The data must be from a **statewide probability sample** of public elementary schools. If a complex sampling scheme is used, the data must be weighted for the sampling scheme.
- The clinical examiners must be trained and standardized within one year of data collection. Examiners may be dentists, dental hygienists, or non-dental health professionals.
- The diagnostic criteria outlined in the Basic Screening Survey model must be used.
- At a minimum, third grade children should be screened. Grades K-2 may also be screened and will be included in the Surveillance System database.
- The data must be stratified by grade rather than age.
- Data will be submitted by school year – NOT calendar year.

While it is not mandatory that data be adjusted for non-response, states are encouraged to adjust for non-response whenever possible. Both unadjusted and adjusted data may be submitted. The web address for NOHSS is [www.cdc.gov/nohss](http://www.cdc.gov/nohss).

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## 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>

# APPENDIX

### Sample Oral Health Screening Form/Preschool Children

Screen Date: ____ / ____ / _____	Site Code:	Screener's Initials:
ID Number:	Age:	
Gender:  1=Male 2=Female	Race/Ethnicity: 1=White 2=Black/African American 3=Hispanic/Latino 4=Asian 5=American Indian/Alaska Native 6=Native Hawaiian/Pacific Islander 7=Multi-racial 9=Unknown	
Untreated Decay:  0=No untreated cavities 1=Untreated cavities	Treated Decay:  0=No treated decay 1=Treated decay	
Early Childhood Caries:  0=No ECC 1=ECC	Treatment Urgency:  0=No obvious problem 1=Early dental care 2=Urgent care	
Comments:		

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

### Sample Oral Health Screening Form/School Children

Screen Date: ____ / ____ / _____	School Code:	Screener's Initials:
ID Number:	Grade:	Age:
Gender:  1=Male 2=Female	Race/Ethnicity: 1=White 2=Black/African American 3=Hispanic/Latino 4=Asian 5=American Indian/Alaska Native 6=Native Hawaiian/Pacific Islander 7=Multi-racial 9=Unknown	
Untreated Cavities:  0=No untreated cavities 1=Untreated cavities	Treated Decay:  0=No treated decay 1=Treated decay	
Sealants on Permanent Molars:  0=No sealants 1=Sealants	Treatment Urgency:  0=No obvious problem 1=Early dental care 2=Urgent care	
Comments:		

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

## Sample Letter to Principals – #1

Dear Principal;

During the 2007-2008 school year, the *Utopia* State Department of Health in cooperation with *the Office of State Superintendent of Public Instruction* is conducting a statewide assessment of the oral health of elementary school students. Your school has been selected to participate.

The findings of this assessment will be used to assure that our preventive oral health programs are effective. Children need good oral health in order to speak with confidence, express themselves openly and to be healthy and ready to learn.

Schools throughout the state have been randomly selected for participation in the assessment. All third grade children with a signed consent from a parent or caregiver, will be given the opportunity to have a free dental screening. The screening will take about one minute per child. No x-rays will be taken and no dental treatment will be provided. We understand that nominal class disruption is essential in the operation of your school. For this reason each school will only be asked to participate for one day. Each participating child will receive a toothbrush and a letter to the parent or caregiver noting the results of the screening. Your school will incur no cost for participating.

We would like to ask for your support and the support of your teachers to carry out this important assessment of our children's oral health needs. The state coordinator is *Jane Doe, RDH*. She will be contacting you to answer your questions and to receive your approval for conducting the assessment. Her telephone number is (555) 555-5555 and her email is *jdoe@utopia.us*.

Thank you in advance for making this contribution to the health and well-being of our children in *Utopia*.

Sincerely,

Enclosure

CC: SUPERINTENDENT

## Sample Letter to Principals – #2

Dear Principal;

During the 2007-2008 school year, the *Utopia* Health Division in cooperation with the *Utopia* Department of Education will be assessing the oral health of elementary school students throughout *Utopia*. The findings of this assessment will be used to evaluate the State's preventive oral health programs, determine the need for additional dental programs, and describe the oral health of *Utopia's* children.

Your school was randomly selected to participate in this assessment. If you choose to participate, we will provide a free dental screening to all third grade children who return a signed consent from a parent or guardian. The screening will take about one minute per child. No x-rays will be taken and no dental treatment will be provided. We understand that nominal classroom disruption is essential to the operation of your school. For this reason, we will limit the time we spend in your school to less than four hours. Each participating child will receive a free toothbrush along with a letter to the parent or guardian noting the results of the screening. Your school will incur no cost for participating.

We would like to ask for your support and the support of your teachers to carry out this important assessment of our children's oral health needs. The *Utopia* Health Division coordinator for this project is *Jane Doe*. She will be contacting you to answer your questions and to receive your approval for conducting the assessment. Her telephone number is (503) 555-1515 and her email is [idoemail.gov](mailto:idoemail.gov). The *Utopia* Department of Education contact for this project is *Susan Smith*. Her telephone number is (666) 666-6666.

As you know, poor oral health has been related to decreased school performance, poor social relationship, and less success later in life. For this reason, we thank you in advance for making this contribution to the health and well-being of *Utopia's* children.

Sincerely,

*Utopia* Health Division

*Utopia* Department of Education

Enclosure

**Sample Fax Back Form**

**UTOPIA SMILE SURVEY 2008 FAX-BACK**

Please return this fax to Jane Doe at (555) 555-5555.

\_\_\_\_ Yes, I want the children in my school to receive this free dental screening.

Please list the name of the person who should be contacted for scheduling the dental screening day:

Name of School: \_\_\_\_\_

Name of Contact Person: \_\_\_\_\_

Title: \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

**Thank-you for your willingness to participate in this important assessment.**



## Sample Positive Consent Cover Letter for Parents

Dear Parent:

Your child's school has been chosen to take part in the state health department's "Make Your Smile Count!" survey to learn about the health of children's teeth in your county and across the state. "Make Your Smile Count!" will help us plan future dental health programs. As you know, a healthy mouth is part of total health and wellness and makes a child more ready to learn.

With your consent, a dentist or dental hygienist will screen your child's teeth to check for tooth decay and other dental problems. Your child will receive a toothbrush and a letter to take home that tells you about the health of your child's teeth. This screening does not take the place of regular dental check-ups.

Please be assured that the dental screening will be carried out in a healthy manner. Dental gloves will be worn, and we will use a new, disposable, sterilized mirror and probe for each child, which will be thrown away after one use. The dentist or dental hygienist will follow all guidelines to prevent the spread of disease set by the Centers for Disease Control and Prevention (CDC) for this type of dental survey. Results of your child's screening will be added to those of other children, and your child will not be named in any "Make Your Smile Count!" report.

Please complete and sign the attached consent form. This will allow your child to be in "Make Your Smile Count!" Return the form to your child's teacher tomorrow.

Thank you for working with us to learn how to improve the dental health of the children of our state. If you have any questions about "Make Your Smile Count!," please contact Susan Smith at 333/555-5555 or via e-mail at [ssmith@doh.mystate.us](mailto:ssmith@doh.mystate.us).

Sincerely,

Enc.

## Sample Passive Consent Cover Letter for Parents

Dear Parent/Guardian:

Your child's school has been chosen to take part in the state health department's *Smile Survey*. The purpose of the *Smile Survey* is to gather information on the dental health needs of children throughout {state}. This will allow us to create a plan to improve dental care for all of {state}'s children.

If you choose to let your child participate, a dentist or dental hygienist will perform a one-minute "smile check" using only a mouth mirror. Dental gloves will be worn, and we will use a new, disposable, sterilized mirror for each child. Results of your child's assessment will be kept confidential, and your child will not be named in any *Smile Survey* report.

As a token of appreciation, your child will receive a toothbrush. We will also send home a letter to let you know if we find any dental problems. This screening, however, does not take the place of regular dental check-ups by your family dentist. Even if you have a family dentist, we encourage you to participate in the *Smile Survey*. By surveying all children in selected schools, we will have a better understanding of the dental health needs of children throughout {state}.

***If you do not wish for your child to have this quick "smile check", please check the NO box below and return the form to your child's teacher tomorrow. If you want your child to have a "smile check" you do not need to return this form.***

As you know, a healthy mouth is part of total health and wellness and makes a child more ready to learn. By letting your child take part in this dental screening, you will help contribute new information that may benefit all of {state}'s children. If you have any questions about the *Smile Survey*, please contact Susan Smith at (333) 555-5555 x1234 or by email at [ssmith@state.doh.gov](mailto:ssmith@state.doh.gov).

Sincerely,



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### ***Smile Survey***

***If you do not want your child to have a dental screening, please check the NO box, sign, and return to your child's teacher tomorrow.***

Child's Name: \_\_\_\_\_

Child's Teacher: \_\_\_\_\_

NO, I do not want my child to receive a dental screening

\_\_\_\_\_  
Parent/Guardian Signature

\_\_\_\_\_  
Date

## Sample Consent Form & Parent Questionnaire

Please complete this form and return it to your child's teacher tomorrow. Thank you.

Child's Name: _____	Child's Age: _____
____ <b>Yes, I give permission</b> for my child to have his/her teeth checked.	
____ <b>No, I do not give permission</b> for my child to have his/her teeth checked.	
_____ Signature of Parent or Guardian:	_____ Date:

Please answer the next questions to help us learn more about access to dental care. Your answers will remain private and will not be shared. If you do not want to answer the questions, you may still give permission for your child to have his or her teeth checked.

- During the past 6 months, did your child have a toothache more than once, when biting or chewing?  
 No       Yes       Don't know/don't remember
- About how long has it been since your child last visited a dentist? Include all types of dentists, such as orthodontists, oral surgeons, and all other dental specialists, as well as dental hygienists. (Check one)  
 6 months or less       More than 3 years ago  
 More than 6 months, but not more than 1 year ago       Never has been to the dentist  
 More than 1 year ago, but not more than 3 years ago       Don't know/don't remember
- What was the main reason that your child last visited a dentist? (Check one)  
 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.  
 Went for treatment of a condition that dentist discovered at earlier check-up or examination.  
 Other  
 Don't know/don't remember
- During the past 12 months, was there a time when your child needed dental care but could not get it?  
 No (Go to Question 6)       Yes (Go to Question 5)       Don't know/don't remember (Go to Question 6)
- The last time your child could not get the dental care he/she needed, what was the **main reason** he/she couldn't get care? (Check one)  
 Could not afford it       Health of another family member       Not a serious enough problem  
 No insurance       Difficulty in getting appointment       Dentist hours are not convenient  
 Dentist did not take Medicaid/insurance       No way to get there       Don't like/trust/believe in dentists  
 Speak a different language       Didn't know where to go       Other reason  
 Wait is too long in clinic/office       No dentist available       Don't know/don't remember
- Do you have any kind of insurance that pays for some or all of your child's MEDICAL OR SURGICAL CARE? Include health insurance obtained through employment or purchased directly, as well as government programs like Medicaid.  
 No       Yes       Don't know
- Do you have any kind of insurance that pays for some or all of your child's DENTAL CARE? Include health insurance obtained through employment or purchased directly, as well as government programs like Medicaid.  
 No       Yes       Don't know
- Which of the following best describes your child? (Check all that apply)  
 White       Black/African American       Hispanic/Latino  
 Asian       American Indian/Alaska Native       Native Hawaiian/Pacific Islander
- Is your child eligible for the free or reduced price lunch program?       No       Yes (**School children only**)

**THANK YOU FOR PARTICIPATING IN "MAKE YOUR SMILE COUNT!"**

## Sample Screening Results Letter for Parents

### UTOPIA DEPARTMENT OF HEALTH

Child's Name: \_\_\_\_\_

Dear Parent or Guardian,

As part of the *Make Your Smile Count* Survey, your child received a dental screening at school. No x-rays were taken and the screening does not replace an in-office dental examination by your family dentist. The results of the screening indicate that:

\_\_\_\_\_ Your child has no obvious dental problems but should continue to have routine examinations by your family dentist.

\_\_\_\_\_ Your child has some teeth which should be evaluated by your family dentist. Your dentist will determine whether treatment is needed.

\_\_\_\_\_ Your child has some teeth which appear to need immediate care. Contact your family dentist as soon as possible for a complete evaluation.

If you do not have a family dentist and you need help in obtaining dental care, you may contact (name of referral source for area).

## Sample Recording Form for Examiner Calibration

Child's Name: \_\_\_\_\_

Screener	Untreated	Treated	ECC (preschool)	Sealants (school age)	Urgency

**Untreated & Treated**

0=No

1=Yes

**Early Childhood Caries**

0=No

1=Yes, caries history on 1+ maxillary anterior teeth

**Dental Sealants**

0=No

1=Yes

**Treatment Urgency**

0=No obvious problem

1=Early dental care

2=Urgent dental care

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## 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."

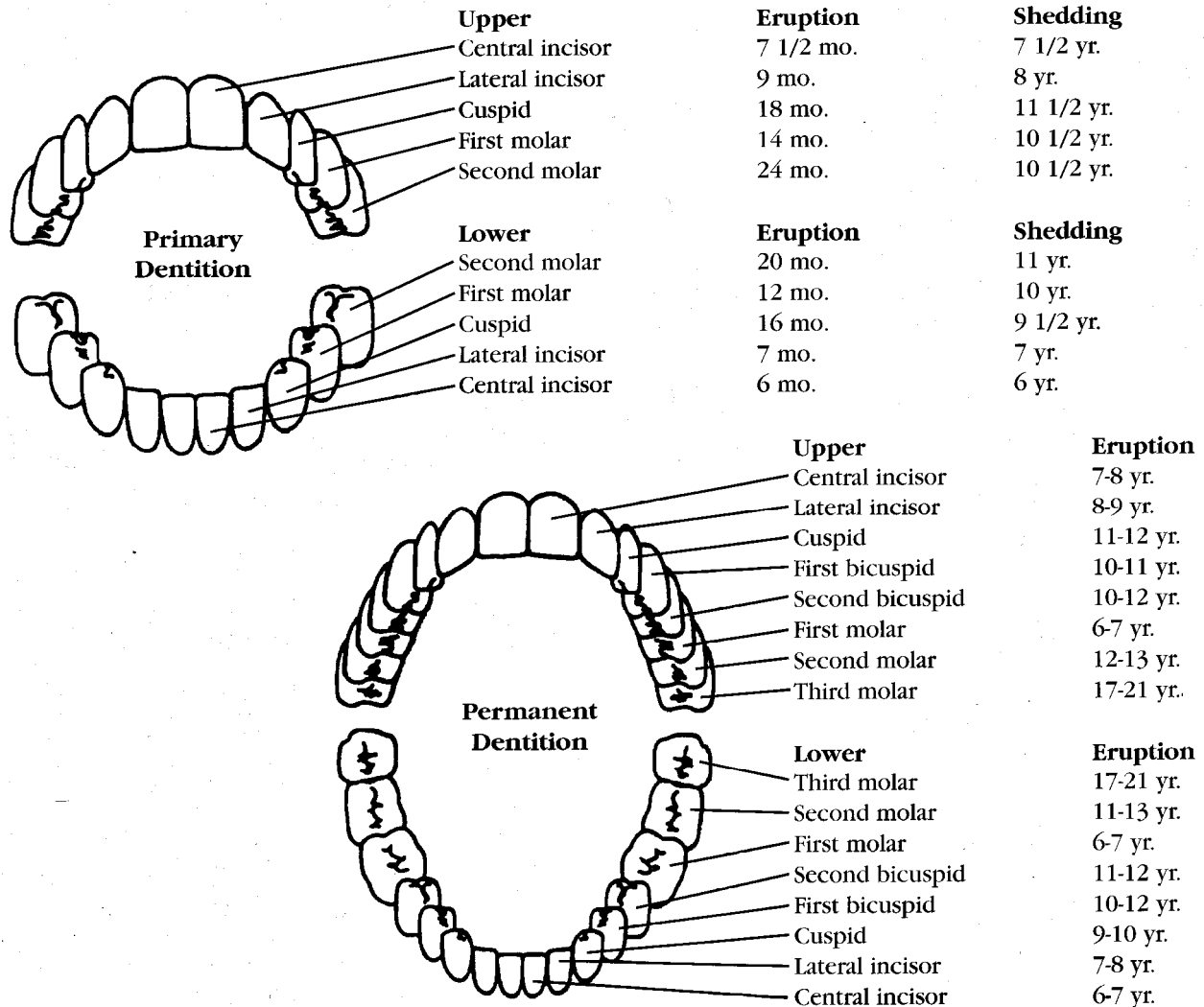
**Hispanic or Latino.** A person of Cuban, Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race. The term, "Spanish origin," can be used in addition to "Hispanic or Latino."

**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.

## ERUPTION PATTERNS

If school nurses or other non-dental professionals are being trained as screeners, you may need to review tooth types and eruption patterns. The following graphic displays the eruption patterns of the primary and permanent teeth.



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