



# National Health and Nutrition Examination Survey (NHANES)

## Oral Health Recorders Procedures Manual



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## Table of Contents

<b><u>Chapter</u></b>		<b><u>Page</u></b>
1	Overview to the Oral Health Component.....	1-1
	1.1 Introduction.....	1-1
	1.2 Data Collection.....	1-2
	1.3 Operations Overview .....	1-3
	1.4 Conducting the Oral Examination and Recording Oral Examination Data .....	1-4
	1.5 Documenting Incomplete and Omitted Examinations.....	1-4
	1.6 Report of Dental Exam Findings and Referral Letters .....	1-5
	1.7 Returning the SP to the Coordinator’s Area.....	1-6
2	Oral Health Examination Methods.....	2-1
	2.1 Preface .....	2-1
	2.2 Sequence of Oral Examination Subcomponents .....	2-1
	2.3 Pre-Examination Procedures .....	2-2
	2.4 Answering Study Participant Questions .....	2-3
	2.5 Guide to the Integrated Survey Information System (ISIS) .....	2-4
	2.6 General Data Entry Guidelines .....	2-5
	2.7 Editing the Examination Record .....	2-7
	2.8 Section Status Screens .....	2-7
	2.9 Examination Breakoffs .....	2-9
	2.9.1 Clearing a Screen.....	2-9
	2.9.2 Canceling an Assessment.....	2-9
	2.9.3 Canceling an Examination.....	2-10
	2.9.4 Exiting an Examination .....	2-10
3	Tooth Count.....	3-1
	3.1 Introduction.....	3-1
	3.2 Recording Procedures .....	3-1
	3.3 Screens.....	3-3

<b><u>Chapter</u></b>		<b><u>Page</u></b>
4	Dental Caries .....	4-1
	4.1 Introduction .....	4-1
	4.2 Examination Procedures .....	4-1
	4.3 Guidelines for Recording .....	4-3
	4.4 Guide for Referral and Followup .....	4-4
	4.4.1 Interaction with Heads-Up Display Screen .....	4-5
5	Dental Root Caries .....	5-1
	5.1 Background .....	5-1
	5.2 Examination Procedures .....	5-1
	5.3 Recording Procedures .....	5-1
	5.4 Guide for Referral and Followup .....	5-2
6	Dental Sealants .....	6-1
	6.1 Introduction .....	6-1
	6.2 Examination Procedures .....	6-1
	6.3 Guidelines for Scoring .....	6-1
	6.4 Recording Procedures .....	6-2
7	Recommendation for Care, Referrals, and Miscellaneous .....	7-1
	7.1 Introduction .....	7-1
	7.2 SP Exam Position Tracking Code .....	7-1
	7.2.1 Scoring Code .....	7-2
	7.2.2 Guidelines for Scoring .....	7-2
	7.3 Recommendation for Care and Referrals .....	7-3
	7.3.1 Recommendations for Care Recording Procedures .....	7-4
	7.3.2 SP Referral Information Screen Recording Procedures .....	7-6
	7.4 Post-Examination Procedures .....	7-9

<b><u>Exhibits</u></b>		<b><u>Page</u></b>
2-1	Guide to oral examination components.....	2-2
2-2	Heads-up display.....	2-4
2-3	Sample section status screen.....	2-8
3-1	Question box displaying surgical implant question.....	3-3
3-2	Tooth count screen.....	3-4
4-1	Coronal caries screen.....	4-5
4-2	Heads-up display screen.....	4-6
5-1	Root caries screen.....	5-3
6-1	Dental sealant screen.....	6-3
7-1	SP position screen.....	7-2
7-2	Recommendation for care screen.....	7-3
7-3	SP referral information screen.....	7-7

# Overview to the Oral Health Component

# 1

## 1.1 Introduction

The 2017-18 Oral Health Component of NHANES is sponsored by the following organizations:

- The Centers for Disease Control and Prevention (CDC)/National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)/Division of Oral Health (DOH);
- The National Institute for Dental and Craniofacial Research (NIDCR); and
- The CDC/National Center for Health Statistics (NCHS).

This component was developed by the DOH, NIDCR, and the NCHS. Some elements of the oral health component benefited from external collaboration

The purpose of this component is to assess the prevalence of oral conditions and diseases, such as tooth retention, dental caries, and sealants. A concurrent set of questions administered during the household interview assesses issues related to dental utilization, oral hygiene practices, and oral health quality of life.

Over the past five decades, oral and dental health characteristics collected in national surveys supported by the Federal Government have been critical for monitoring health status, risk factors for disease, access to preventive and treatment services, and other health characteristics among the general population and special subpopulations. These studies include the National Health and Nutrition Examination Survey (NHANES) and the National Health Interview Survey (NHIS), as well as special surveys such as the Hispanic Health and Nutrition Examination Survey and the children's and adult surveys conducted by the National Institute of Dental and Craniofacial Research.

Oral and dental diseases affect many in the United States. Dental caries and tooth loss remain significant problems affecting the Nation's oral health. Although average dental caries rates for school-age children have declined, 17 percent of children aged 6–9 years have untreated dental caries. Dental sealants, an effective caries prevention measure, have been underutilized in the United

States, with about 32 percent of children aged 6–9 having them. Among older adults, complete tooth loss affects about 1 in 7 adults aged 65–74 years.<sup>1</sup>

The 2017-18 oral health component will meet a critical need to continue monitoring trends in oral health status. The 2017-18 oral health component has a comprehensive caries evaluation that is similar to the assessment that was conducted during 2015–16. Likewise, the assessments of dental sealants are similar to those conducted during 2015–16. An evaluation of dental root caries will be continued using assessment criteria similar to that used in 1999–2004 and differentiating restorative dental materials used, introduced in 2015–16, will be continued in 2017-18. In addition to the examination component, oral health-related questions will be asked during the home interview covering topics on dental usage, quality of life, health promotion/disease prevention, and periodontal health. The 2017-18 oral health exam will produce sufficient data to monitor five Healthy People 2020 oral health objectives (addressing dental caries experience; untreated dental decay; no permanent tooth loss; complete tooth loss; and dental sealants). A question on the receipt of prevention information from oral health care providers will produce data to monitor a new Healthy People 2020 health objective.

This section provides a general overview of the oral health component and the mobile examination center (MEC) operations. Specific procedures for conducting the oral examination are described in the Oral Health Examiners Procedures Manual while specific procedures for recording data are described in the Oral Health Recorders Procedures Manual.

## 1.2 Data Collection

The MEC contains an automated computer system referred to as ISIS, the Integrated Survey Information System. This automated system is used to:

- Direct the flow of study participants (SPs) through the MEC, keeping track of which parts of the examination have been completed;
- Record interview and examination data;
- Perform edits on collected data; and
- Enter quality control data for each component.

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<sup>1</sup> Dye, BA, Li, X, and Thornton-Evans, G. Oral health disparities as determined by selected Healthy People 2020 objectives for the United States, 2009-10. NCHS Data Brief, no 104. Hyattsville, MD: National Center for Health Statistics, 2012.

The oral health examiner “calls” his or her observations (codes for oral health indices) that are directly entered into ISIS during the dental examination by MEC staff trained as dental recorders.

## 1.3 Operations Overview

This section summarizes the flow in the MEC and the responsibilities of the dental examiner and dental recorder.

- The oral health exam will be conducted by licensed dentists (D.D.S./D.M.D.). Data will be recorded by a separate dental recorder.
- The dental examiner (D.D.S./D.M.D.) arrives at the MEC prior to the session start. He or she needs to arrive early enough to complete the following tasks prior to the start of session:
  - Print and post the session schedule for the number of SPs and their ages;
  - Set up the oral health work area;
  - Check all equipment;
  - Make sure enough supplies are available for the session. A full session is quite busy and there will be no time to resupply; and
  - Complete the quality control for setup in ISIS.
- At the start of the session, each SP will check in with the coordinator at the workstation, just inside the MEC entrance. The coordinator will provide each SP with a bracelet with the SP’s name, ID number, and corresponding barcode.
- The dental examiner notifies the coordinator that the room setup is complete and the examiner is ready to receive SPs.
- The coordinator assigns a recorder to the Oral Health room and then assigns the SP.
- The recorder opens the SP’s record in ISIS and scans the barcode on the SP’s bracelet.
- The dental examiner completes the oral health subcomponents while the recorder enters the data in the ISIS system.
- The dental recorder escorts the SP to the reception area or next examination unless the SP is eligible for the imaging exam.
- The dental examiner sets up the room for the next SP.

- At the end of a session, the examiner does the following:
  - Cleans the oral health room;
  - Takes the biohazard trash bag to the collection area; and
  - Completes the End of Session quality control (QC) in ISIS.

## 1.4 Conducting the Oral Examination and Recording Oral Examination Data

Data for this component will be collected using a visual-tactile examination. This examination has several assessments. The specific assessment an SP receives is dependent on that person's age. Only SPs age 1 year or older are eligible for one or more parts of the oral health component. The specific oral health screenings and question modules, with appropriate age range, are listed below:

- Tooth Count (age 1 and older);
- Dental Caries (age 1 and older);
- Root Caries (18 years and older);
- Dental Sealants (3–19 years); and
- Miscellaneous Report of Findings (age 1 and older).

The oral health exam will be conducted in the oral health examination room. The assessments will be performed with the SP in a recumbent position and with the dental examiner seated behind the SP.

## 1.5 Documenting Incomplete and Omitted Examinations

If a scheduled examination is partially completed or not done at all, the reason must be recorded in ISIS. The NHANES dental examination has several subcomponents and not every SP receives every subcomponent. The primary reasons SPs do not receive certain subcomponents relate to age. However, there may be occasions when SPs are prevented from receiving the dental examination, or the dental examination begins but must be terminated prior to completion. These unusual

circumstances are recorded in ISIS. The age-dependent components are already accounted for by the system.

Specific reasons for terminating an examination or a subcomponent of an examination are recorded in ISIS on the status screen for the whole examination, or for the particular section of the examination. Section status screens are summary screens that appear at the end of each subcomponent section: dentition, recommendation for care, and imaging. If the subcomponent is partially complete or not done, the following reasons are programmed into the ISIS system and appear at the status screen:

- SP refusal;
- No time;
- Physical limitation;
- SP unable to comply;
- Equipment failure;
- SP ill/emergency;
- Safety reasons;
- Communication problem;
- Interrupted;
- Language barrier; and
- Other reason (a reason not programmed in the ISIS system requires a comment).

## 1.6 Report of Dental Exam Findings and Referral Letters

The last portion of the examination is the Recommendation for Care screen. The information on this screen is used to create the Report of Oral Exam Findings and an Oral Health Referral Letter, if needed. The information on this screen is partially automated—based on the examination data, and partially examiner driven—based on information the dental examiner gives the recorder. The Report of Findings will be handed to the SP when he or she leaves the MEC. It will indicate whether the SP should continue his or her usual dental care, see a dentist at his or her earliest convenience, see a dentist within 2 weeks, or see a dentist immediately. The Referral Letter is completed for those SPs

whose oral health warranted a concern that they see a dentist within the next 2 weeks or earlier. The report, Referral Letter, and related procedures will be discussed in Chapter 7.

## **1.7 Returning the SP to the Coordinator's Area**

After examination data are recorded and the examiner completes the Recommendation for Care screen, the recorder will escort the SP to the coordinator station or to another examination room. If the SP is eligible for the imaging exam, the SP will remain in the oral health room, and the examiner will escort the SP to his or her next location. The examiner will then prepare the oral health room for the next SP.

## 2.1 Preface

The oral health examination consists of five assessment modules and related sections covering the Report of Findings and Dental Imaging. The dentist conducts the oral health assessments and completes the Report of Findings. All examiner observations are directly entered by dental recorders.

Clinical examination data are entered by keyboard directly into computer terminals at the examination sites. This chapter details procedures for recording into the Integrated Survey Information System (ISIS). The examination procedures are discussed in the Oral Health Examiners Procedures Manual.

## 2.2 Sequence of Oral Examination Subcomponents

Most study participants (SPs) aged 1 year and older are eligible for some part of the oral health component. The subcomponents are conducted in the following order:

- Tooth Count (age 1 and older);
- Dental Caries (age 1 and older);
- Root Caries (18 years and older);
- Dental Sealants (3-19 years); and
- Miscellaneous/Report of Findings (age 1 and older).

The assessment procedures and methods are discussed in the following sections of this manual. The assessment sequences follow the sequences shown on the ISIS screen. Each assessment has its own sequence.

Exhibit 2-1 lists the oral examination components in the sequence in which they are conducted. Included on the table are eligible ages of the SP for each examination component and whether the component triggers a referral.

**Exhibit 2-1. Guide to oral examination components**

Assessment	Age	Referral match
<b>1. Dentition</b>		
Tooth Count	1+	No
Dental Caries	1+	Yes
Root Caries	18+	Yes
Dental Sealants	3-19	No
<b>2. Recommendation for Care</b>	1+	

The assessment sequences of the examination follow the order shown on the corresponding ISIS screen, which is usually arranged by quadrants in the mouth. Each examination component has its own pattern sequence and order within the sequence. At the end of each dental component, a component status screen appears indicating whether that component is complete, partially complete, or not done. Reasons for partially completed or omitted exams are to be defined on these screens.

## 2.3 Pre-Examination Procedures

1. The dental examiner will select the Dental Examination icon from the introductory window of the automated system at the start of a session.
2. The examiner will enter his or her password when prompted at the beginning of each session.
3. The recorder will open a new examination when an SP has been assigned to the room.
4. The recorder will enter his or her password when prompted.
5. The recorder will then scan the SP's identification bracelet and verify the SP's name and identification number displayed on the screen.

6. The examiner will explain the process to the SP in his or her own words and include the following facts:
  - The dental exam that I am about to perform is for study purposes only and is not a substitute for a dental exam that you would normally receive by a dentist.
  - I will be entering numbers and letters that have meaning only for this study into the computer.
  - I will be looking at your teeth and may touch your mouth, teeth, gums, or dental appliances.
  - You may briefly experience possible gum tenderness, minor gum bleeding, and potential dislodging of an already loose dental filling or material following the dental examination.
  - I would like to remind you that you can stop the exam at any time and you are free to ask questions at any time.
  - I may be able to give you some very general information regarding what I saw at the end of this exam.

## 2.4 Answering Study Participant Questions

It is very important that the D.D.S./D.M.D. answer questions raised by the SPs. Some of their concerns about the oral health exam and appropriate responses might be the following.

- **Treatment.** If the SP asks, assure him or her that the exam will not include treatment, x-rays, a drill, or anesthesia. The examiner will use only a dental mirror and a #23 dental explorer to examine the mouth.
- **Existing dental work.** The exam will not interfere with any existing dental work such as fillings, bridges, or orthodontic braces. The examiner may ask the SP to remove any complete or partial dentures for intraoral inspection.
- **AIDS (acquired immune deficiency syndrome).** The Centers for Disease Control and Prevention, part of the U.S. Public Health Service, has established standard practices for dentists and staff to use to prevent the spread of diseases, viruses, and bacteria, and these procedures are strictly observed by the staff on this study. The precautions used in this study are the same as those maintained in dental offices.

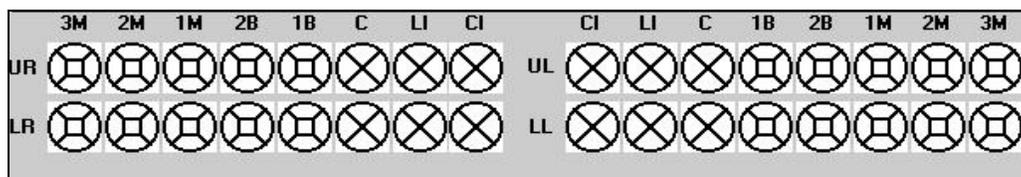
- **Qualification of the examiner.** I am a licensed dentist and I have been trained by a licensed dentist with expertise in conducting dental surveys.
- **What do you do with all of my information—does my dental information remain private?** The CDC summarizes the information to produce national estimates of tooth decay, missing teeth, and other oral conditions. Your dental information will remain confidential and researchers will not be able to link your dental data directly to your private data to identify you.

## 2.5 Guide to the Integrated Survey Information System (ISIS)

The dental recorder is responsible for entering the dental “calls” directly into ISIS during the examination. Detailed instructions for proceeding through each screen are provided in this chapter. The ISIS screens are organized as follows:

- **Demographic information.** On the bar located at the top of the screen, the SP ID, name, age, gender, date, and session time are displayed.
- **Heads-up display.** This is a summary screen (Exhibit 2-2) that is displayed in the upper portion of the screen after the Tooth Count is completed.

Exhibit 2-2. Heads-up display



Space for each surface of each tooth is provided and conditions, such as caries and restorations, are indicated with different symbols as the recorder enters them.

The mouth diagram is shown as if the examiner is facing the SP with the central incisors of each quadrant in the middle of the diagram and the third molars at each end. Tooth surfaces are displayed in the pattern commonly used in diagnostic charts and are defined as follows:

- Occlusal – top or biting surface;
- Lingual – surface toward the tongue;
- Facial (buccal) – surface outside, toward the lips and cheeks;

- Mesial – interproximal surface towards the midline of the arch; and
- Distal – interproximal surface away from the midline of the arch.

### ***Examination Data Entry***

The various examination data entry screens have the following similarities:

- Each row represents a quadrant or portion of a quadrant.
- The quadrants are displayed in the following order: upper right, upper left, lower left, and lower right.
- The data entry spaces correspond to the teeth being examined in that quadrant for that assessment.
- The teeth are identified with codes along the top of the row to identify the teeth as follows:
  - CI = Permanent Central Incisor/Primary Central Incisor
  - LI = Permanent Lateral Incisor/Primary Lateral Incisor
  - C = Permanent Cuspidw/Primary Cuspid
  - 1B/1PM = 1st Bicuspid/1st Primary Molar
  - 2B/2PM = 2nd Bicuspid/2nd Primary Molar
  - 1M = 1st Permanent Molar
  - 2M = 2nd Permanent Molar
  - 3M = 3rd Permanent Molar

## **2.6 General Data Entry Guidelines**

This section summarizes key data entry guidelines. Directions regarding allowable codes, acceptable ways to move through a screen, allowable shortcuts, and mandatory quality control (QC) checks **by screen** are provided in this chapter.

Movement within the dental examination program can be accomplished by using the mouse or the keyboard. In most instances, using the keyboard is easier and more efficient. The keys are to be used in the program as follows:

TAB	Use this key to move <b>forward</b> from data entry field to data entry field within a screen whenever the program does not automatically move from field to field for you.
Shift TAB	Use this key to move <b>backwards</b> from data entry field to data entry field within a screen.
Backspace	Use this key within a data entry field to erase an entry backwards, one digit at a time.
Enter	Use this key to move to the next screen after all allowable entries are made on the current screen.
F11	Use this key to clear data on a screen and restart the assessment (see Section 2.9.1).
F12	Use this key to stop in the middle of an assessment and continue with the remainder of the exam.

The mouse is used in a variety of ways as follows:

- To move the cursor to any data entry field within a screen;
- To display a list of allowable responses on a “pick list” by clicking on the down arrow (▼) to the right of the data entry field;
- To activate shortcuts by clicking on a box that will trigger fields to be filled or shaded, as appropriate; and
- To move to the next screen after all allowable entries are made on a screen by clicking on the right arrow button on the lower right portion of the screen.

Improper entries will cause the system to beep, display an error message in the lower left portion of the screen, and prohibit movement within the screen until a valid response is entered. If necessary, the recorder should provide the examiner with the explanation of the error as defined in the error message.

In some instances, a “9” will appear in one or more shaded data entry fields on a screen when the screen is initially displayed. This code is termed a “hard 9” and is triggered by specific codes entered on the Tooth Count screen (see Section 2.7). The program does not allow the recorder to overwrite

the 9 with any other code. ISIS will skip these fields and the cursor will move to the first blank field space on the screen. To change this “hard 9,” the tooth count code for that tooth must be changed on the Tooth Count Screen.

## 2.7 Editing the Examination Record

ISIS automatically edits responses as the recorder enters them. Below are a few of the edits that the system provides.

- **Range edit checks.** The system checks to make sure that the value entered by the recorder is valid as specified in this chapter.
- **Tooth count edit checks.** The system checks against the tooth count calls during all subsequent assessments. This ensures calls are consistent across assessments—in other words, that teeth coded as missing in the tooth count are not assessed in most of the subsequent assessments and primary teeth are not assessed in subsequent assessments that look only at permanent teeth.

When the system determines that a tooth should not be assessed for a particular component based on the tooth count results, the tooth space on the screen is shaded and “hard coded” with a 9 (cannot be assessed) code.

- **“Hard 9” checks.** The system does not allow the recorder to overwrite a “hard 9” code with another code. “Hard 9” codes are determined by the system as a result of the tooth count.

## 2.8 Section Status Screens

After each component section (Dentition, and Recommendation of Care), a status screen is displayed, which is used to document the outcome of that section (Exhibit 2-3). The screen consists of two parts: the first part is used to record an overall completion code, and the second part is used to record the reasons for incomplete examinations.

The overall completion code is automatically assigned by the system based on the results during the course of the dental examination. One of three outcomes is selected:

- Complete;
- Partial complete; or
- Not done.

Exhibit 2-3. Sample section status screen

Dental: Stand:806 Session:808491 03-Dec-98 05:30 pm - 09:30 pm

File View Utilities Reports Window Help

Dental: Stand:806 Session:808491 03-Dec-98 05:30 pm - 09:30 pm

SP ID: 164826 Name: White, Gary Age: 40 years Gender: Male Date: 11/16/1998 Time: 01:58 PM

Dentition Section Status

	3M	2M	1M	2B	1B	C	LI	CI		CI	LI	C	1B	2B	1M	2M	3M
UR	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	UL	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
LR	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	LL	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗

Status

Complete

Partial

Not Done

Comments

Other text

5 of 5

End of Section Close Exam Finish

Ready

The system automatically defaults to complete, partial, or not done based on the data that were entered on all screens for that section. Whenever a “partial complete” or “not done” outcome is assigned, ISIS prompts the recorder to enter a reason for the incomplete exam. There are 11 choices the recorder can select from. These choices are standard throughout the survey and are listed below.

1. SP refusal
2. No time
3. Physical limitation
4. SP unable to comply
5. Equipment failure
6. SP ill/emergency
7. Safety reasons
8. Communication problem

9. Interrupted
10. Language barrier
11. Other (specify). If “Other (specify)” is chosen, the “Other text” field is enabled and the recorder must enter a comment in order to continue.

## 2.9 Examination Breakoffs

There are several types of examination breakoffs. In the first scenario, you may need to clear an assessment and restart it. In the second scenario, you may need to break off during a particular assessment and still continue with the examination. In the third scenario, you may need to break off during a particular assessment and cancel the rest of the examination. The procedures to be followed for these situations are provided in this section.

### 2.9.1 Clearing a Screen

There are various reasons for clearing a screen. For example, the examiner inadvertently calls the codes for one assessment while the recorder is entering data on another screen, or the examiner is calling assessments for a particular tooth and the recorder is entering that call for a different tooth. If the situation cannot easily be resolved, the screen is cleared and the assessment is restarted using the <F11> key.

If the <F11> key is used on any screen other than the Tooth Count screen, only the data on the selected screen are cleared. However, if the <F11> key is used on the Tooth Count screen, all data on the Tooth Count screen as well as data on the following screens are cleared. This is because the tooth count calls drive subsequent assessments.

### 2.9.2 Canceling an Assessment

There are times when an assessment must be interrupted before it is completed but the examination can continue. In these situations, the F12 key is used to end the assessment, regardless of how much has been completed. The examiner will then continue with the next assessment. Any data entered on the screen before the screen is “canceled” will be saved.

To cancel an assessment and proceed with the next assessment:

- Press the F12 key. The screen is closed with the data entered up to this point saved. The next screen in the examination is displayed.
- Begin data entry on the new screen.

### 2.9.3 Canceling an Examination

There may be situations when an examination is terminated early—for example, the SP faints, the session ends, or the MEC shuts down because of severe weather. To cancel an examination before it is finished, the recorder uses the CLOSE EXAM button on the navigation bar and then selects an option under the comments tab as to the reason why the exam was closed.

**Note:** All data entered up until the point you exited is saved. The “Open an Existing Examination” icon on the toolbar is used to reenter the examination. The program requires the user to scroll forward through the screens until the first blank screen or partially blank screen, depending on how you exited, is displayed. The examination is continued from this point forward.

### 2.9.4 Exiting an Examination

The FINISH button, located on the navigation bar, is used to exit an examination once the SP-specific assessments are completed. This button is enabled only when the Recommendation-for-Care Section Status screen is **completed**; it is not enabled on any other screen. To exit the examination on any other screen, the CLOSE EXAM button is used as specified in the previous section.

To exit an examination once it is completed:

- Use the mouse to click on the FINISH button.
- The SP’s examination record is cleared. All data entered are saved.
- The system returns to the dental program menu screen and is ready for the next SP examination.

### 3.1 Introduction

Study participants (SPs) 1 year and older receive this examination assessment, which includes the assessment of the number of primary and permanent teeth present and the presence of surgical implants. Information on surgical implants is obtained from preliminary questions asked by the examiner. The examiner will proceed to examine the SP, utilizing any guidance provided during the questioning.

### 3.2 Recording Procedures

The recorder enters the code called by the examiner for the question about whether the SP has ever had a tooth replaced with a surgical implant. The recorder then uses the next screen (Tooth Count screen) to enter the tooth count calls made by the examiner.

**Note:** It is extremely important that the correct calls be made by the examiner and entered correctly by the recorder on this screen, since the outcome of this assessment determines how other assessments are performed and coded. For example, the sealant examination is only implemented on dentate SPs (i.e., having teeth).

The results of the tooth count are entered on the Tooth Count screen, which contains four rows of eight data entry spaces. Each row represents a quadrant. The quadrants are displayed in the following order: upper right, upper left, lower left, and lower right. The eight data entry spaces correspond to the eight teeth per quadrant and are listed in order from the central incisor to the third molar. Abbreviations are provided along the top of the row to identify the teeth as described in Section 2.5.

The first five data spaces can store codes for primary or permanent teeth, while the last three store codes only for permanent teeth. Only one code per tooth should be entered. The codes for the tooth calls for this component are as follows:

- 1 = Primary tooth (deciduous)
- 2 = Permanent tooth
- 3 = Dental implant
- 4 = Tooth not present
- 5 = Permanent dental root fragment

Whenever a call in the Tooth Count is made that precludes an assessment later on (such as primary teeth not eligible for assessment of incisor trauma), the program automatically shades the affected tooth in the subsequent assessment. A “Cannot be assessed” code is also automatically displayed in the shaded data entry space. This code is “9” and the shaded “9” code is termed a “hard 9.” Note that the program does not allow the recorder to overwrite the 9 with any other code in subsequent assessments. The Integrated Survey Information System (ISIS) will skip these tooth positions and the cursor will move to the first blank tooth space. To change this “hard 9,” the Tooth Count code for that tooth must be changed on the Tooth Count screen.

In the rare event an SP is edentulous:

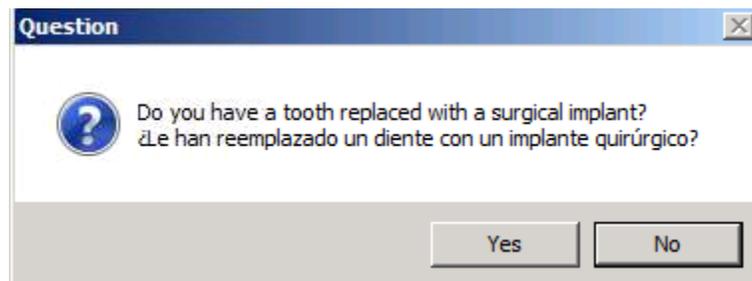
1. There is a box on the screen labeled “Edentulous,” which must be checked if the SP is edentulous. Simply recording all “4s” in the tooth spaces will not suffice for coding the SP as edentulous.
2. Natural teeth used as an overdenture abutment would be coded as a “5.” Any retained root fragments under denture plates will be coded as a “5” as well.

Retained root fragments are classified as any permanent residual tooth structure that is predominantly composed of dental root structure with more than 90 percent of the coronal structure (tooth crown) destroyed by caries and occupies a dental position within the dental arch. Because multi-rooted posterior teeth may present as multiple root tips, the dental examiner will assign multiple root tips to the appropriate dental position in the arch and code accordingly.

### 3.3 Screens

In order to record data in the system for the tooth count, the recorder must first record whether there are surgical implants present by answering the question “Have you ever had a tooth replaced with a surgical implant?” as shown in Exhibit 3-1. The examiner asks this question to SPs ages 13+ and the recorder enters “Y” for “Yes” or “N” for “No” depending on the SP’s answer. Regardless of the SP’s answer, the program displays the Tooth Count screen (Exhibit 3-2).

**Exhibit 3-1.** Question box displaying surgical implant question



When “Yes” is selected from the question box, the program will prefill the Implant box on the Tooth Count screen. When “No” is selected from the question box, the program will not prefill the Implant box on the Tooth Count screen.

**Note:** The information in the “Implant” box can be changed directly on the Tooth Count screen *without* returning to this question box by unchecking the implant box.

Exhibit 3-2. Tooth count screen

Oral Health: Stand:430 Session:430940 03/07/2005 08:30 am - 12:30 pm

SP ID: 314779 Name: HARRIS\_7, MARIA Age: 31 years Gender: Female Date: 10/02/2008 Time: 03:52 PM

**Tooth Count**

Permanent	CI	LI	C	1B	2B	1M	2M	3M	
Primary				1PM	2PM				
UR	<input type="checkbox"/> Implant								
UL	<input type="checkbox"/> Edentulous								
LL	<input type="checkbox"/>								
LR	<input type="checkbox"/>								

1 of 2

End of Section Close Exam Finish

## 4.1 Introduction

The NHANES caries assessment is a comprehensive dental surface-by-dental surface evaluation for the presence of untreated caries and dental restorations.

## 4.2 Examination Procedures

Each SP aged 1 year and older receives the coronal caries assessment. All teeth except the third molars are assessed. Each quadrant is dried with air only when needed and examined with a surface reflecting mirror and a No. 23 explorer. The examiner begins the assessment in the maxillary right quadrant with the right central incisor and continues distally through the second molar in the same quadrant. The same sequence is followed for the upper left, lower left, and lower right quadrants. Tooth surfaces are examined in the following order: lingual, facial (buccal), mesial, and distal for anterior teeth, and lingual, occlusal, facial, mesial, and distal for posterior teeth. The examiner will mentally accumulate surface calls for a given tooth, and then dictate the calls to the recorder.

The codes characterizing a whole tooth condition are referred to as “tooth calls.” The allowable codes are as follows:

S = Sound permanent tooth (no decay or filling on any surface)

Z = Permanent tooth with surface condition

F = Permanent tooth with a restored surface condition

D = Sound primary (deciduous) tooth

K = Primary tooth with surface condition

A = Primary tooth with a restored surface condition

U = Unerupted tooth

E = Missing due to dental disease (caries/periodontal disease)

M = Missing due to other causes (orthodontic/traumatic or other nondisease)

R = Missing due to dental disease but replaced by a fixed restoration

X = Missing due to other causes but replaced by a fixed restoration

P = Missing due to dental disease but replaced by a removable restoration

Q = Missing due to other causes but replaced by a removable restoration

J = Permanent root tip is present but no restorative replacement is present

T = Permanent root tip is present but a restorative replacement is present

Y = Tooth present, condition cannot be assessed

B = Bypass

The codes characterizing the surface condition are referred to as “surface codes.” The allowable codes are set for caries and for filled teeth or restorations.

For caries (when tooth condition code of “Z” or “K” is called), the allowable codes are as follows:

0 = Lingual caries

1 = Occlusal caries

2 = Facial caries

3 = Mesial caries

4 = Distal caries

For filled teeth or restorations (when tooth condition code of “F” or “A” is called), the allowable surface codes are as follows:

0 = Lingual AMALGAM restoration

1 = Occlusal AMALGAM restoration

2 = Facial AMALGAM restoration

3 = Mesial AMALGAM restoration

4 = Distal AMALGAM restoration

5 = Lingual OTHER restoration

6 = Occlusal OTHER restoration

7 = Facial OTHER restoration

8 = Mesial OTHER restoration

9 = Distal OTHER restoration

C = Crown (non-specific full-coverage restoration)

### 4.3 Guidelines for Recording

The Coronal Caries screen is divided into eight rows, which correspond to the four quadrants of the mouth: upper right, upper left, lower left, and lower right. These quadrants are labeled on the left portion of the screen. The teeth are labeled across the top. Space to enter the overall caries tooth call and the individual surface caries is provided for each tooth except the third molars. There is space to enter codes for 7 teeth per quadrant. No more than 28 permanent teeth can be scored for each SP. Third molars, or wisdom teeth, are not scored for dental caries. The scoring system is set up to permit the calculation of the Decayed, Missing, and Filled Surface Index (DMFS).

If the tooth is permanent with no decay or filling on any surface, the examiner calls “S.” If the tooth is permanent and is not sound, the examiner calls “Z” and/or “F” with the appropriate surface condition codes as described below. “D” is entered for all sound primary calls, whereas “K” and/or “A” with the appropriate surface condition codes are entered if the primary tooth has surface conditions (caries, restoration). If the tooth is missing and characterized by one of the other “tooth” calls, the examiner calls out the appropriate letter (“U” through “X”).

The recorder records the appropriate tooth condition code in the first space for the tooth on the data entry row. After this first space, there is a separate block of data entry spaces to accommodate the surface calls for that tooth as necessary.

On the second row, if necessary, the recorder enters another code for the tooth condition followed by the surface calls for the next block of data entry codes. If the tooth does not warrant another surface code, the recorder enters a “B” to bypass that entry and move to the next tooth.

If the tooth is permanent with decay or restorations on one or more surfaces (Z and/or F), the examiner calls the number(s) that correspond(s) to the surface(s) having decay and/or a restoration. Some examples are listed below.

- If the examiner calls 0, 1, 2, 3, or 4 with a Z or a K, it means that there is decay on the surfaces of the tooth represented by those numbers.
- If the examiner calls 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9 with an F or an A, it means that there is a filling on the surface(s) represented by the number(s) called.
- If the examiner calls “C,” it means that there is a crown on that tooth.

Combinations of caries and restorations on **different** surfaces are allowed. This procedure continues to the second molar for each of the four quadrants of the mouth.

## 4.4 Guide for Referral and Followup

Any caries call (Z or K) flags an ISIS recommendation telling the SP to see a dentist at his or her earliest convenience (Level 3 recommendation). Levels of recommendation are discussed in detail in Chapter 8.

The examiner and recorder are both responsible for making sure that the calls the examiner makes are being recorded in the correct tooth space on the screen. In order to do this consistently, refer to each tooth position by its quadrant location and tooth location. For example, whenever a new quadrant is started or there is a long silence between calls, the recorder will prompt the examiner with the next blank tooth space, such as “upper left central incisor” (noted as “UL CI” on the screen).

In instances where all teeth in the upper and/or lower jaws are missing *for the same reason*, it is imperative that the examiner prompt the recorder to use the “Upper” and “Lower” fields to indicate the caries code. By doing so, the system will fill all teeth in that half mouth with the same code, and the SP will be scored with the appropriate half-mouth calls.

### 4.4.1 Interaction with Heads-Up Display Screen

As condition codes are entered on the Coronal Caries screen (Exhibit 4-1), the corresponding condition symbols are displayed on the Heads-Up Display screen (Exhibit 4-2). Red bullets symbolize caries, while restorations are symbolized by shading. No changes are made to implants (red circle with “I”) or missing teeth (red circle with slash) based on calls entered on this or subsequent screens.

**Exhibit 4-1. Coronal caries screen**

Stand:615 Session:615292 09/24/2010 05:30 pm - 09:30 pm

File View Utilities Reports Window Help

Stand:615 Session:615292 09/24/2010 05:30 pm - 09:30 pm

SP ID: 305619 Name: PHASE 1, MAUREEN Age: 18 years Gender: Female Date: 10/03/2014 Time: 01:44 PM

Coronal Caries

	3M	2M	1M	2B	1B	C	LI	CI		CI	LI	C	1B	2B	1M	2M	3M
UR	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗		⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
LR	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗		⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗

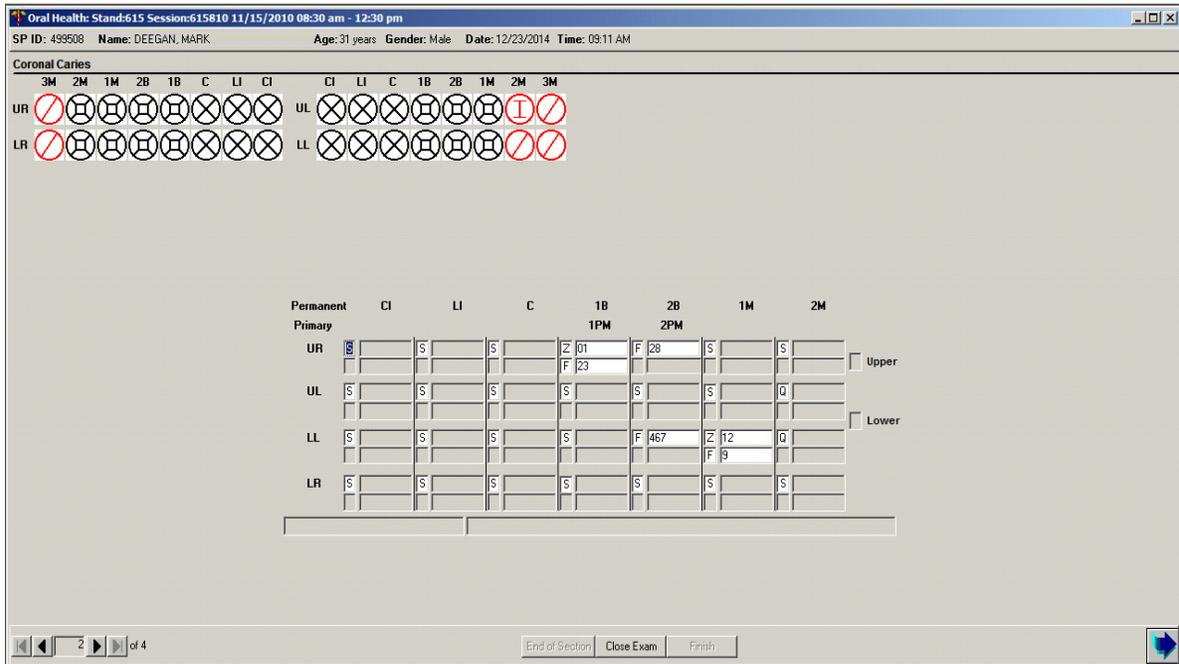
Permanent Primary

	CI	LI	C	1B	2B	1M	2M	
UR								Upper
UL								
LL								Lower
LR								

End of Section Close Exam Finish

Ready | Not connected to Coordinator | 01:47 PM

Exhibit 4-2. Heads-up display screen



## 5.1 Background

The NHANES assessment for caries prevalence on dental roots is a subject-level evaluation for the presence of untreated root caries and dental root restorations. The diagnostic criteria used for root caries in 2017-18 are similar to procedures used during NHANES 1999–2004. This root caries assessment will produce oral health data to monitor a Healthy People 2020 oral health objective (dental root caries experience).

This assessment is conducted only on study participants (SPs) aged 18 years and older.

## 5.2 Examination Procedures

Only teeth that have recession should be assessed for the presence of root caries and root-restorations. If recession is present but the root surfaces are sound, then the score is “2.” If recession is not present, the score is also a “2.” All exposed portions of a tooth’s root surface should be examined carefully in the following sequence: the examiner begins with the maxillary right quadrant with the right central incisor and continues distally through the second molar in the same quadrant. The same sequence is followed for the upper left, lower left, and lower right quadrants.

Each quadrant with recession is dried with air and examined with a surface reflecting mirror and a No. 23 explorer. The most difficult areas to examine are approximal surfaces in posterior teeth, particularly those that contain approximal restorations. Subgingival inspection is not recommended because few lesions are confined subgingivally and it may produce bleeding. Data are captured as overall presence or absence of root caries and overall presence or absence of root restorations.

## 5.3 Recording Procedures

A maximum of 28 permanent teeth will be examined for each SP. Third molars, or wisdom teeth, are not examined for root caries. The Root Caries screen (Exhibit 5-1) consists of two “whole

mouth” variables. Space has been provided to indicate whether **any** root caries or root restorations exist in the SP’s mouth.

The allowable “whole mouth” codes for root caries are as follows:

- 1 = Root caries detected
- 2 = No root caries detected
- 9 = Cannot be assessed

The allowable “whole mouth” codes for root restorations are as follows:

- 1 = Root restoration detected
- 2 = No root restoration detected
- 9 = Cannot be assessed

The allowable “whole mouth” codes for “other” root lesions (erosions/abrasions) are as follows:

- 1 = Root erosion or abrasion detected
- 2 = No erosion or abrasion detected
- 9 = Cannot be assessed

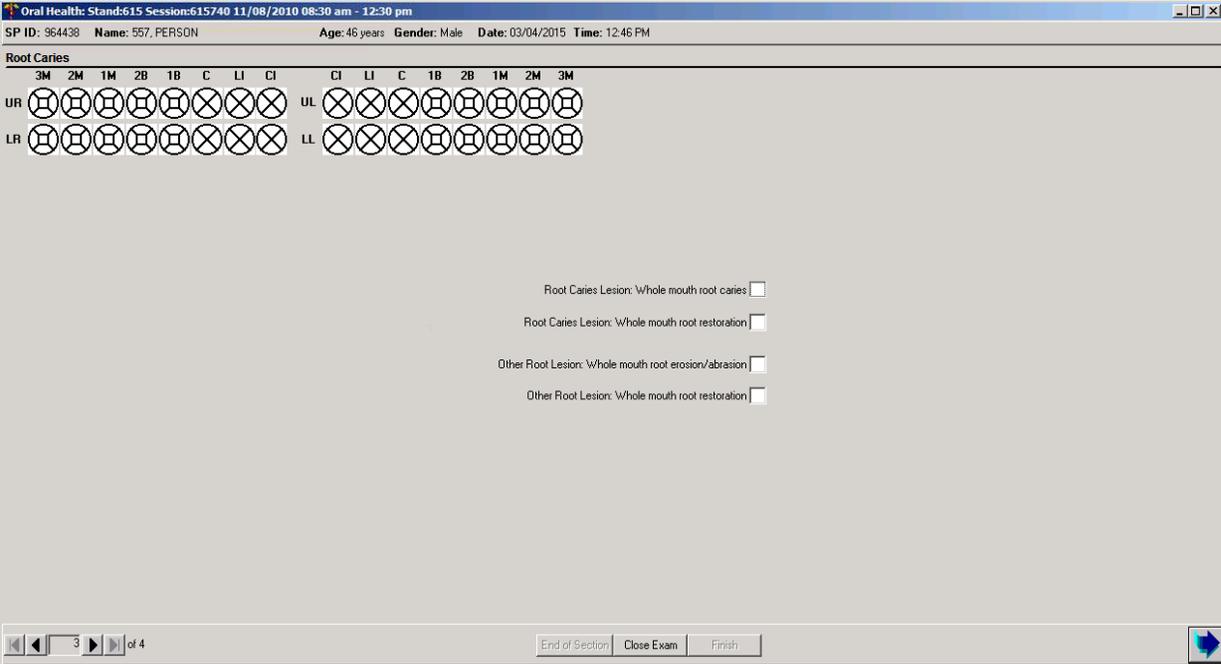
The allowable “whole mouth” codes for “other” root restorations are as follows:

- 1 = Root restoration detected placed for reasons “other” than caries
- 2 = No “other” root restoration detected
- 9 = Cannot be assessed

## 5.4 Guide for Referral and Followup

Presence of any root caries flags an ISIS recommendation telling the SP to see a dentist at his or her earliest convenience (Level 3 recommendation). Levels of recommendation are discussed in Chapter 7.

Exhibit 5-1. Root caries screen



## 6.1 Introduction

The dental sealant assessment is a tooth-level evaluation for the presence of preventive dental sealants. Sealants are professionally applied plastic films used to occlude the pits and fissures on occlusal, facial (buccal), and lingual surfaces of teeth. Sealants are applied to the teeth as viscous liquids and polymerize (or “cure”) in a short period of time. The purpose of sealants is to provide a physical barrier to the collection of substrate for cariogenic bacteria in the pits and fissures, and thus prevent dental caries from initiating or developing further.

## 6.2 Examination Procedures

SPs aged 3–19 years receive the sealant assessment. The sequence of the exam is the same as that of the tooth count. However, only the pitted or grooved surfaces of the first and second bicuspid/primary molars, first and second molars, and the permanent maxillary lateral incisors are to be **scored for the assessment**.

The calls for the sealant assessment are as follows: “0” = Sealant not present; “1” = Occlusal sealant on permanent tooth; “2” = Facial sealant on mandibular permanent tooth only; “3” = Lingual sealant on maxillary permanent tooth only; “4” = Occlusal sealant on **primary** tooth; and “9” = Cannot be assessed.

## 6.3 Guidelines for Scoring

The calls for the sealant assessment are as follows:

- 0 = Sealant not present
- 1 = Occlusal sealant present on permanent tooth
- 2 = Facial sealant present on permanent tooth (mandibular only)

3 = Lingual sealant present on permanent tooth (maxillary only)

4 = Occlusal sealant present on **primary** tooth

9 = Cannot be assessed

The following guidelines should be considered:

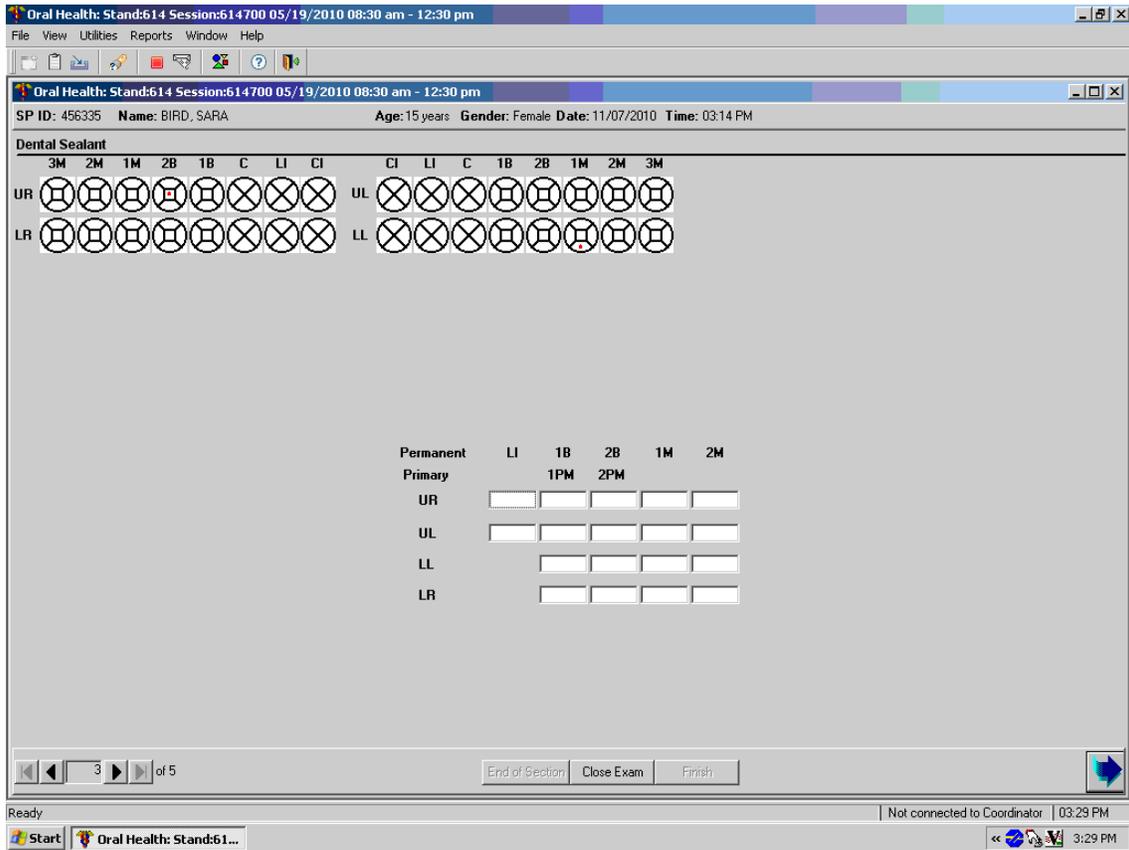
- “0,” “4,” and “9” are mutually exclusive calls.
- Combinations of “1, 2” and “1, 3” are allowed for permanent molars since more than one surface of these teeth may be sealed.
- Only “0,” “3,” or “9” are allowable codes for lateral incisors.
- Only “0,” “1,” “3,” or “9” are allowable codes for upper permanent molars.
- Only “0,” “1,” “2,” or “9” are allowable codes for lower permanent molars.

## 6.4 Recording Procedures

Sealant codes can be entered for the bicuspid/primary molars, first and second molars, and the permanent maxillary lateral incisors only (Exhibit 6-1). One code is permitted for primary teeth, bicuspid, and permanent lateral incisors, while multiple codes are permitted for permanent molar teeth. Refer to the previous section for allowable codes.

The recorder may use a designated shortcut key to record all “0s” if the SP has no sealants on the teeth to be assessed. In these instances, the examiner calls “All 0s” instead of calling “0” for each individual tooth assessed. The recorder presses the <F2> key to automatically fill “0” in all blank tooth spaces in each quadrant; thus, pressing the <F2> key four times will fill all four quadrants with “0s.”

Exhibit 6-1. Dental sealant screen



# Recommendation for Care, Referrals, and Miscellaneous

# 7

## 7.1 Introduction

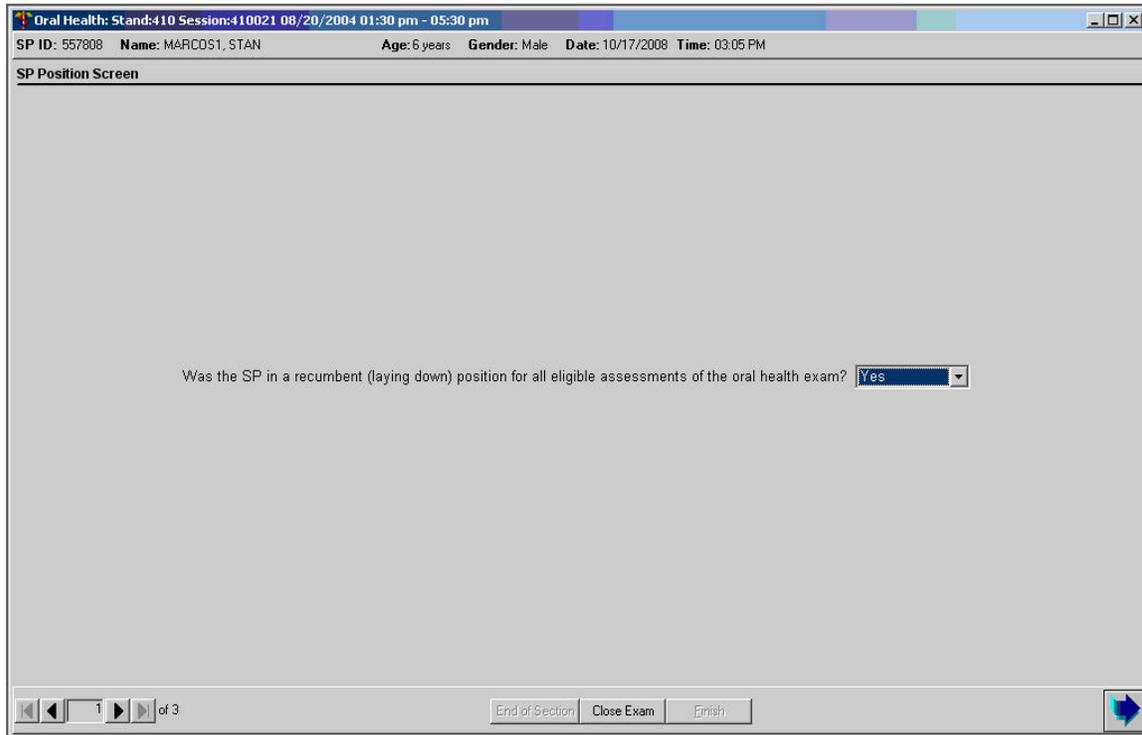
As stated earlier, each study participant (SP) will receive some general results about the dental examination he or she received in the mobile examination center (MEC). These general oral health results will be combined with general results from the other MEC examination components to create an overall Report of Findings for each SP. In addition, SPs who require immediate dental care will receive a separate Oral Health Referral Letter. Both of these documents are discussed in this chapter.

Some SPs may not be able to physically complete the oral health assessments in a recumbent position (i.e., lying down in the dental exam chair.) These individuals may use a wheelchair and thus experience difficulty in transferring to the dental exam chair; they may be very frail; or they may exceed the weight limitations of the dental exam chair (weight limit 300 lbs). Consequently, individuals who do not receive the entire oral health exam lying down in the dental chair are identified with a special tracking code.

## 7.2 SP Exam Position Tracking Code

Before the Recommendation of Care screen appears, an inquiry box will appear in ISIS asking if the SP was in a recumbent (lying down) position for all eligible assessments of the oral health exam (including tooth count through loss of attachment measures). See Exhibit 7-1. The examiner will dictate to the recorder if a “Yes” is applicable. If not, the examiner will dictate “No” to the recorder. Final discretion as to whether an SP should be examined on the dental chair in a recumbent position is left to the examiner’s professional judgment and the abilities/wishes of the SP.

Exhibit 7-1. SP position screen



## 7.2.1 Scoring Code

The codes for the SP exam position tracking variable is as follows:

1. 1 = Yes
2. 2 = No
3. 9 = Cannot assess

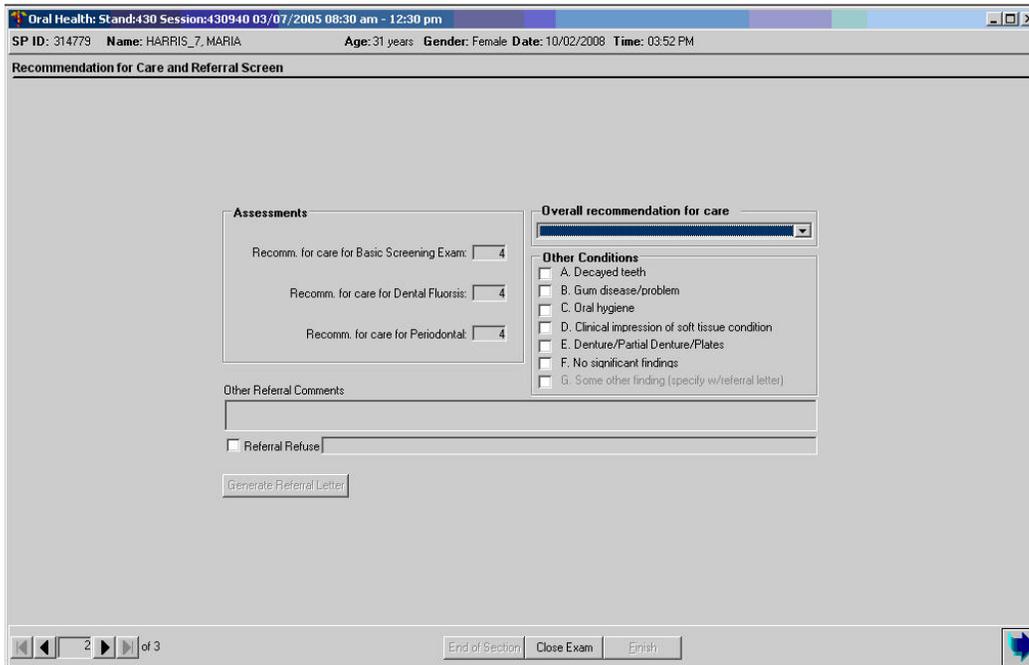
## 7.2.2 Guidelines for Scoring

If a child was held by a parent or guardian during the exam, the child will be coded as a “No.” If the child was lying down on the dental exam chair with a parent or guardian sitting on the chair as well, the child will be coded as a “Yes.” If, at any part during the oral health exam, a SP must sit up to complete any portion of an exam or to quit any exam component, the SP will be coded as a “No.”

### 7.3 Recommendation for Care and Referrals

The Recommendation for Care screen (Exhibit 7-2) is used to document the care level assigned by the examiners. The computer system generates a list of specific recommendations for followup care based on subcomponent evaluation. There are four levels of referrals defined in the system that are flagged for specific conditions. An overall Recommendation for Care level is assigned by the examiner based on the summary of care levels assigned to each individual assessment conducted during the exam and the examiner’s best professional judgment.

Exhibit 7-2. Recommendation for care screen



A Recommendation for Care level must be assigned to each and every SP by the examiner. If the SP does not have a condition that triggers a Level 1, Level 2, or Level 3 recommendation for any assessment, he or she will be flagged as a Level 4 examination Recommendation for Care referral. However, if the examiner finds any condition that warrants a different level of referral, he or she will override the system’s referral.

### 7.3.1 Recommendations for Care Recording Procedures

The Recommendation for Care screen is a multipart screen with a list of the assessments that may trigger a referral on the upper left side of the screen and a choice of referral levels on the upper right side of the screen. (The system automatically pulls data from the assessments performed to aid the examiner in determining which level of care should be recommended.) The lower portion of the screen is an open-ended comment section used by the examiner to clarify the reason for the recommendation.

**Allowable entries for this screen:**

Overall Recommendation is for one of the four levels of referrals (1 through 4) described above:

- Level 1. SP should see a dentist immediately.
- Level 2. SP should see a dentist within the next 2 weeks.
- Level 3. SP should see a dentist at his or her earliest convenience.
- Level 4. SP should continue with his or her regular routine dental care.

Other Conditions: (Code all that apply by using the mouse to click on the appropriate boxes.)

- A. Decayed teeth/dental restorations
- B. Gums/gum disease
- C. Oral hygiene
- D. Clinical impression of soft tissue condition
- E. Denture/partial denture/plates
- F. No significant findings
- G. Other finding (see comment)

**Note:** The condition F, “No significant findings,” is mutually exclusive of the other categories and cannot be combined with any other entry.

Other Referral Comments: Accepts up to 75 characters. Type in examiner's verbatim response. **This section must be completed whenever "some other finding" (Code G) is selected in the "Other Conditions" field.**

The "Assessments" section will be prefilled by the system. As noted earlier, if the codes entered for an assessment do not trigger a Recommendation for Care flag as defined in this chapter, the system automatically assigns a Level 4 to that assessment. If the codes entered for an assessment trigger a predetermined care level, the system automatically assigns that level. In the event that multiple codes are assigned within the assessment, the system automatically displays the code for the more severe recommendation.

**Note: Preassigned assessment levels are provided as a guide for the examiner only.**

The "Overall Recommendation" section should be based on the level of care determined by the examiner and entered by the recorder. **It is the examiner's responsibility to assign an overall examination recommendation for care level based on his or her best professional judgment and call the level to the recorder.**

The "Other conditions" section is located just below the "Overall recommendation" section. The dental examiner will choose to have one or more of the following conditions printed on the Referral Letter and Report of Findings:

- A = Decayed teeth/dental restorations
- B = Gum problems/disease
- C = Oral hygiene
- D = Clinical impression of soft tissue condition
- E = Denture/partial denture/plates
- F = No significant findings
- G = Other finding (see comment)

**Note: As noted earlier, condition "F" is mutually exclusive with all other calls and no other condition will be listed if selected.**

“Other finding” (code G) is primarily used when a referral letter needs to be generated. The “Other Referral Comments” section is for the examiner to record any open-ended comment up to 75 characters long. The purpose of this comment is to clarify the reason for the Level 1 or Level 2 referral, if necessary. **The information recorded in this space is printed on the Referral Letter the SP receives, so the information must be entered verbatim as provided by the examiner.**

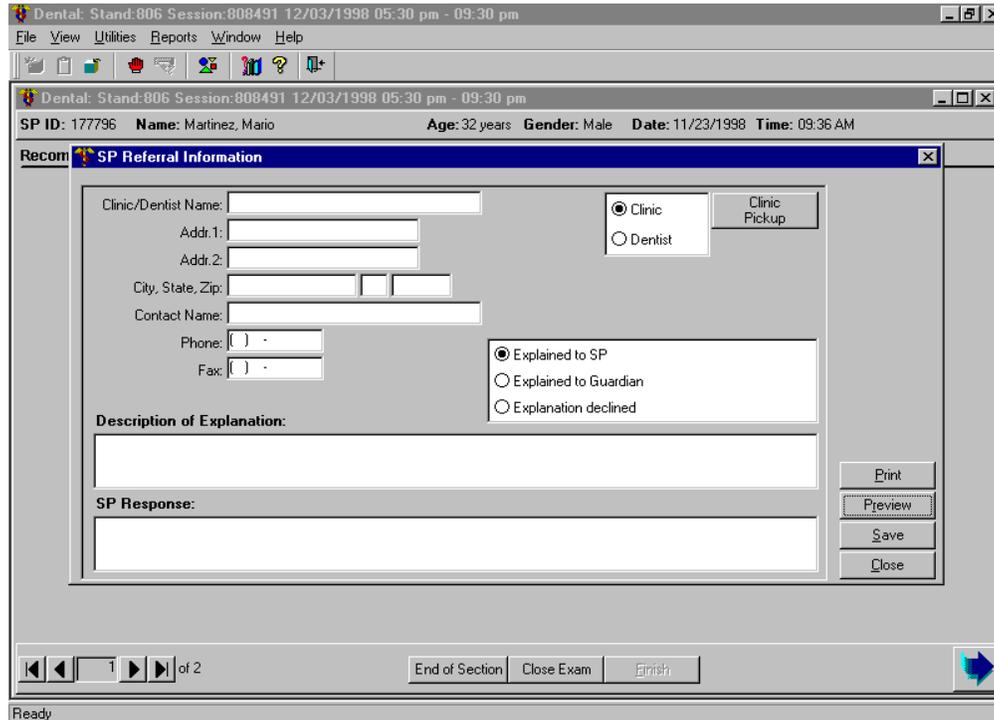
The “Referral Refused” and “Generate Referral Letter” boxes are enabled whenever a Level 1 or Level 2 recommendation is entered.

- If the SP refuses the referral, use the mouse to click on the “Referral Refused” box. A checkmark will appear and a letter will not be created. You will be required to enter a comment. This should include the reason the referral was refused and any comments the examiner may have that would be helpful. Proceed to the Recommendation for Care Status screen.
- If the SP accepts the referral, use the mouse to click on the “Generate Referral Letter” button. The SP Referral Information screen is displayed. Complete the screen as discussed in the next section.

### 7.3.2 SP Referral Information Screen Recording Procedures

The SP Referral Information screen (Exhibit 7-3) is used to record the information necessary to create the SP Referral Letter. It is displayed whenever the “Generate Referral Letter” button is selected on the Recommendation for Care screen.

Exhibit 7-3. SP referral information screen



To complete this screen, the examiner can ask the SP the name and address of his or her dentist or clinic to which the letter should be addressed. In addition, the examiner will record any statements that should be added regarding the nature of the explanation or the SP’s response. Then the screen is used to document to whom the referral was actually given—the SP or the SP’s guardian.

If the SP does not have a specific dentist or clinic to which the letter should be sent, the Clinic Pickup feature on the upper right hand portion of the screen can be used as follows:

- Use the mouse to click on either “Clinic” or “Dentist.”
- The list of NHANES referral dentists and/or clinic names will appear. The examiner asks the SP to choose one of the facilities listed, and that is the health care provider to whom the SP Referral Letter will be addressed. Use the mouse to click on the name the SP chooses.
- The name and address information for that dentist/clinic is transferred to the SP Referral Information screen and the referral list is cleared from the screen. If the dentist/clinic name has many characters, the information may not transfer over. You will then need to enter the information.
- Continue with data entry on the rest of the screen.

**Note: If the SP does not choose a clinic at the time, the name and address can be left blank and the dental referral info sheet should be given to the SP.**

All comments added in the “Description of Explanation” and “SP Response” dialogue boxes should be recorded verbatim as the examiner dictates. In sensitive cases, the examiner may ask the recorder to leave the room and complete the screen himself or herself with the SP still present. The examiner will then complete the examination or ask the recorder to come back and close the examination.

After completing the SP Referral Information screen, the following functions may be performed by choosing the menu options on the lower right-hand portion of the screen. Use the mouse to click on the appropriate button as follows:

- Print      This button will trigger the referral letter to be printed in the staff lounge. Use this function whenever the examiner needs to review a hard copy of this letter with the SP. ***Do not provide the SP with a copy of this letter.*** He or she will receive a copy of the letter along with the related documents when he or she leaves the MEC.
- Preview    This button is used to view the letter on the computer screen. You will be able to scroll through the letter to verify that all items have been inserted properly: the dentist name and address, the SP name, and the conditions entered on the Recommendation for Care screen. Any changes that need to be made must be made on the appropriate referral screen; changes cannot be made on this preview screen.
- Save        This button is used to save the letter so it may be printed by the coordinator when the SP leaves the MEC. It then closes the SP Referral screen and returns the user to the Recommendation for Care screen.
- Cancel     This button is used to cancel the generation of the SP Referral Letter and return the user to the Recommendation for Care Screen.

After the SP Referral Information screen is completed, the program returns to the Recommendation for Care screen. To proceed with the rest of the examination, press Enter and the system will proceed to the Recommendation for Care Section Status screen.

**Note: If the examination was not completed (e.g., SP ill, MEC closes, equipment malfunction, etc.), but the examiner felt that an SP Referral Letter should be generated, the CLOSE EXAM button, not the FINISH button, must be selected on the section status screen.**

## 7.4 Post-Examination Procedures

1. Complete the Dental Examination screens.
2. Click on the FINISH button.
3. Escort the SP to the next component room or back to the coordinator area for assignment to another component.