National Health
and Nutrition
Examination Survey

DENTAL
RECORDERS
PROCEDURES
MANUAL

Revised January 2003

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1. OVERVIEW TO THE ORAL HEALTH COMPONENT

1.1   Introduction

The oral health component of NHANES is sponsored by the following organizations:

■   National Institute of Dental and Craniofacial Research (NIDCR);

■   The Division of Oral Health of the Center for Chronic Disease Prevention and Health Promotion of the Centers for Disease Control and Prevention (CDC); and

■   The National Center for Health Statistics (NCHS).

The component was developed by the NIDCR, the Division of Oral Health, and the NCHS, with input from nationally recognized research scientists intramurally and extramurally, and public health leaders from the NIDCR, CDC, other U.S. Public Health Service agencies, universities, and state health departments.

The purpose of the NHANES oral health component is to assess the prevalence of oral diseases and conditions, such as dental caries, periodontal disease, edentulism, denture use, sealants, fluorosis, and traumatic injury in a national sample. The periodic assessment includes evaluation of tooth wear, functional occlusal contacts, and perceived overall quality of oral health.

Over the past four 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 Surveys (NHANES), National Health Interview Surveys (NHIS), National Medical Expenditure Surveys (NMES), and special surveys such as the Hispanic Health and Nutrition Examination Survey.

Oral and dental diseases affect many in the United States and constitute a major burden on the Nation. Dental caries, periodontal disease and tooth loss are significant problems affecting the Nation's oral health. Although average dental caries scores for school-aged children have declined, 50 percent of children still have caries. In addition, 94 percent of adults in the United States have

experienced caries. Dental sealants, an effective means of preventing caries, are underutilized in the United States, with only 19 percent of children aged 5-17 having them. In addition to caries, 15 percent of Americans have severe periodontal destruction and 11 percent have lost all their teeth.

The oral health component of the current NHANES will meet a critical need by accomplishing the objectives listed below. The NHANES oral health component will:

- Evaluate trends in oral and dental diseases;

- Evaluate trends in tooth retention and replacement;

- Estimate the burden of oral and dental diseases in the population as a whole;

- Estimate the burden of oral and dental diseases in subgroups of the population; and

- Assess progress in meeting national health objectives.

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 Chapter 4 of the *Dental Examiners Procedures Manual* while specific procedures for recording data are described in Chapter 3 of the *Dental Recorders Procedures Manual*.

1.2 Data Collection

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

- Direct the flow of 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.

The dental examiner "calls" his/her observations (codes for oral health indices) during the oral examination and the recorder enters these calls into ISIS.

1.3   Operations Overview

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

- The dental examiner 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 study participants (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;

    - Complete the quality control for set-up in ISIS; and

- 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 SPs name, ID number, and corresponding bar code.

- The examiner notifies the coordinator that the room set-up is complete and the examiner is ready to receive SPs.

- The examiner or recorder checks the daily appointment schedule and goes to the coordinator station to meet the SP and bring him/her to the oral health room.

- The recorder opens the SP's record in ISIS and wands the bar code on the SP's bracelet.

- The examiner asks SPs 16 years and older medical exclusion questions, and responds to SP questions. SPs aged 13 to 15 years will have a proxy form that the MEC manager completed with the SP's parent or guardian.

- The examiner completes the oral health subcomponents while the recorder enters the data in the ISIS system.

- The SP is escorted to the reception area or next examination by the dental examiner or recorder.

- The 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 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 sections. The specific section a study participant receives is dependent on their age and medical exclusions. The specific examinations, with the appropriate age range are listed below.

Medical Exclusions and Dental Condition Questions

■ Medical exclusion questions (13 years and older); and

■ Dental condition questions (16 years and older).

Dentition

■ Denture Questions (25 years and older);

■ Tooth count (2 years and older);

■ Coronal caries (2 years and older);

■ Root caries (18 years and older);

■ Dental sealants (2 to 34 years old);

■ Dental fluorosis (6 to 49 years);

■ Incisor trauma (6 to 29 years old);

■ Tooth wear (13 years and older); and

■ Functional occlusal contacts (25 years and older).

Periodontal Assessment

■ Loss of attachment (13 years and older); and

■ Bleeding from probing (13 years and older).

Recommendation for Care

- Report of Findings (2 years and older); and

- Referral letter (as needed).

1.4.1 Exclusion for Medical Conditions

SPs with certain medical conditions will not be permitted to participate in some components of the dental exam. The examiner must ask each SP 16 years or older if he or she has any of the conditions listed on the Medical Exclusion screen. The MEC manager obtains medical exclusion information for SPs 13 to 15 years old from the SP's parent or guardian. The MEC manager records the answers on a hard copy proxy questionnaire. The questionnaire accompanies the SP to the oral health room and is reviewed by the dental examiner. This information is then entered in ISIS by the dental recorder at the beginning of the examination. The responses to the medical exclusion questions along with the SP's age determine which dental examination components can be performed.

1.4.2 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 and medical exclusions. 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. Medical exclusions and these other unusual circumstances are recorded ISIS. The age-dependent components are already accounted for by the system.

Medical exclusions are recorded by a "yes" response to any of the medical conditions or circumstances listed in ISIS. This causes the system to automatically skip the excluded subcomponents.

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: medical exclusions and dental conditions, dentition, periodontal, and recommendation for care. 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 refused or uncooperative.** An "uncooperative" SP is one who is unwilling to cooperate, e.g., an infant or small child who cannot be persuaded to get through the examination.

- **No time.**

- **Physical limitation.** An SP may complete part of the examination because of a physical limitation, e.g., the examiner may not be able to do part of an examination because an SP has braces.

- **SP unable to comply.** SP who is willing but faces a barrier in complying with the protocol, e.g., a person who cannot sit in a position conducive to conducting the examination.

- **Equipment failure.** A piece of equipment is not working, or the examiner does not have the supplies necessary to complete an exam.

- **Medical reasons.** A circumstance where the SP's safety or medical condition is of concern to the examiner due to pain, fainting, seizure, bleeding, etc.

For example, if the SP experienced pain or fainted and the examiner elected not to complete certain exam portions, this would be treated as an aborted exam for medical reasons.

- **Safety Reasons.** If a SP is excluded from certain subcomponents because of a medical exclusion question, but has otherwise gone through the exam, it is recorded as a partially completed exam for safety reasons **not** a termination for medical reasons.

- **Room not available.**

- **Other reason.** A reason not programmed in the ISIS system requires a comment.

1.4.3 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 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/her usual dental care, see a dentist at his/her earliest convenience, see a dentist within 2 weeks, or see

a dentist immediately. The Referral Letter is handed to 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 depth in Chapter 3.

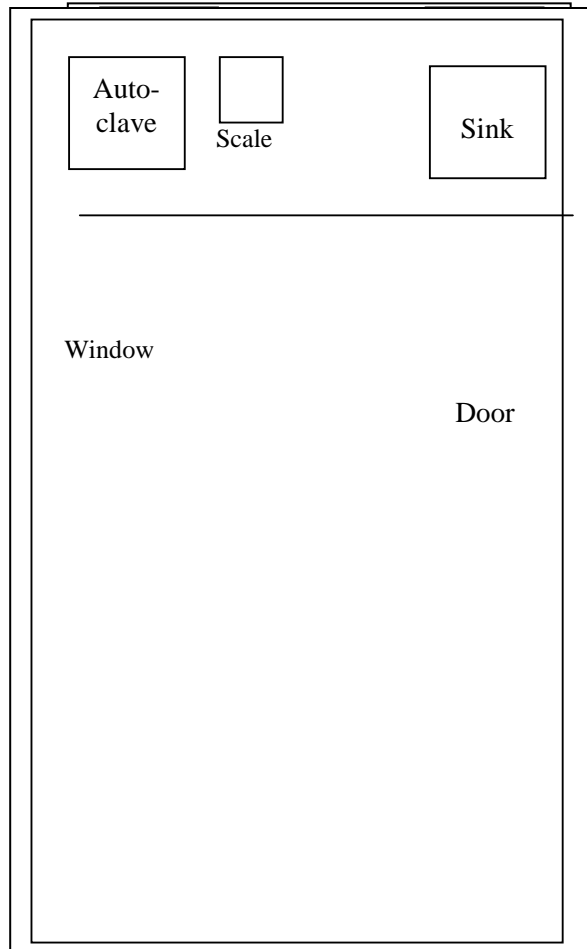### 1.4.4 Returning the SP to the Coordinator's Area

After examination data are recorded and the examiner completes the Recommendation for Care screen, the examiner or recorder will escort the SP to the coordinator station or to another examination room. The examiner will then prepare the oral health room for the next SP.

2. EQUIPMENT AND SUPPLIES

2.1   **Dental Examination Area in the MEC**

One room of the MEC has been designated for dental examinations and contains all of the equipment and supplies needed for the component. The room is 9' x 4' 9" and includes cabinets for storage, a counter top, and a sink with running water as shown below.

The dental examiner is responsible for taking an inventory of the supplies and maintaining all equipment needed to conduct the dental examinations.

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3. ORAL EXAMINATION METHODS

The oral examination component consists of a questionnaire and multiple clinical examination subcomponents. The dental examiner and dental recorder work as a team in conducting this examination for each study participant (SP).

Questionnaire and clinical examination data are entered by keyboard directly into computer terminals at the examination sites. This chapter details procedures for recording into this Integrated Survey and Information System (ISIS). The examination procedures are discussed in the *Dental Examiners Procedures Manual*.

3.1   Sequence of Oral Examination Components

Exhibit 3-1 lists the oral examination components in the sequence in which they are conducted. Included on the table are the eligible ages of the SP for each examination component and whether the component triggers a referral.

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 which indicates whether that component is complete, partially complete, or not done. Reasons for partially completed or omitted exams are to be defined on these screens. (Details are provided in Section 3.3.3.)

3.2   Before the Examination

1.   The examiner or recorder 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/her password when prompted.

3.   The recorder will open a new examination when a SP has been assigned to the room.

4.   The recorder will enter his/her password when prompted.

Exhibit 3-1. Guide to oral examination components

Assessment	Age	Referral Match
1 – ELIGIBILITY AND DENTAL CONDITION		
Medical Exclusion Questions	13+	No
Dental Condition Questions	16+	No
2 – DENTITION		
Denture Questions	25+	No
Tooth Count	2+	No
Caries: Coronal Surface	2+	Yes
Caries: Root Surface*	18+	Yes
Sealants	2-34	No
Fluorosis - Dean's Index	6-49	Yes
Incisor Trauma	6-29	Yes
Tooth Wear Scores	13+	No
Functional Occlusal Contacts Index	25+	No
3 – PERIODONTAL		
Loss of Attachment*	13+	Yes
Bleeding on Probing	13+	Yes
4 – RECOMMENDATION FOR CARE		

Instrument Packs
#5 Reflecting Mirror
#23 Explorer
Hu Friedy PCP-2 (2-4-6-8-10-12) Periodontal Probe
Endodontic Ruler

*Not to be performed if there is a medical exclusion.

5. The recorder will then pass the optical scan wand across 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/her own words and include the following facts:

   - This dental examination is not a substitute for examinations performed by the SP's dentist.

   - He/she will be looking at and lightly touching the SP's teeth.

   - He/she will be calling out numbers and letters to the recorder that only have meaning for the research project.

   - Some results will be provided when they leave the MEC.

In conducting the examinations, each SP will be examined in the same manner. An examiner should avoid the temptation of examining a SP who appears to be highly susceptible to a condition more thoroughly than a SP who appears less susceptible.

3.3 Guide to the Integrated Survey and 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, and gender are provided in addition to the examination date and session time.

Heads Up Display: This is a summary screen that is displayed in the upper portion of the screen after the Tooth Count is completed.
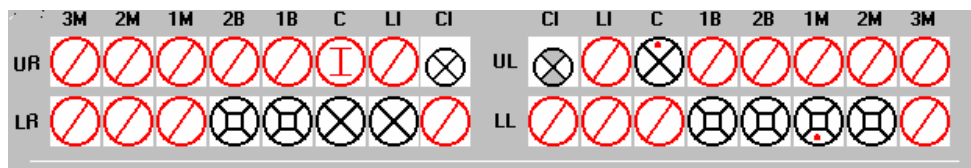
Space for each surface of each tooth is provided and conditions, such as caries and restorations, are indicated with different symbols as the recorder enters them.

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
> Distal - interproximal surface away from the midline of the arch

Tooth condition symbols are as follows:

Circle, black	=	Permanent tooth
Circle, small, black	=	Primary tooth
Circle with slash, red	=	Missing tooth
Circle with "I", red	=	Implant

Surface condition symbols are:

Bullet, red	=	Caries
Shading, gray	=	Restoration

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 Cuspid/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

3.3.1 General Data Entry Guidelines

A summary of the key data entry guidelines that are used to move within and between screens is provided in this section. Detailed instructions on the general ISIS are available in the MEC Subsystem Overview Manual. Detailed instructions on the allowable codes, acceptable ways to move through a screen, allowable shortcuts, and mandatory 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 following keys are to be used in the program as follows:

TAB	Use this key to move **forward** 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 **backwards** 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 once all allowable entries are made on the current screen.
F2	Use this key as a shortcut on two assessments, dental sealants and fluorosis. (See Sections 3.9 and 3.10, respectively.)
F11	Use this key to clear data on a screen and restart the assessment. (See Section 3.3.4.1.)
F12	The F12 key allows you to skip one or more assessments but still complete the "Recommendation for Care" section. It can be used for the following assessments: coronal caries, sealants, fluorosis, trauma, tooth wear, functional occlusal contacts and periodontal assessments. (See Section 3.3.4.2).

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 which will trigger fields to be filled or shaded, as appropriate;

■ To move to the next screen once all allowable entries are made on the screen by clicking on right arrow button on 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 (unless otherwise noted), 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 3.7). The program does not allow the recorder to overwrite the "9" with any other code. ISIS will skip these data entry fields and the cursor will move to the first blank data entry space on the screen. To change this hard "9," the tooth count code for that tooth must be changed on the Tooth Count Screen.

3.3.2   Editing the Examination Record

ISIS automatically edits responses as they are entered by the recorder. 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 to make sure calls are consistent across assessments, i.e., teeth coded as missing in the tooth count are not assessed in most of the subsequent assessments, primary teeth are not assessed in subsequent assessments which only look at permanent teeth (e.g., incisor trauma); etc.

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.

3.3.3   Section Status Screens

After each component section (medical occlusions and dental conditions, dentition, periodontal, and recommendation of care), a section status screen is displayed which is used to document the outcome of that section. 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 entered by the recorder during the course of the dental examination. One of three outcomes is selected:

- Complete;

- Partial complete; and

- Not done.

Whenever a "partial complete" or "not done" outcome is selected, the ISIS prompts the recorder to enter a reason for the incomplete. There are nine choices the recorder can select from. These choices are standard throughout the survey and are listed below.

1.   Safety exclusion;

2.   SP refusal;

3.   No time;

4.   Physical limitation;

5.   Communication problem;

6.   Equipment failure;

7.   SP ill/emergency;

8.   Interrupted; and

9.   Other (Specify) - If "Other specify" is chosen, the "Other text" field is enabled and the recorder must enter a comment in order to continue.

3.3.3.1 Sample Section Status Screen
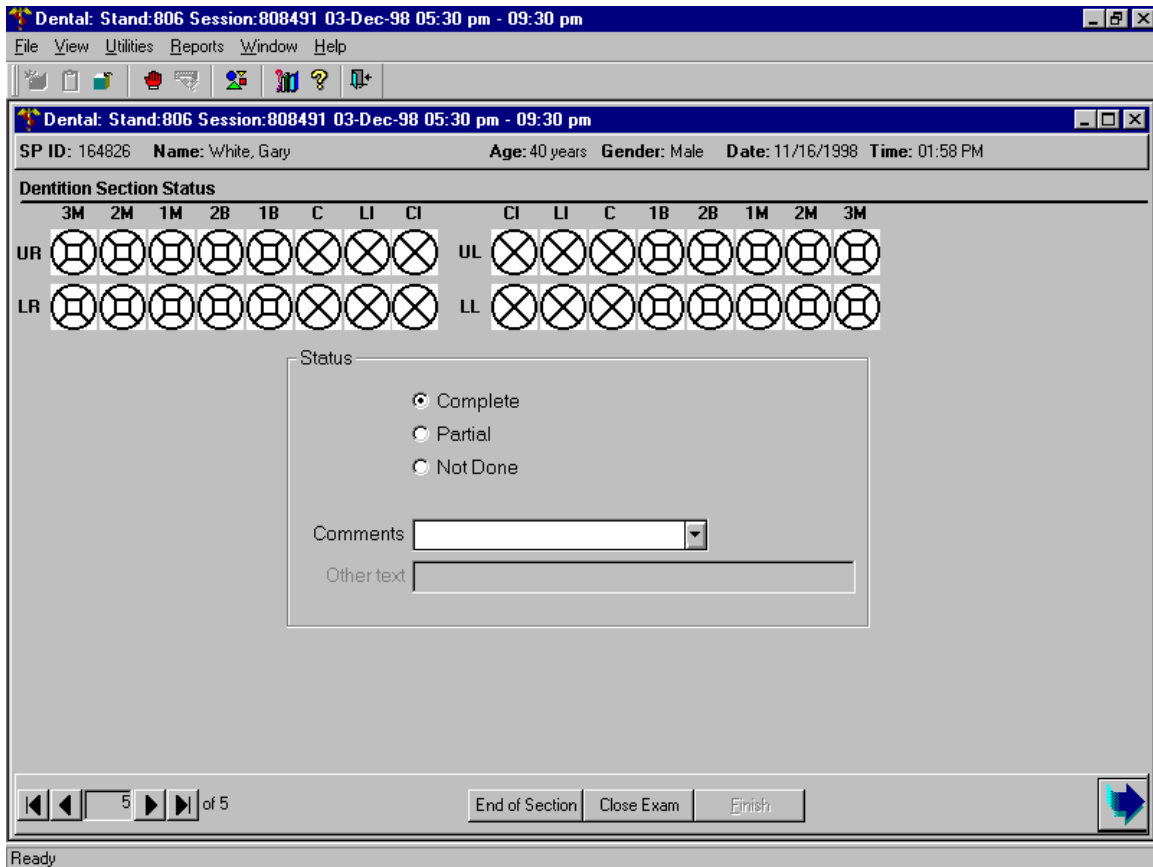
Allowable Entries: Status
The system automatically defaults to complete, partial, or not done based on the data that was entered on all screens for that section.
Comments
Use the mouse to click on the down arrow and display the choices. Then use the mouse to highlight the appropriate reason. Allowable entries are:

-Safety exclusion	-Equipment failure
-SP refusal	-SP ill/emergency
-No time	-Interrupted
-Physical limitation	-Other (specify)
-Communication problem	

Other Text
Accepts up to 225 characters. Type examiner's verbatim response.

Move Through Screen: User must use mouse to move from field to field.

Shortcut: None

3.3.4 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 breakoff during a particular assessment but continue with the examination. In the third scenario, you may need to breakoff during a particular assessment and cancel the rest of the examination. The procedures to be followed for these situations are provided in this section.

3.3.4.1 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; the examiner is calling assessments for a particular tooth and the recorder is entering that call for a different tooth; and other similar situations. If the situation cannot easily be resolved, the screen is cleared and the assessment is restarted using the <F11> key.

To clear a screen and restart the assessment:

- Press the <F11> key. Data previously entered on the screen is deleted.

- Move the cursor to the first data entry field on the screen.

- Begin data entry.

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

3.3.4.2 Canceling an Assessment

There are times when an assessment must be interrupted before it is completed but the examination can continue (for example, the SP experiences pain in gingival bleeding but is still eligible for loss of attachment). 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 in "cancelled" 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.

3.3.4.3 Canceling an Examination

There are several reasons for terminating an examination prior to finishing it. For example, the SP faints, the session ends, the MEC shuts down for weather reasons, and so on. To cancel an examination before it is finished, the recorder uses the <CLOSE EXAM> button on the navigation bar as follows:

■ Select the <CLOSE EXAM> button on the navigation bar.

■ A confirmation message is displayed "Are you sure you want to cancel the current exam?" Select "Yes" to exit the examination; select "No" to return to the screen you just left.

■ An abbreviated "status screen" is displayed with the "Partial Complete" examination status assigned. Enter the reason for the abbreviated examination and press <ENTER>

■ The system returns to the dental menu screen and is ready for the next SP examination.

NOTE: All data entered up until the point you exited is saved.

To reenter an SP examination:

■ Use "File, Open" or "Control/O" to reenter the examination once the coordinator assigns the SP.

■ The Medical Exclusion Questionnaire is displayed to remind you of the pertinent exclusion information.

■ Press <Enter> to continue.

- Use the right arrow on the left side of the navigation bar to move forward through the screens until you reach the first blank screen (or partially blank screen, depending on how you exited). Do **not** use the end-of-section arrow to move forward through the screens because the system recalculates summary section statuses as the user proceeds forward and will assume that any assessment screens that are skipped are not completed.

- Continue the examination from this point forward and exit as described in the next section.

NOTE: Occasionally, the examiner may choose to complete the Recommendation-For-Care screen before terminating an examination to report conditions noted during the partial examination. In these instances, use the end-of-section arrow to proceed to the Recommendation-For-Care section. Complete these screens as instructed by the examiner and click on <CLOSE EXAM> here. Do not click on the <FINISH> button which is discussed in the next section.

3.3.5 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 only enabled when the Recommendation-For-Care Section Status screen (Section 3.15) 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.

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3.4   Medical Exclusion Questionnaire

The Medical Exclusion Questionnaire (Exhibit 3-2) will be asked of all SP's aged 13 years and older. The purpose of this questionnaire is to identify SPs who should be excluded from portions of the oral health examination for their personal safety.

The Medical Exclusion Questionnaire asks about conditions that may preclude the SP from participating in some components of the oral exam. If there are no medical exclusions for the SP (all questions were answered "No"), then all age-appropriate assessments are performed. However, if there is at least one "yes" answer to a medical condition that leads to a medical exclusion, then all of the age-appropriate assessments are performed **except the root caries and the two periodontal assessments**-gingival bleeding and loss of attachment. ISIS is designed to skip these assessments as appropriate.

It is the examiner's responsibility to ask the medical exclusion questions directly of all SPs aged 16 years and older. The examiner will then summarize the SP's responses and prompt the recorder to enter all "No's" or a "Yes" to a particular question. The recorder will not enter data as the examiner administers the questions.

Medical exclusion information will be obtained from SPs aged 13-15 years via proxy interviews conducted by the MEC manager. The hard copy Proxy Questionnaire will accompany the SP to the dental room and the recorder will enter the responses when prompted by ISIS. The dental examiner must review the hard copy proxy questionnaire prior to starting the dental examination.

NOTE: A positive response to Q2 does not indicate a medical exclusion; rather it indicates that Q3-Q6 must be asked. A positive response to any of the specific conditions asked about in Q3-Q6 will generate a medical exclusion based on a heart condition.

NOTE: The remainder of the Medical Exclusion Questionnaire is not asked once a positive response to a medical exclusion item is given. For example, if the SP answers "Yes" to Q6, the examiner will not ask Q7-Q11. The system will prevent data entry on the remainder of the items in the questionnaire and will wait for the recorder to proceed to the next screen.

Exhibit 3-2. Medical Exclusion Questionnaire

Allowable Entries:
  Y = Yes
  N = No
  D = Don't Know (Q9 and Q10 only)

Move Through Screen: System autotabs after each entry.

Shortcut: Use mouse to click on "All Exclusion Questions are No" box. A check mark will appear in the box and the program will automatically fill all pertinent data entry fields with "No." To clear the entries, click on the box a second time.

NOTE: The questions on hemophilia (Q9) and pacemakers (Q10) will not be asked here if the information is obtained elsewhere, such as in the household interview or other examination components. Answers obtained elsewhere will appear on the screen when the screen is initially displayed. Therefore, the examiner will only ask these questions if they are highlighted on the screen as this indicates that the information is still pending. Because these are "shared" medical exclusion items and "Don't Know" responses are accepted in other components, acceptable entries for those two items are "Yes," "No," and "Don't Know."

However, entries of "Don't Know" will be treated as "No" by the ISIS, that is, <u>no</u> medical exclusions will be prompted based on an entry of "Don't Know" in Q9 or Q10.

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3.5 Dental Condition Questions

3.5.1 Introduction

The Dental Condition Questionnaire is administered to all SPs 16 years or greater by the dental examiner. The purpose of this questionnaire is to ascertain a perceived general assessment of the condition of the mouth and reasons associated with utilization of dental care.

3.5.2 Recording Procedures

The dental examiner uses the Dental Questionnaire crib sheet to read the questions to the SP. A "good" or "fair" response to the perceived overall condition of the mouth will lead to a question about perceived problems/reasons. The dental examiner receives the SP's responses and dictates the appropriate codes to the dental recorder.

3.5.3 Perceived Condition of Mouth Screen
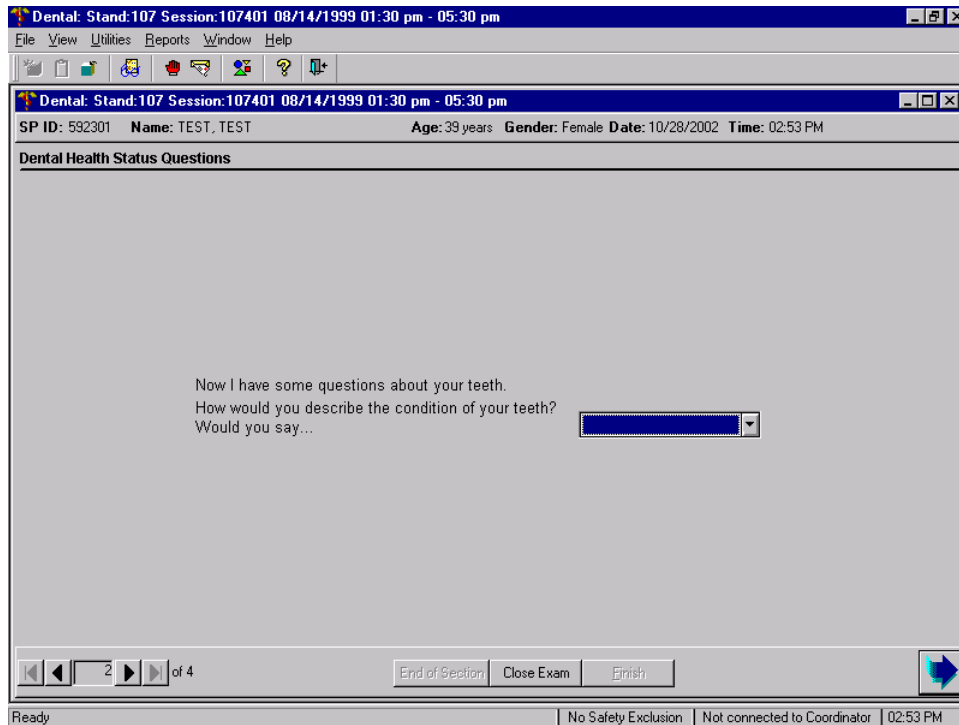
Allowable Entries:

E = Excellent

V = Very Good

G = Good

F = Fair

P = Poor

R = Refused

D = Don't Know
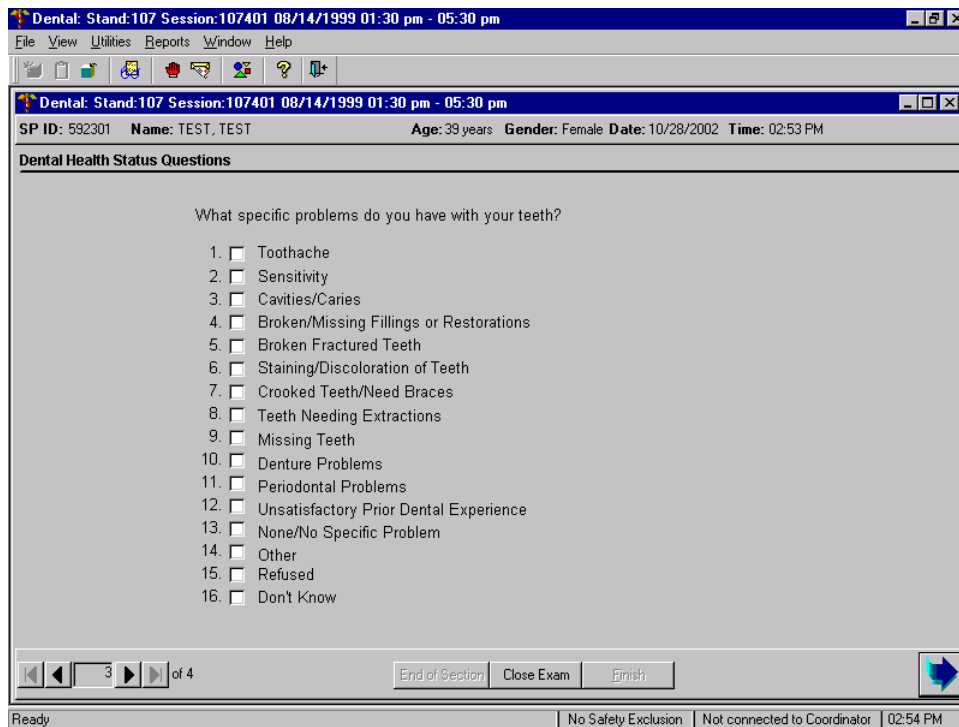
Move Through Screen: Not Applicable

Shortcut: None

3.5.4 Perceived Problems/Reasons Screen

Allowable Entries:

1. Toothache
2. Sensitivity
3. Cavities/Caries
4. Broken/Missing Fillings or Restorations
5. Broken/Fractured Teeth
6. Staining/Discoloration of Teeth
7. Crooked Teeth/Need Braces
8. Teeth Needing Extractions
9. Missing Teeth
10. Denture Problems
11. Periodontal Related Problems
12. Unsatisfactory Prior Dental Experience
13. None/No Specific Problems
14. Other
15. Refused
16. Don't Know

NOTE: This item allows multiple responses

Move Through Screen: User must use mouse to move from field to field.

Use the mouse to select the box to the right of the numeric code associated with the response. Click on the left mouse button to select the response. Click again to deselect it.

Shortcut: None

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3.6 Denture Questions

3.6.1 Introduction

SPs aged 25 years and older receive the denture questionnaire subcomponent. This component consists of a series of questions asked by the examiner to the SP regarding complete or partial denture use.

3.6.2 Recording Procedures

The recorder uses the Denture Questionnaire screen to enter the examiner's calls as the SP responds to the questions. There may be 2 to 4 questions asked depending on the previous answers provided by the SP to the examiner.

Scoring Codes. The codes for each of the four denture questions are the same and are as follows:

Y = Yes
N = No
R = Refused
D = Don't Know

3.6.3 Denture Questionnaire Screen

Allowable Entries:

$$Y = \underline{Y}es$$
$$N = \underline{N}o$$
$$R = \underline{R}efused$$
$$D = \underline{D}on't\ Know$$

Move Through Screen: System autotabs after each entry

Shortcut: None

3.7   Tooth Count

3.7.1   Introduction

SPs 2+ years 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.

3.7.2   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, root caries, dental fluorosis, and traumatic injuries are assessed only on permanent teeth as defined in the tooth count.

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 3.3.

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

1 = Primary Tooth
2 = Permanent Tooth
3 = Implant
4 = Tooth Not Present
5 = Permanent Tooth Root

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. 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.

NOTE: There is a variable on the screen labeled "Implant" which must be checked if the SP reports an implant. Simply recording a "3" in the tooth spaces will not suffice for coding the SP as having an implant.

NOTE: There is a variable on the screen labeled "Edentulous" which must be checked if the SP is edentulous (SP has no teeth). Simply recording all "3s" and "4s" in the tooth spaces will not suffice for coding the SP as edentulous.

NOTE: Both the "Implant" and "Edentulous" boxes may be checked if the SP is edentulous and has implants.

NOTE: If an SP reports an implant, but the dental examiner determines there are no implants, you must uncheck the implant box before you proceed.

3.7.3   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*?" The examiner asks this question of the SP 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.
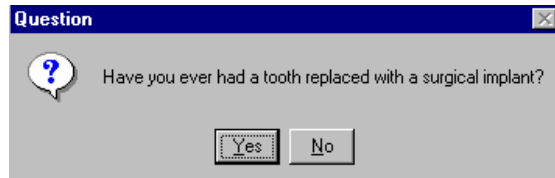
When "Yes" is selected from the question box, the program will prefill the Implant box on the Tooth Count screen. When "No" is selected from the question box, the program will not prefill the Implant box on the Tooth Count screen.

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.

3.7.3.1 Tooth Count Screen
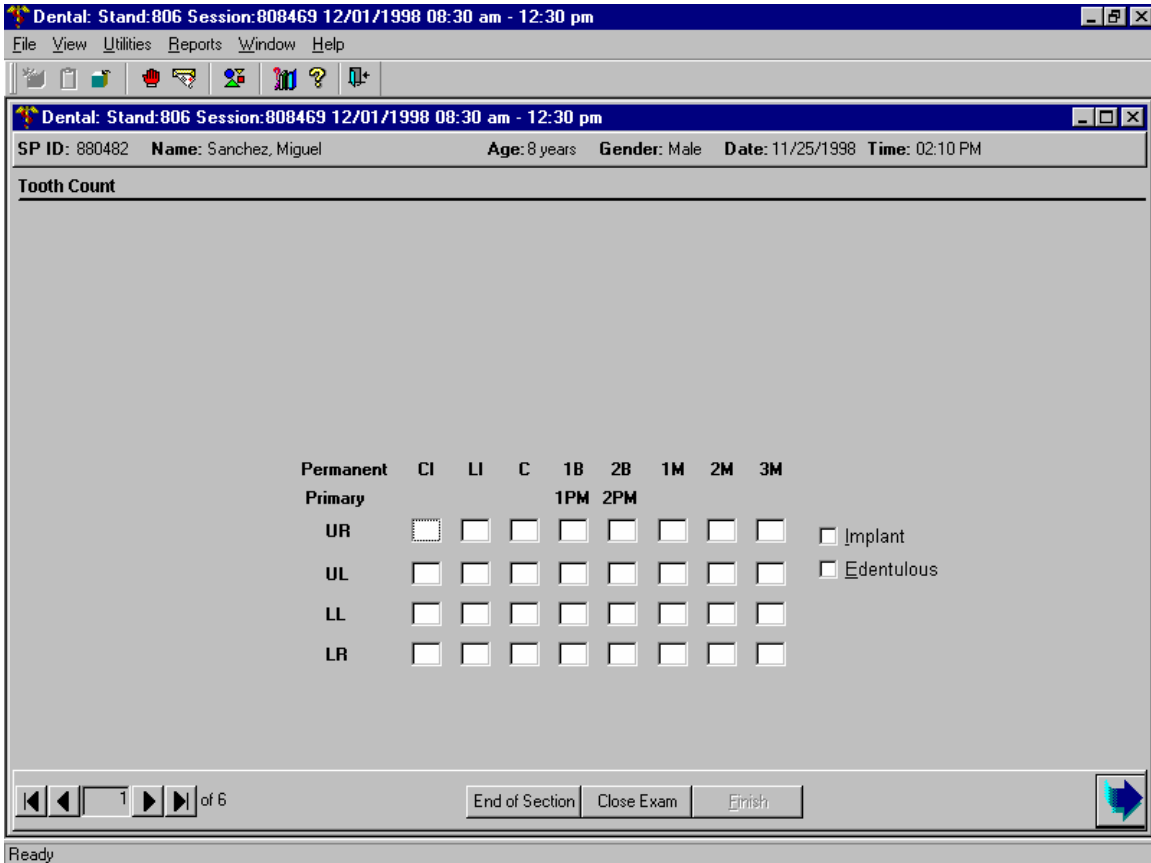
Allowable Entries:	1 = Primary tooth	
	2 = Permanent tooth	
	3 = Implant	
	4 = Tooth not present	
	5 = Permanent Tooth Root	

Move Through Screen: System autotabs after each entry.

Shortcut: Edentulous: Use the mouse to click on the "edentulous" box. A check mark will appear in the box; the program automatically fills all remaining blank data entry fields with "4."

QC Check: Implant: The system makes sure that at least one "3" in entered whenever the "implant" box is checked. The system makes sure that no "3"s are entered if the "implant" box is not checked.

Edentulous: The system makes sure that only "3"s and "4"s are entered whenever the "edentulous" box is checked. The system makes sure that at least one "1" or "2" is entered if the "edentulous" box is not checked.

3.8   Dental Caries Assessment Methods

3.8.1   Coronal Caries Assessment

3.8.1.1   Introduction

There are two parts to the dental caries assessment: coronal caries and root caries. Each SP aged 2 years and older receives the coronal caries assessment, which involves all teeth except the third molars. The order in which the teeth are examined is the same as that used for the Tooth Count Screen.

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. It is not advisable to call out individual surface codes as each tooth surface is examined, as this can be confusing to the recorder. It is better for the examiner to mentally accumulate surface calls for a given tooth until all surfaces have been examined before dictating the calls to the recorder.

3.8.1.2   Recording Procedures

A maximum of 28 permanent teeth are scored for each SP. Third molars, or wisdom teeth, are not scored for dental caries. The Coronal Caries screen is divided into four rows, which correspond to the four quadrants of the mouth: upper right, upper left, lower left, and lower right. These quadrants are labeled in the extreme left column 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 seven teeth per quadrant.

As condition codes are entered on the Coronal Caries screen, the corresponding condition symbols are displayed on the Heads-Up Display screen. As mentioned earlier, red bullets symbolize caries while restorations are symbolized by shading. No changes are made to the display of implants (red circle with "I") or missing teeth (red circle with slash) based on calls made on this or subsequent screens.

Scoring Codes. 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
D = Sound primary (deciduous) tooth
K = Primary tooth with 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 <u>fixed</u> restoration
X = Missing due to other causes but replaced by a <u>fixed</u> restoration
P = Missing due to dental disease but replaced by a <u>removable</u> restoration
Q = Missing due to other causes but replaced by a <u>removable</u> restoration
J = Permanent root tip is present but <u>no</u> restorative replacement is present
T = Permanent root tip is present but a restorative replacement is present
Y = Tooth present, condition cannot be assessed

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** the appropriate surface condition codes as described below. "D" is entered for all sound primary calls while "K" **and** 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. After this first space, there is a separate block of data entry spaces to accommodate the surface calls for that tooth as necessary.

For caries, the allowable codes to indicate the appropriate surface are as follows:

0 = Lingual caries
1 = Occlusal caries
2 = Facial caries
3 = Mesial caries
4 = Distal caries

For filled teeth or restorations, the allowable surface codes are as follows:

5 = Lingual restoration
6 = Occlusal restoration
7 = Facial restoration
8 = Mesial restoration

9 = Distal restoration

C = Crown (short call for both primary and permanent teeth)

If the tooth is permanent with decay on one or more surface (Z), the examiner calls the number(s) which correspond(s) to the surface(s) having decay. For example, if the examiner calls 0, 1, 2, 3, or 4, it means that there is decay on the surfaces of the tooth represented by those numbers. The recorder fills the appropriate spaces on the caries area of the screen. If the examiner calls 5, 6, 7, 8, or 9, 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. For example, if the examiner calls "1, 8, 9"; it means that there are caries on the occlusal surface and restorations on the mesial and distal surfaces. This procedure continues to the second molar for each of the four quadrants of the mouth.

NOTE: Only *one entry* is made for each tooth surface. In the event that a surface has both decay and a filling, only the decay is called. If the examiner gives two codes, which are on the same surface, the recorder should bring this to the examiner's attention immediately. (The system will beep and an error message will be displayed in the lower right portion of the screen. Data entry will be prohibited until an allowable response is entered.)

NOTE: For permanent teeth coded as a "5" in the tooth count, the "T" or "J" codes must be used. If the recorder attempts to enter any other code, the system will beep and an error message will be displayed.

NOTE: The examiner and recorder are both responsible for making sure that the calls the examiner makes are being recorded by the recorder in the correct tooth space on the screen. In order to do that consistently, each tooth position is to be referred to 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).

NOTE: In instances where all teeth in the upper and/or lower mouths 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.

3.8.1.3 Caries Screen
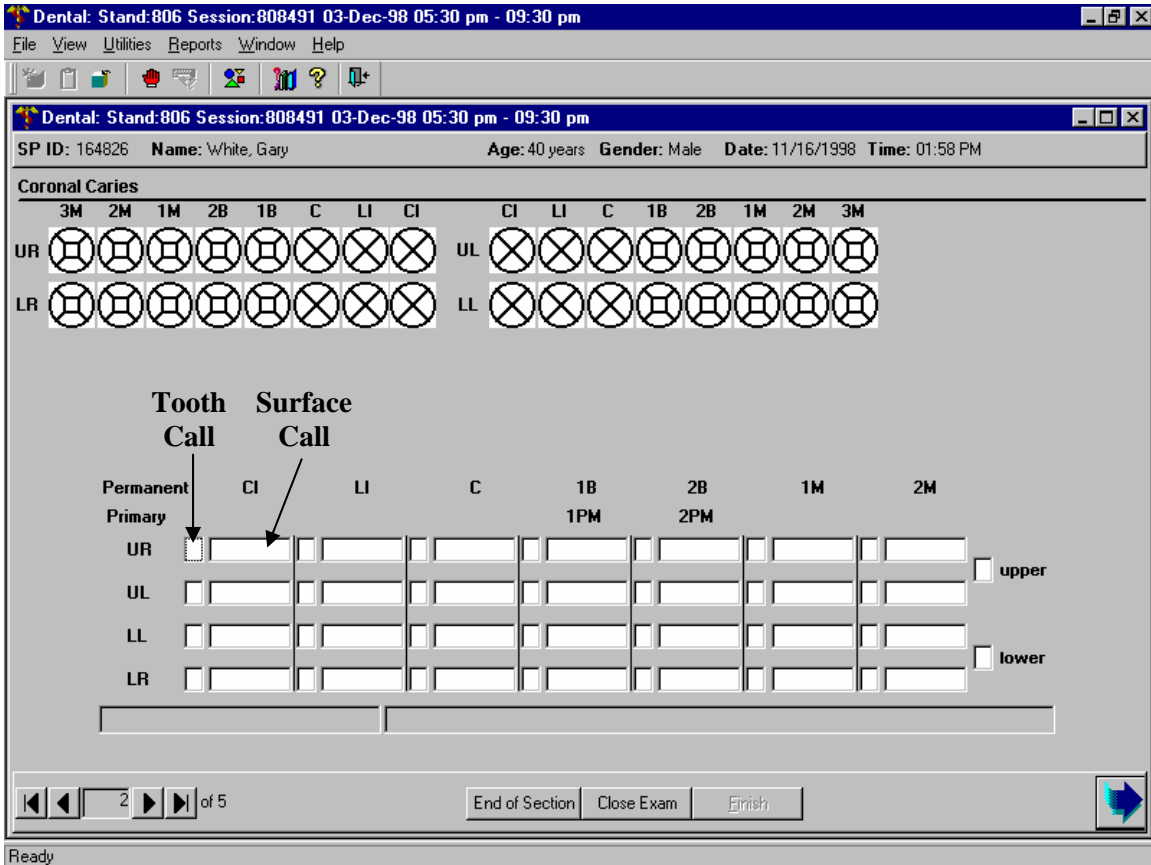
Allowable Entries: See next page.

Move Through Screen: Tooth Calls
System autotabs after each entry.

Surface Calls
User must press <TAB> to proceed to next data entry field.

Shortcut: Use the mouse to click on "Upper" or "Lower" box, as appropriate, whenever all teeth in the upper or lower half-mouth are missing **for the same reason**. The cursor will appear in the box. Enter the code for the reason for the missing teeth as prompted by the examiner and the program will automatically fill all pertinent data entry fields with that code.

To clear the "Upper" and/or "Lower" box entries, keep the cursor in the box and press the <Delete> key.

Allowable codes for this shortcut are: E, M, R, X, P, Q.

Allowable Entries: <u>Tooth Calls</u>

S = Sound permanent tooth (no decay or filling on any surface)
Z = Permanent tooth with surface condition
D = Sound primary (deciduous) tooth
K = Primary tooth with 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 <u>fixed</u> restoration
X = Missing due to other causes but replaced by a <u>fixed</u> restoration
P = Missing due to dental disease but replaced by a <u>removable</u>
      restoration
Q = Missing due to other causes but replaced by a <u>removable</u> 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

<u>Surface Calls</u>

<u>Caries</u>	<u>Surface</u>	<u>Restoration</u>
0	Lingual	5
1	Occlusal	6
2	Facial (Buccal)	7
3	Mesial	8
4	Distal	9
	Crown	C

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3.8.2   **Root Caries Assessment**

SPs aged 18 years and older receive this assessment to determine the prevalence of root caries and root restorations.

3.8.2.1   **Recording Procedures**

A maximum of 28 permanent teeth will be examined for each SP. Third molars, or wisdom teeth, are not scored for root caries. The Root Caries screen 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.
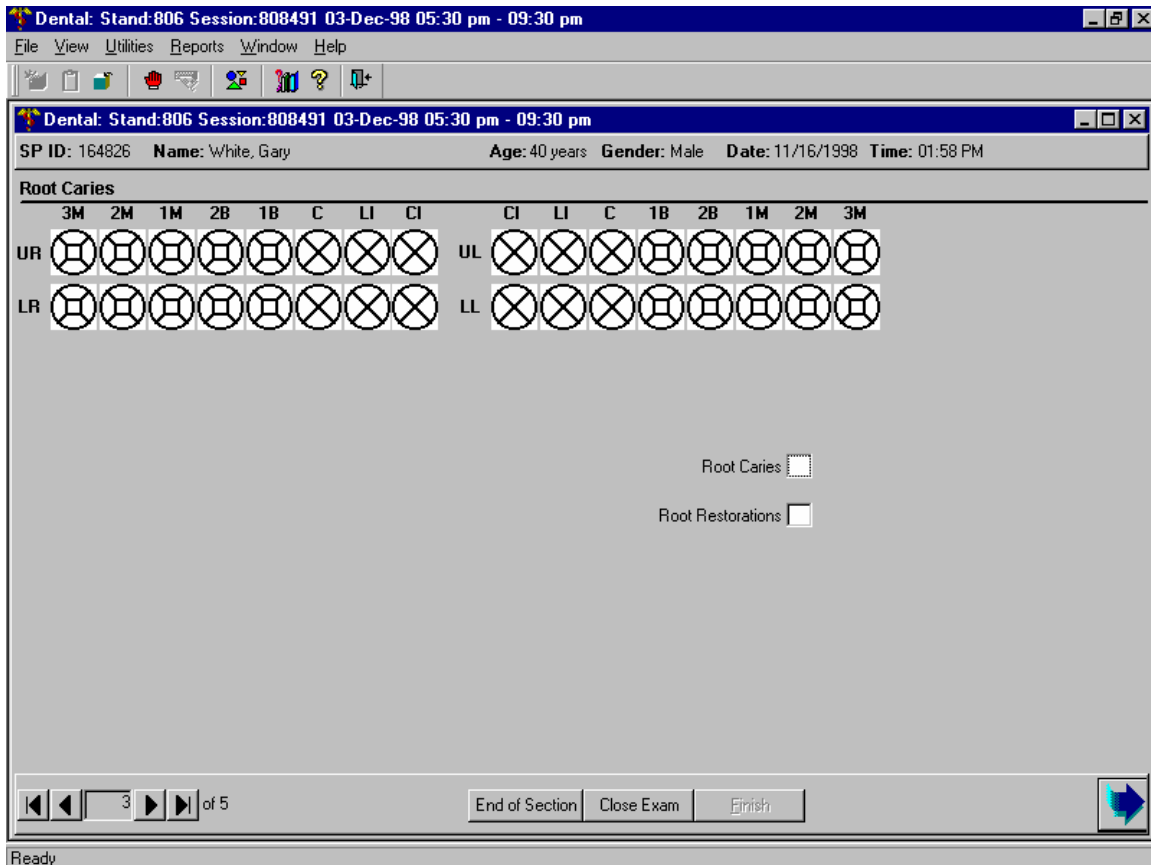
The allowable "whole mouth" codes for root caries are as follows:

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

3.8.2.3   Root Caries Screen

Allowable Entries: <u>Root Caries</u>
1 = Root caries detected
2 = No root caries detected
9 = Cannot be assessed

<u>Root Restorations</u>
1 = Root restoration detected
2 = No root restoration detected
9 = Cannot be assessed

Move Through Screen: System autotabs after each entry.

Shortcut: None

3.9   **Sealant Assessment**

3.9.1   **Introduction**

SPs aged 2-34 years receive the sealant assessment. The sequence of the examination 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 present on permanent tooth
2 = Facial sealant present on permanent tooth (lower molars only)
3 = Lingual sealant present on permanent tooth (upper molars only)
4 = Occlusal sealant present on <u>primary</u> tooth
9 = Cannot be assessed

3.9.2   **Recording Procedures**

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

The examiner may use a designated shortcut key to record all "0s" if the SP has no sealants on the teeth to be assessed. In this instance the examiner calls "No Sealants" instead of calling "0" for each individual tooth assessed and the recorder will press the <F2> key four times to automatically fill "0s" in all blank data entry fields by quadrant.

NOTE: "0", "4" and "9" are mutually exclusive calls. However, combinations of "1, 2" or "1, 3" are allowed for permanent molars since more than one surface of these teeth may be sealed.

NOTE: Only "0," "3," or "9" are allowable codes for lateral incisors.

3.9.3   Dental Sealant Screen
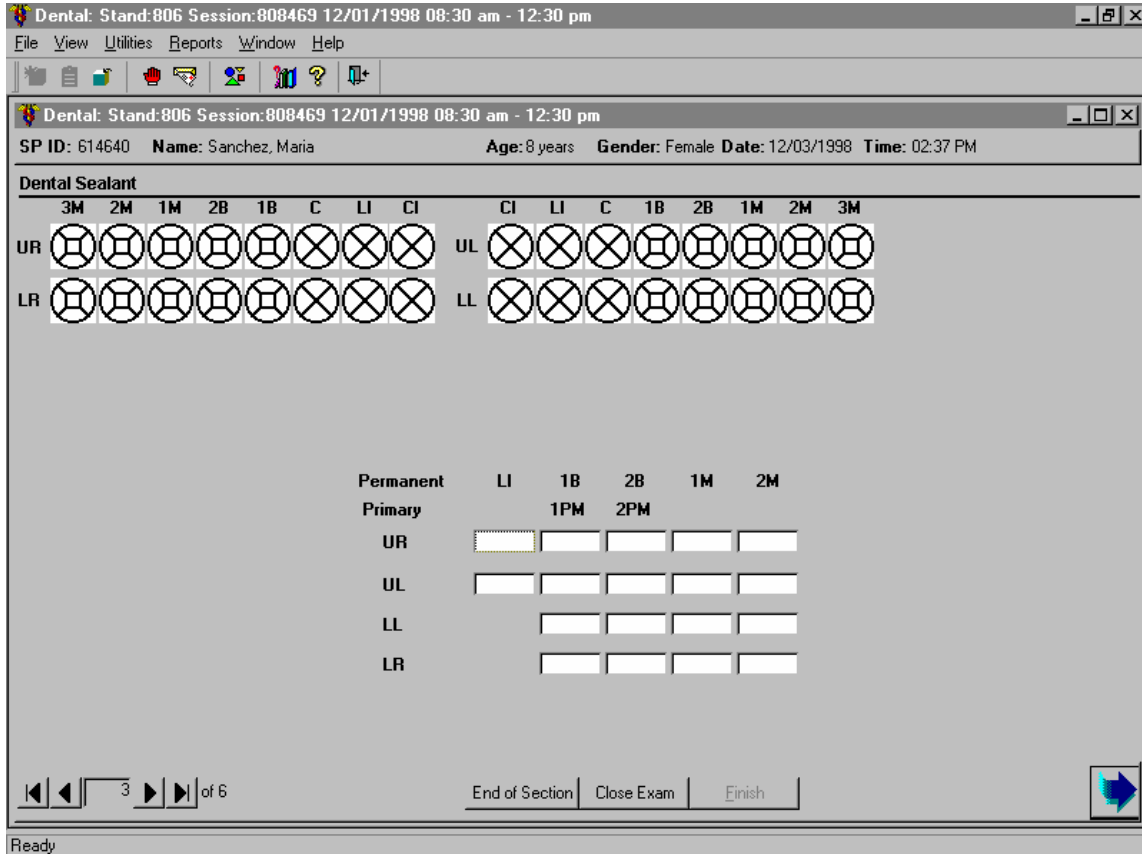
Allowable Entries: 0 = Sealant not present
1 = Occlusal sealant present on permanent tooth
2 = Facial sealant present on permanent tooth (lower molars only)
3 = Lingual sealant present on permanent tooth (upper molars only)
4 = Occlusal sealant present on primary tooth
9 = Cannot be assessed

Move Through Screen: System autotabs after each entry of "3" on lateral incisors.
System autotabs after each entry of "0", "4" and "9" on any tooth.
User must press <Tab> key after all other entries.

Shortcut: Press <F2> key to automatically enter "0" for all remaining blank data entry fields in a quadrant.

3.10   Dental Fluorosis Assessment

3.10.1   Introduction

All SPs aged 6-49 years old receive the dental fluorosis assessment which utilizes the Dean's Fluorosis Index to assess the condition. The assessment is conducted in the same order and sequence as the caries examination, and all permanent teeth except the third molars are assessed.

3.10.2   Recording Procedures

The scores called by the examiner are entered in the appropriate fields for the Dean's Index using the codes as follows:

0 = Normal (no fluorosis detected)
1 = Very mild (opaque, paper white areas involving less than ¼ of the tooth surface)
2 = Mild (opaque, paper white areas involving ¼ to less than ½ of the tooth surface)
3 = Moderate (opaque paper white areas involving ½ or more of the tooth surface)
4 = Severe (discrete or confluent pitting in involved areas)
5 = Questionable (sight aberration of normal enamel appearance including white flecks)
8 = Non-fluoride opacity
9 = Cannot be assessed

NOTE: There is only one score per tooth.

The recorder may use a designated shortcut key to record "0s" whenever the SP has no fluorosis. In these instances, the examiner calls "No Fluorosis" instead of "0" for each individual tooth assessed and the recorder presses the <F2> key 4 times to automatically fill "0s" in all blank data entry fields by quadrant.

3.10.3 Fluorosis – Dean's Index Screen
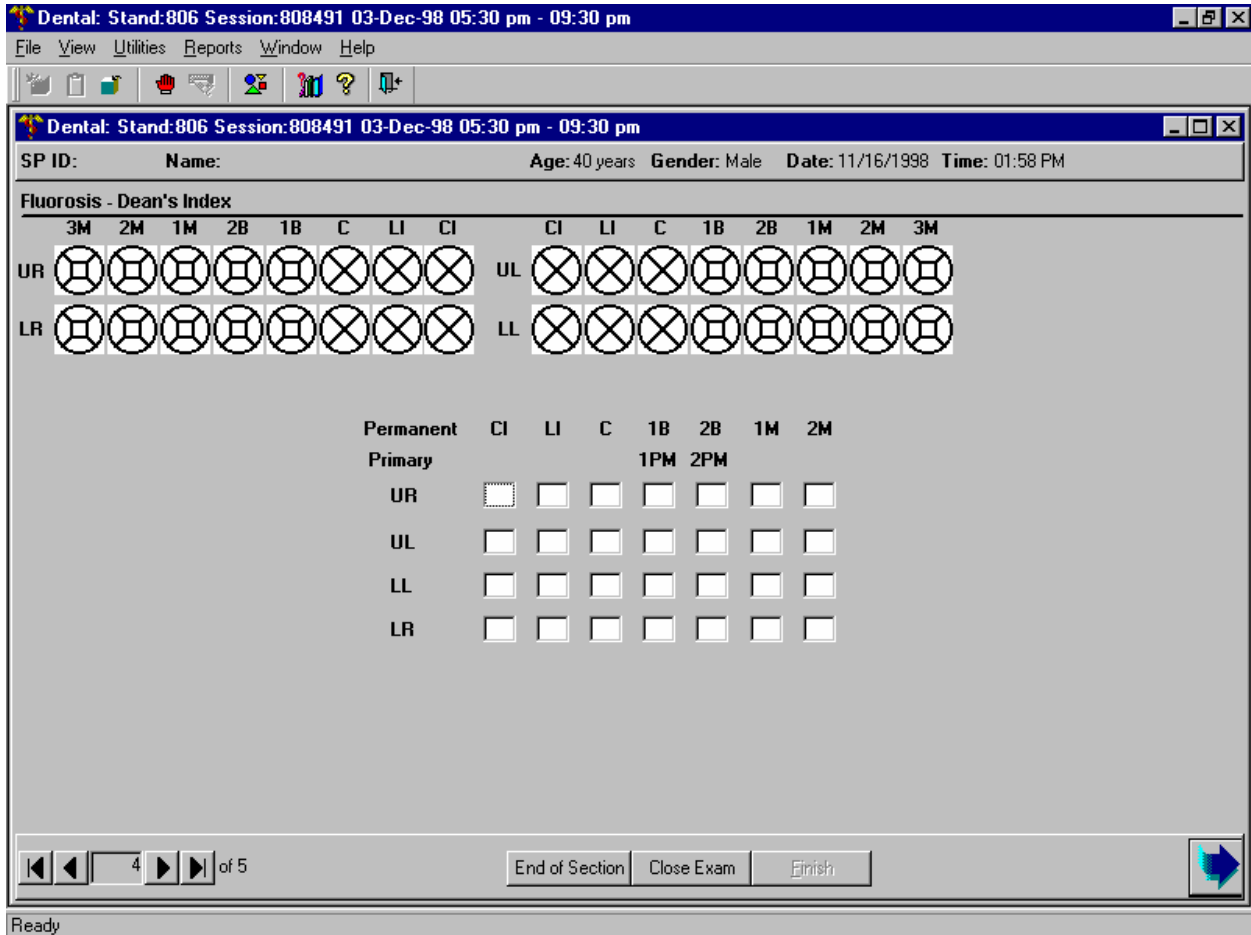
Allowable Entries:

0 = Normal (no fluorosis detected)
1 = Very mild
2 = Mild
3 = Moderate
4 = Severe
5 = Questionable
8 = Nonfluoride opacity
9 = Cannot be assessed

Move Through Screen: System autotabs after each entry.

Shortcut: Press <F2> key to automatically enter "0" for all remaining blank data entry fields in a quadrant.

3.11   Incisor Trauma Assessment

3.11.1   Introduction

All SPs aged 6-29 years receive the traumatic injuries assessment for the upper and lower permanent incisors only. The examiner asks the SP (or a responsible adult for children) whether the SP has ever had an injury to the front teeth. Note that there is no space in the system to record this information; it is used as a reference for the examiner during the examination.

3.11.2   Recording Procedures

Findings for the traumatic injuries of permanent incisor teeth are recorded on the Incisor Trauma screen. If there is no physical indication of trauma in any of the eight incisors, the examiner will call "No Trauma" and the recorder will record "0" for each tooth assessed. Allowable codes range from "0" to "6" and "9" as listed above. Missing or implanted teeth are restricted to "6" and "9."

One of the following scores is to be assigned for each incisor tooth:

0   No evidence of traumatic injury
1   Unrestored enamel fracture is present and does not involve the dentine
2   Unrestored fracture is present which involves the dentine
3   Untreated pulpal damage
4   Restored fracture, either with a full crown or a less extensive restoration.
5   Lingual restoration as a sign of endodontic therapy, and a positive history from the SP or responsible adult of root canal therapy following traumatic injury
6   Tooth is missing due to trauma
9   Cannot be assessed

3.11.3   Incisor Trauma Screen
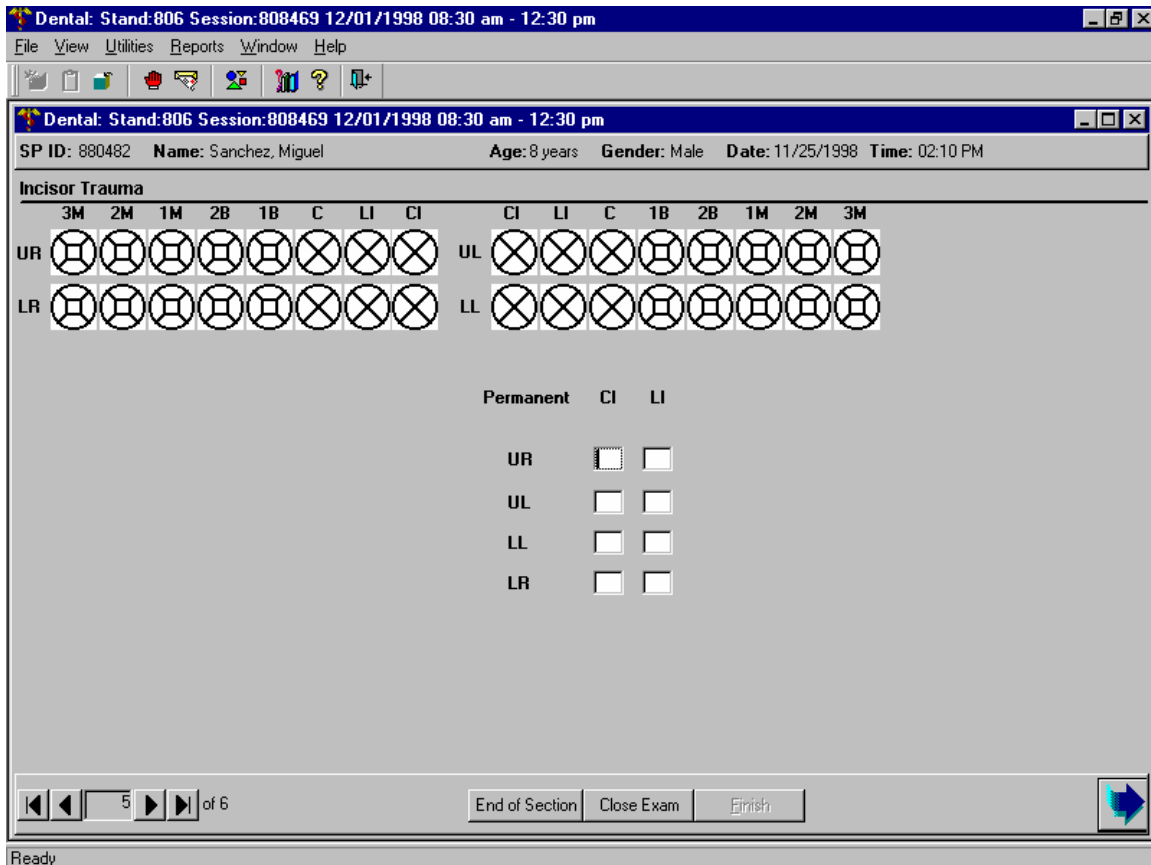
Allowable Entries: 0 = No evidence of traumatic injury
1 = Unrestored enamel fracture is present; does not involve the dentine
2 = Unrestored fracture is present which involves the dentine
3 = Untreated pulpal damage
4 = Restored fracture
5 = Lingual restoration
6 = Tooth is missing due to trauma
9 = Cannot be assessed

Move Through Screen: System autotabs after each entry.

Shortcut: None

3.12   Tooth Wear

3.12.1   Introduction

The exam is conducted on all SPs aged 13 years or greater and utilizes the Tooth Wear Index to assess dental erosion.

3.12.2   Recording Procedures

A Tooth Wear Score (TWS) can be entered for the dental incisors, lateral incisors, cuspids, and first molars only. One code is permitted for each surface. Only the occlusal surface is assessed on first molars. The lingual, incisal, and facial surfaces are examined on the incisors and cuspids.

If a code of "1", "3", "4", or "5" from the Tooth Count has been recorded, a "9" is hard-coded for the appropriate tooth for the TWS.

Scoring: The scores called by the examiner are entered in the appropriate fields for the TWS using the codes as follows:

Score	Surface	Criteria
0	All	Sound natural tooth surface. Any wear is restricted to the enamel and does not extend into dentin.
1	All	Loss of enamel just exposing dentin.
2	B, L	Loss of enamel exposing dentin for more than an estimated one-third of the individual surface area (B,L).
	O, I	Loss of enamel and extensive loss of dentin, but not exposing secondary dentin or pulp. On occlusal/incisal surfaces exposed dentin facets with a buccal-lingual dimension of 2mm or greater at the widest point will be seen.
3	B, L	Complete loss of enamel on a surface, pulp exposure or exposure of secondary dentin where the pulp used to be. Frank pulp exposure is most unlikely.
	O, I	Pulp exposure or exposure of secondary dentin.
8	All	Fractured tooth. Clear evidence of traumatic loss of tooth substance rather than wear.
9	All	Cannot assess. More than 75% of surface is obscured and no remaining incisal edge/tip which can be coded. Includes missing teeth, crowns, and abutments.

3.12.3 Tooth Wear Score Screen
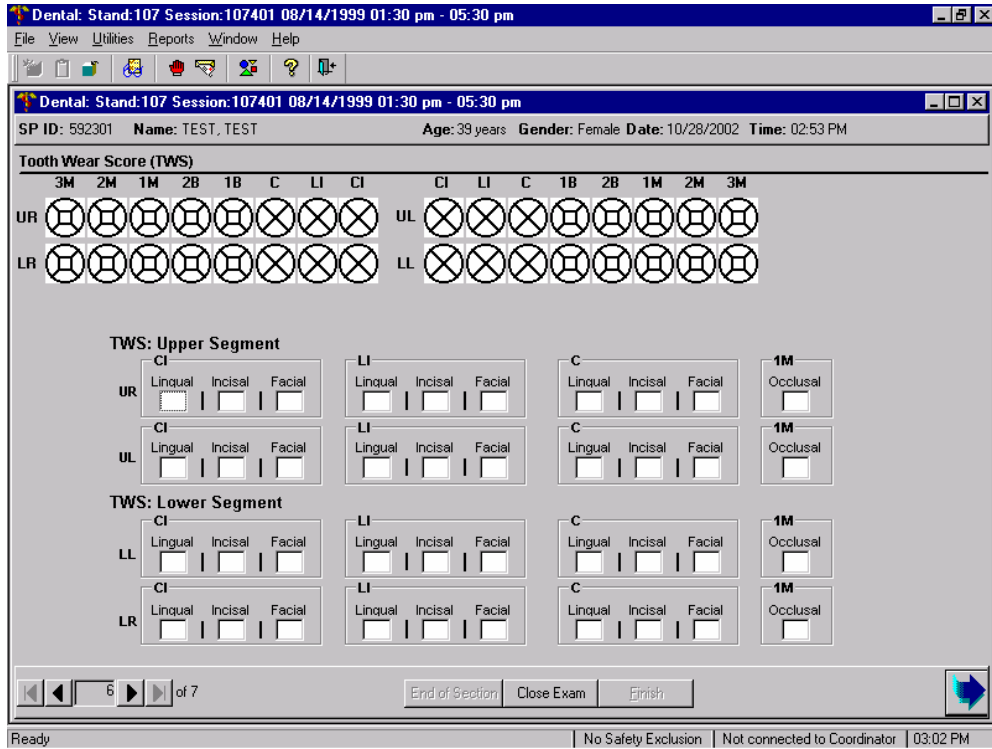
Allowable Entries:

Score	Surface	Criteria
0	All	Sound/No Wear
1	All	Enamel loss with exposed dentin
2	B, L	Exposed dentin > one-third of surface area.
	O, I	Exposed dentin buccal-lingual = >2 mm at the widest point. No exposed secondary dentin or pulp.
3	B, L	Complete loss of enamel on a surface or,
	O, I	Pulp exposure or exposure of secondary dentin where the pulp used to be.
8	All	Fractured tooth.
9	All	Cannot assess.

Move Through Screens: System autotabs after each entry.

Shortcut: None

3.13   Functional Occlusal Contact Index (FOCI)

3.13.1   Introduction

The exam is conducted on all SPs aged 25 years or older.

The exam will count the number of functional occlusal contacts in such a way to quantify an important aspect of the functional status of the dentition that simple counts of teeth and prostheses alone cannot provide. This is a visual examination that goes beyond counting the number of teeth to count how many of the teeth oppose each other and can function properly when eating.

Given that the range of incisal opening is a contributory factor to a functional occlusion, a maximal incisal opening measure will also be collected.

3.13.2   Recording Procedures

The functional occlusal contact exam begins with the maximal incisal opening. The allowable calls are as follows:

0-65 =   Measurement in mm (where 65 = 65 mm or greater)
99   =   Cannot be assessed.

Following the maximal incisal opening measurement, the Functional Occlusal Contact Index exam is implemented.

The Functional Occlusal Contacts Index (FOCI) consists of (1) an assessment of the posterior (premolar and molar) regions, and then (2) a similar assessment for the sum of anterior tooth contacts. The right and then left posterior regions are assessed for (1) the number of contacts between natural teeth, (2) natural teeth and pontics of fixed prostheses, (3) natural teeth and removable prostheses, and (4) the number of contacts between denture teeth. As there are few anterior teeth missing without prostheses in the U.S. adult population, the anterior assessment is limited to a single assessment requiring at least one anterior mandibular tooth in contact with an opposing anterior tooth irrespective of the type of teeth involved.

One code is permitted for each posterior zone (16 zones in total) and one code is permitted for the anterior segment assessment. The dental examiner will dictate the codes to the dental recorder.
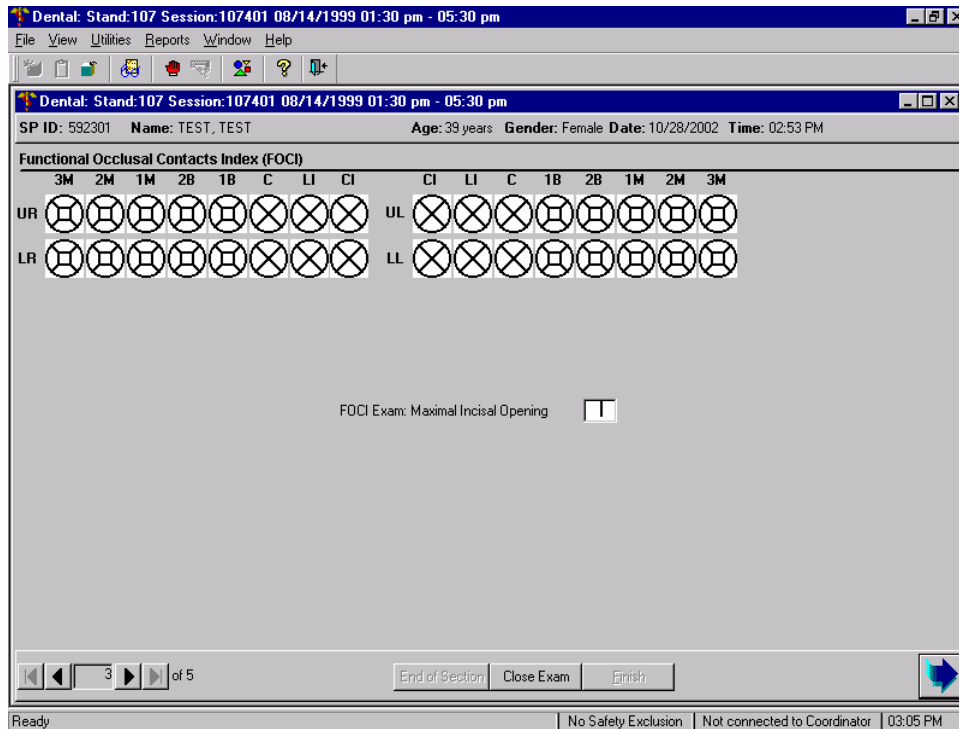
The allowable codes for the **posterior functional occlusal contact zones** are as follows:

0 = No posterior functional contact
1 = Functional contact present between two natural teeth
2 = Functional contact present between a natural tooth or a fixed prosthesis and a removable prosthesis
3 = Functional contact between two removable prostheses
9 = Cannot assess

The allowable codes for the **anterior function occlusal contact zone** are as follows:

0 = No anterior functional contact
1 = Functional contact present between two natural teeth
2 = Functional contact present between a natural tooth or a fixed prosthesis and a removable prosthesis
3 = Functional contact between two removable prostheses
9 = Cannot assess

3.13.3 Maximal Incisal Opening Measurement Screen

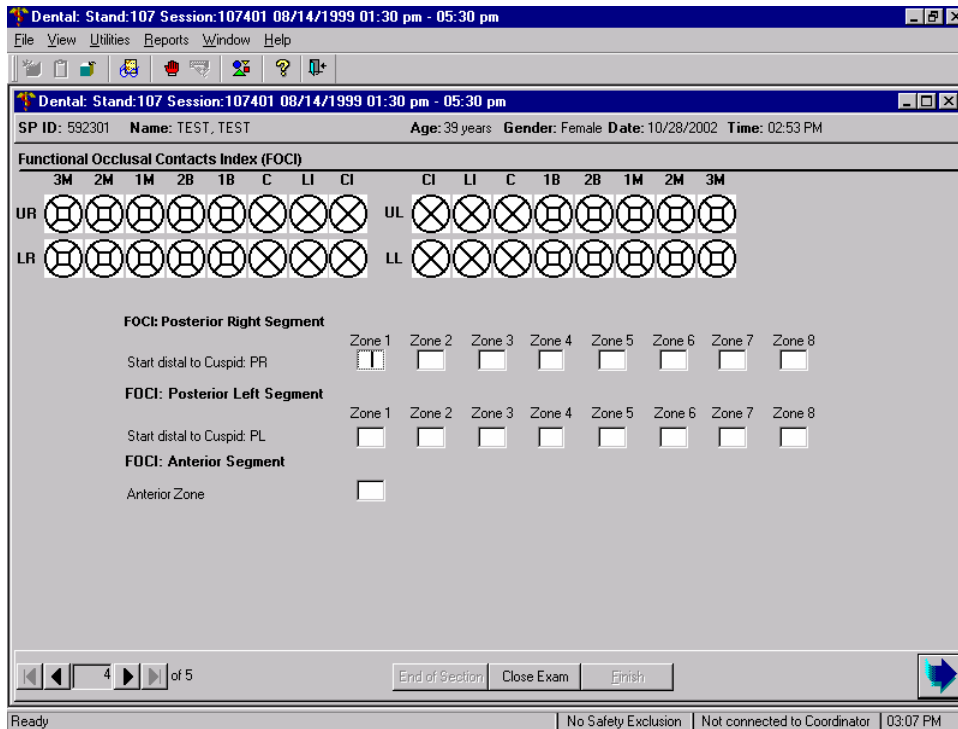**Allowable Entries:**   00-65 = Measurement in mm (where 65 = 65 or greater)

99 = Cannot be assessed

NOTE: Must be 2-digit entry; therefore, zero fill numbers less than 10.

Move Through Screen: Not applicable

Shortcut: None

3.13.4 FOCI Screen

Allowable Entries:	0 = No posterior functional contact
	1 = Functional contact present between two natural teeth
	2 = Functional contact present between a natural tooth or a fixed prosthesis and a removable prosthesis
	3 = Functional contact between two removable prostheses
	9 = Cannot assess
Anterior Zone:	0 = No anterior functional contact
	2 = Functional contact present between a natural tooth or a fixed prosthesis and a removable prosthesis
	3 = Functional contact between two removable prostheses
	9 = Cannot assess
Move Through Screen:	System autotabs after each entry.
Shortcut:	None

3.14   Periodontal Assessment

The periodontal section includes two parts: measurements to determine the loss of attachment and the identification of bleeding from probing. Periodontal assessments are conducted from posterior to anterior beginning with the most distal tooth in a quadrant (excluding third molars) and proceeding toward the midline. Three sites per tooth (the distal, mid-facial, and mesio-facial) are examined in a randomly selected upper quadrant and a randomly selected lower quadrant for the periodontal assessments.

3.14.1   Participant Eligibility for the Periodontal Assessment

SPs aged 13 years and older will receive the periodontal assessment. The assessment is performed on three sites per tooth (distal, mid-facial and mesio-facial) for two randomly selected quadrants—one upper quadrant and one lower quadrant. The periodontal assessment begins with the most distal tooth and moves forward through each quadrant. Only permanent teeth are measured. The dental examiner will complete loss of attachment for the upper quadrant, and then bleeding on probing for the same quadrant before proceeding to the lower quadrant.

3.14.1.1   Selection of Quadrants to be Assessed

The computer program automatically identifies the two random quadrants (one random upper and one random lower) to be selected for the periodontal assessment as follows:

The fifth digit of the ID number is used to select the upper quadrant. If this number is even, the right side is used. If this number is odd, the left side is used.

Similarly, the sixth digit of the ID number is used to select the lower quadrant for the periodontal examination. If this number is even, the right side is used. If this number is odd, the left side is used.

For example, if the SP's ID number is 123456, this would represent a left upper and right lower designation for the SP.

1	2	3	4	5	6
				Upper left	lower right

3.14.1.2   Recording Procedures

Findings for the periodontal assessment are recorded on the periodontal assessment screens. There is one screen for the upper quadrant and one screen for the lower quadrant. Codes for the periodontal assessment are provided below. Again, only permanent teeth are assessed.

The codes listed below are for loss of attachment.

The allowable range for the FGM to CEJ measurement is:

-9 to 9 = Measurement in millimeters
±A   = Measurement is ±10 millimeters
±B   = Measurement is ±11 millimeters
±C   = Measurement is ±12 millimeters
Y   = Cannot be assessed

The allowable range for the FGM to sulcus base measurement (pocket depth) is:

0 - 9   = Measurement in millimeters
A   = Measurement is 10 millimeters
B   = Measurement is 11 millimeters
C   = Measurement is 12 millimeters
Y   = Cannot be assessed

NOTE: If one measurement cannot be assessed, then the other measurement must also be coded as "Cannot be assessed."

NOTE: The second measurement must be equal to or greater than the first measurement. If the user enters a second measurement that is smaller than the first measurement,

the system will prevent the user from moving until the error is corrected. If the second measurement was entered incorrectly, simply enter the correct information.

If the first measurement was entered incorrectly, you must delete the second measurement first, backspace to the first measurement, enter the correct information on the first space, then return to the second space and *reenter* the information.

If a "9" is entered, the system will send a message asking you if the measurement was "9 mm." This is because, for all other assessments, "9" is "Cannot be assessed," but for loss of attachment, a "9" is an actual measurement. The code "Y" is "Cannot be assessed."

The allowable codes for bleeding on probing are as follows:

1 = Bleeding from probing detected
2 = No evidence of bleeding
9 = Cannot assess

3.14.1.3 Loss of Attachment Screen

Allowable Entries for
Loss of Attachment: For each tooth site (distal, mid-facial, or mesio-facial) the following two spaces must be recorded:

First Data Entry Space (FGM to CEJ measurement)
-9 to 9 = Measurement in millimeters
+A = Measurement is +10 millimeters
+B = Measurement is +11 millimeters
+C = Measurement is +12 millimeters
Y = Cannot be assessed

Second Data Entry Space (FGM to sulcus base measurement)
0 – 9 = Measurement in millimeters
A = Measurement is 10 millimeters
B = Measurement is 11 millimeters
C = Measurement is 12 millimeters
Y = Cannot be assessed

Move Through Screen: System autotabs after each entry.

Shortcut: None

Allowable Entries for
Bleeding on Probing: For each tooth site (distal, mid-facial, or mesio-facial) the following entries are allowable:

1 = Bleeding from probing deleted
2 = No bleeding detected
9 = Cannot assess

Move Through Screen: System autotabs after each entry

Shortcut: None

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3.15   Recommendation For Care, Referrals, and Miscellaneous

As described in this chapter, certain calls for several of the assessments trigger a "Recommendation For Care" referral that is specific for this study. There are four levels of referrals defined in the system as follows:

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/her earliest convenience

Level 4 - SP should continue with his/her regular routine dental care

Recommendation For Care levels 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 judgement.

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/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/she will override the system's referral.

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 be wheel-chair-bound and experience difficulty in transferring to the dental exam chair, or they may be very frail. Consequently, individuals who do not receive the entire oral health exam lying down in the dental chair are identified with a special tracking code.

3.15.1 Recording Procedures

This section is comprised of three screens. The first screen is used to track the SP's position during the exam. The second screen is used to document the care level assigned by the examiners. The third screen is used to create the SP referral letter, if needed.

3.15.1.1 SP Exam Position Tracking Screen

Before the Recommendation For Care screen appears, ISIS displays a screen asking if the SP was in a recumbent (lying down) position for all eligible assessments of the oral health exam (including orofacial pain through loss of attachment measures).

The allowable codes for the position tracking screen are as follows:

Y = Yes
N = No
C = Cannot assess

"Yes" is the default code for this item.

3.15.1.2 Recommendation For Care Screen

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.

The "Assessments" section will be prefilled by the system. 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 levels are provided as a guide for the examiner only.**

The "Overall Recommendation" section is to 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/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 as follows.

        A = Decayed teeth
        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: "F" is mutually exclusive with all other calls and no other condition will be listed if selected.

Section G is only used when a referral letter will be generated. The "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 check mark 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.

3.15.1.3   SP Referral Information Screen

The SP Referral Information screen 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.

To complete this screen, the examiner will obtain the name and address of the SP's dentist or clinic to whom the letter should be addressed. In addition, the examiner will inform the recorder of 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 whom the letter should be sent, the Clinic Pickup feature on the upper right hand portion of the screen is 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.

All comments to be added in the "Description of Explanation" and "SP Response" dialog boxes are to be recorded verbatim as the examiner dictates. In sensitive cases, the examiner may ask the recorder to leave the room and complete the screen him/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 Shipping Room. Use this function whenever the examiner needs to review a hardcopy of this letter with the SP. ***Do not provide the SP with a copy of this letter.*** He/She will receive a copy of the letter along with the related documents when he/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 Recommendation For Care screen (refer back to Section 4.3.5) to exit the examination.

3.15.2 Position Tracking Screen
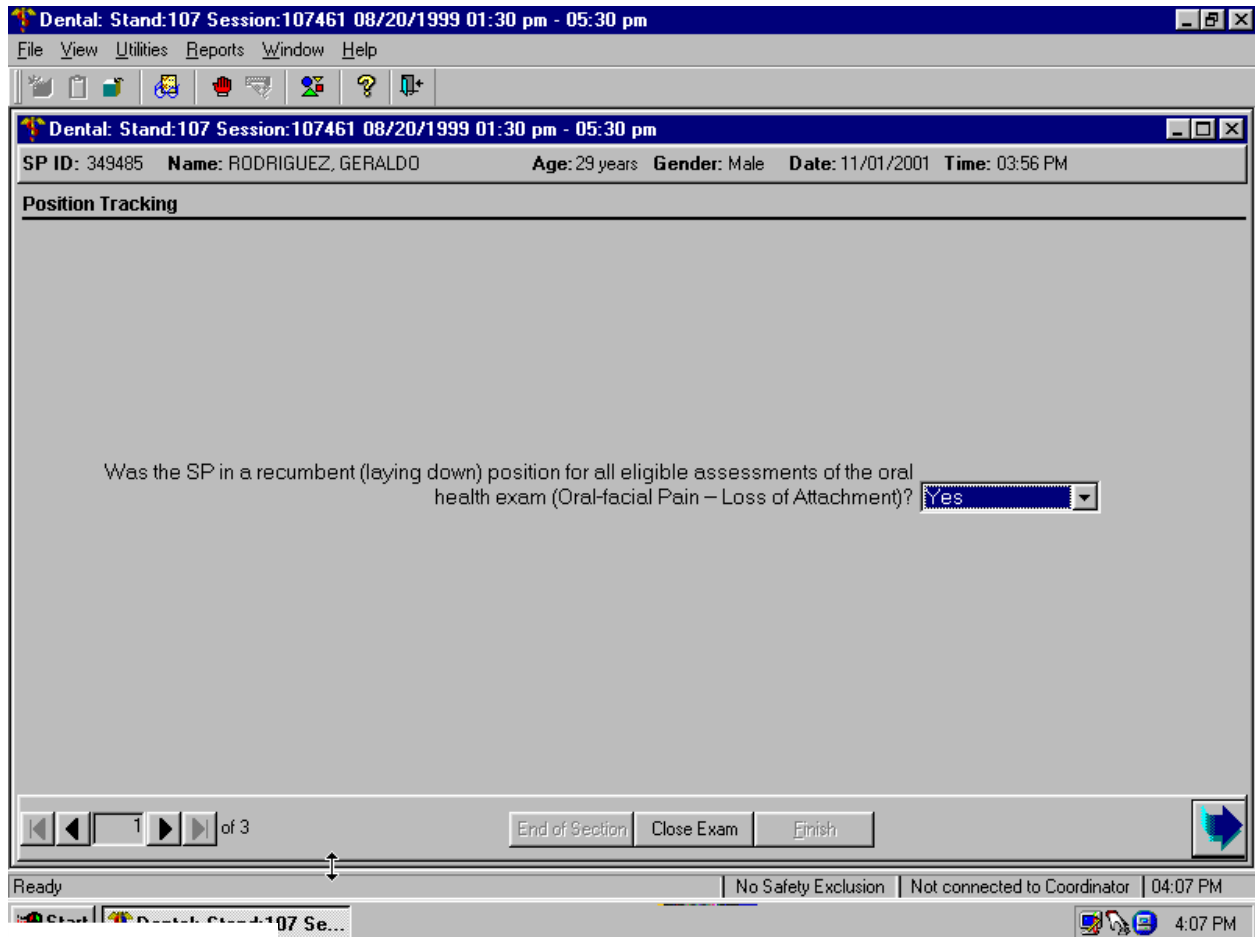
Allowable Entries: Y = Yes (default)
                          N = No
                          C = Cannot assess

Move Through Screen: Not applicable

Shortcut: None

3.15.3 Recommendation For Care Screen

Allowable Entries: Overall Recommendation
1 = SP should see a dentist immediately
2 = SP should see a dentist within the next 2 weeks
3 = SP should see a dentist at his/her earliest convenience
4 = SP should continue his/her regular routine care
Other Conditions
(Code all that apply by using the mouse to click on the appropriate boxes)
A.   Decayed teeth
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 findings (see comment)
NOTE: The condition F, "No finding," 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.
NOTE: This section must be completed whenever "Some other finding" is selected in the "Other Conditions" field.

Move Through Screen: User must use mouse to move from field to field.

Shortcut: None

3.15.4 SP Referral Information Screen

Allowable Entries:	Clinic/Dentist Name, Address, and Phone
	If SP has a preferred dentist/clinic: Enter verbatim as provided by the SP.
	If SP requires a referral dentist/clinic: Use mouse to select "clinic" or "dentist" in Clinic Pickup box.
	Explained to…
	Use mouse to select one of three options displayed on the screen.
	Description of Explanation/SP Response
	Accepts up to 225 characters; enter verbatim as provided by examiner.
Move Through Screen:	User must use mouse to move from data entry field to data entry field.
Shortcut:	None

3.16   **Post-Examination Procedures**

1.   Complete the Dental Examination Screens.

2.   Use the mouse to click on the <FINISH> button located on the navigation bar of the Recommendation For Care Section Status screen. (Remember to click on the <CLOSE EXAM> button if exiting prior to the end of the examination). The SP's examination record is cleared.

3.   Escort the SP to the next component room or back to the coordinator area for assignment to another component as directed by the coordinator via the ISIS messaging system.