

DENTAL CARIES EXAMINATION

1. Equipment

dental mirror
North Carolina 15 periodontal probe
dental explorer
2"x2" sterile gauze
air syringe

2. Examination Protocol

If the last digit of the participant's ID number is ODD then the right side of the mouth is examined.
If the last digit is EVEN then the left side is examined.

An effort should be made to examine each subject in the same manner regardless of the amount of caries or prior treatment. In any research project, it is ideal to systematize the examination procedure, and to follow the same routine for each examinee. As an aid to consistency, teeth should be air-dried prior to examining each quadrant. A mounted dental light (rather than natural light) should always be used. Trans-illumination by external light source is permissible. A front-surface mirror, periodontal probe, and explorer will be used to assess caries. ***The explorer will only be used to assess the presence of inter-proximal decay. The explorer will not be used to assess a "stick" or "tug-back" in potentially carious areas or to determine if a root lesion is "soft".*** To determine if areas are soft, a periodontal probe will be used to gently determine surface consistency. Explorers are not being used in the traditional manner because they have been shown to damage demineralized enamel and cementum.

Before the examination, have the participant remove any removable prostheses. The maxillary arch is examined first. The caries examination begins at the most distal tooth in the arch and proceeds to the midline. The examiner should examine the surfaces in the following order: occlusal, lingual, buccal, distal, and mesial on posterior teeth and lingual, buccal, distal, and mesial on anterior teeth. All surfaces of the tooth are examined before proceeding to the next tooth. The procedure is then repeated for the mandibular arch.

When accumulations of plaque obstruct the examination procedure, the plaque can be removed with gauze or a toothbrush. No attempts should be made to remove calculus.

NOTE: For the purpose of this study, the dental radiographs should not be used to determine the presence of caries.

IMPORTANT: Dental implants are considered to be missing teeth. Third molars are not evaluated in any part of the oral assessment – even if they have drifted into the second molar position.

3. Coronal Caries

Each crown should be coded as either missing, sound, restored, or decayed. The clinical terms, sound, restored and decayed will not be used; instead, a numbering system will be used to classify each tooth (Sound=0, Restored=1, Decayed=2).

Missing: If the natural tooth is missing – even though it may be replaced with a bridge or implant – code the tooth as missing.

Sound (Code=0): Only teeth with no coronal restorations or coronal decay are considered sound.

Restored (Code=1): If the coronal portion of the tooth has a filling, temporary filling, or full coverage code the tooth as restored – unless coronal decay is also present. If the coronal portion of the tooth is restored but also has decay – code the tooth as decayed.

If a tooth has a restoration that is cracked, chipped or partially missing, code the tooth as restored – unless coronal decay is also present. A “broken” restoration does not necessarily mean that active decay is present.

Decayed (Code=2): Active decay is detected when a screener can readily observe two things: (1) A loss of at least ½ mm of tooth structure at the enamel surface and (2) brown to dark-brown coloration of the walls of the cavity. Teeth that meet **both** of these criteria are considered decayed, even if a filling or a crown is also present. These criteria apply to both pit and fissure cavities as well as those on smooth tooth surfaces.

If the screener notices a retained root, assume that the coronal portion of the tooth was destroyed by caries and code the crown as decayed.

Broken or chipped teeth are considered sound unless a cavity is also present. Teeth with temporary fillings are considered restored unless a cavity is also present.

Decay on proximal surfaces: For areas not available to direct visual-tactile examination, the following criterion applies: a discontinuity of the enamel in which the explorer will catch is carious if there is softness. In posterior teeth, visual evidence of undermining under a marginal ridge is not acceptable evidence of a proximal lesion unless a surface break can be entered with the explorer. In the anterior teeth, however, transillumination can serve as a useful aid in discovering proximal lesions. Transillumination is achieved by placing a mirror lingually and positioning the examining light so that it passes through the teeth and reflects into the mirror. If a characteristic shadow or loss of translucency is seen on the proximal surface, then this is indicative of caries on the surface. Ideally, the actual diagnosis should be confirmed with the explorer, however, clear visualization of a lesion by transillumination can justify a positive diagnosis.

4. Root Surface Caries

Caries can occur in root surfaces of teeth only where there has been loss of normal gingival attachment (apical recession from the CEJ). Generally, caries in root surfaces are coronal to the present gingival margin; very few lesions exist solely in the gingival pocket. Although all exposed root surfaces are susceptible, it has been reported that caries predominantly occur in approximal and buccal aspects.

Root caries start at or just below the CEJ. Most commonly, early root caries lesions are small and round. However, they may spread laterally along the cervical junction, sometimes coalescing with neighboring lesions to produce a gutter or even a collar of caries around the root. Caries that begin on a root surface do not tend to affect the outer enamel surface directly. Rather, it may undermine

the cervical enamel and exist in coronal dentin, leaving a cervical enamel spur or ledge. If the carious process continues, pieces of this ledge may fracture, making it appear as if caries had originated in the enamel as well as the cementum. The opposite sequence can occur as well, with cervical coronal caries spreading apically to involve the CEJ and the root surface. Whenever both a coronal and root surface is affected by a single caries lesion, only its likely site of origin should be scored as decayed on the recording form. The likely site of origination can often be determined by clinical appearance. When it is impossible to determine the site of origin, both the coronal and root surface should be scored “decayed”. For restorations, the same rules apply. The margins of all filled root surfaces should be gently checked for recurrent decay and the criteria for scoring “decayed” roots should be the same as for coronal surfaces.

Areas of abrasion or erosion in root surfaces rarely become carious because they are generally kept clean and are free of plaque. Root caries frequently occur beneath plaque, but rarely beneath calculus. Accumulations of plaque which obstruct the examination procedure should be removed with gauze or a toothbrush. Surfaces covered entirely by calculus are considered sound.

Active caries lesions in root surfaces are yellow/orange, tan or light brown in color. Lesions in remission tend to be darker, sometimes almost black. Areas of root caries are softer than surrounding cementum and it is possible to differentiate sound cementum from carious cementum based on tactile sense. Gently feel the area with a periodontal probe (not an explorer) to determine if the area is “soft”.

Each root should be coded as either sound, restored, or decayed. Note: Missing teeth are only recorded in the coronal caries portion of the exam. The clinical terms, sound, restored and decayed will not be used; instead, a numbering system will be used to classify each tooth (Sound=0, Restored=1, Decayed=2).

Sound (Code=0): Only teeth with no root restorations or root decay are considered sound.

Restored (Code=1): If the root portion of the tooth has a filling or temporary filling code the root as restored – unless root decay is also present. If the root of the tooth is restored but also has decay – code the root as decayed.

Decayed (Code=2): Active decay is detected when a screener can readily observe two things: (1) A loss of at least ½ mm of tooth structure on the cementum and (2) tan, brown, orange, or dark-brown coloration of the walls of the cavity. Teeth that meet ***both*** of these criteria are considered decayed, even if a filling or a crown is also present.

If the screener notices a retained root, code the root as decayed.

Teeth with temporary fillings are considered restored unless a cavity is also present.

5. Special Conditions

5.1 Differentiation Between Coronal and Root Caries

Coronal caries starts at or just above the cemento-enamel junction (CEJ). If the coronal and root surfaces are both affected by a single lesion, it will be necessary to determine whether the lesion originated on the root or the crown. If more than half of the lesion is above the CEJ, then the site of origin is determined to be on the crown, no call is made for root caries. If the site of origin is

determined to be on the root, no call is made for coronal caries. When the lesion appears to affect the root and coronal surfaces equally, both surfaces should be scored as affected. For restorations, the same rules apply.

5.2 Non-Vital Teeth

Non-vital teeth are to be scored in the same manner as vital teeth.

5.3 Mobile Teeth

Mobile teeth are to be scored in the usual manner but should be examined with caution.

5.4 Abrasion and Erosion

Areas of abrasion or erosion in root surfaces rarely become carious because they are generally kept clean and are free of plaque. These areas should be coded as “sound” unless a definitive root lesion is also present.

5.5 Dental Implants

For the purpose of the caries examination, dental implants are considered to be missing teeth.

5.6 Third Molars

Third molars are not evaluated even if they have drifted into a second molar position. If you determine that the second molar position is held by a third molar, classify the second molar as missing and ignore the third molar.

NOTE:

Root tips

If a participant has a retained root tip, the following rules apply:

1. Score the crown as carries
2. Score the root as carries

Retained Primary Teeth

If a participant has a retained primary tooth, the following rules apply:

1. Score the permanent tooth as missing