Oral Health of United States Children

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DENTAL FLUOROSIS

Diagnosis and Classification:

General Guidelines for the Dental Fluorosis Examination

The examiner follows the same sequence in the mouth as for the DMFS examination. A single call is made for each tooth or tooth position present in children in Grades 2-12.

No fluorosis assessment is made for deciduous teeth, permanent teeth not in full eruption, or teeth in which more than one-half of the visible surface is obscured by a restoration, caries, or an orthodontic appliance. These tooth spaces will be excluded.

Classification and Scoring

The most commonly used system for clinically classifying and scoring dental fluorosis is the system described by Dean in 1942. In Dean's system, each tooth is examined and assigned to one of six categories according to its degree of fluorosis. Classification of a person is based on the two teeth most affected by fluorosis. If the two teeth are not equally affected, the classification given is that of the less involved tooth. The criteria for Dean's classification system and the corresponding scores are as follow:

Classification (Score)	Criteria
Normal(0)	The enamel represents the usual translucent semivitriform type of structure. The surface is smooth, glossy, and usually of a pale

	creamy white color.
Questionable(.5)	The enamel discloses slight aberrations from the translucency of normal enamel, ranging from a few white flecks to occasional white spots. This classification is utilized in those instances where a definite diagnosis of the very mildest form of fluorosis is not warranted and a classification of "normal" is not justified. Included in this category are teeth that show no signs of fluorosis other than 1-2 mm of white opacity at the cusp tips of posterior teeth or incisal edges of anterior teeth.
Very Mild(1)	Small, opaque, paper white areas scattered irregularly over the enamel but involving less than 25 percent of the total surface area.
Mild(2)	The white opaque areas are more extensive but involve less than 50 percent of the total surface area.
Moderate(3)	At least 50 percent of the total surface area is affected. Surfaces subject to attrition often show wear and brown stains may be present.
Severe(4)	The entire surface area is usually affected. The diagnostic sign required for this classification is discrete or confluent pitting of the enamel. With marked confluent pitting, the tooth often presents a corroded-like appearance. Brown stains of intact enamel are often present.

Special Diagnostic Considerations

- Only fully-erupted teeth are scored, using a good source of artificial light. The teeth are not air-dried before scoring.
- A tooth is not scored if one-half or more of the visible enamel area is replaced with a restoration or is destroyed by caries or covered with an orthodontic band.
- Fluorosis in the milder classifications may be confined to particular areas of the enamel, or may occur irregularly over the entire enamel surface. The area affected is derived by visually coalescing all areas of fluorosis and relating that area to the total area of all visible enamel. For posterior teeth, the visible enamel is composed of the buccal and lingual surfaces, extending from embrasure to embrasure, and the occlusal surface. For anterior teeth, the visible area is composed of the labial and lingual surfaces, extending from embrasure to embrasure.
- Because of masticatory abrasion, occlusal surfaces of posterior teeth may show less fluorosis than buccal and lingual surfaces of the same teeth. Also, toothbrush abrasion and continued post-eruptive mineralization may result in gradual decreases in the intensity of fluorosis, particularly in areas of enamel affected by the milder forms of the condition. Thus, the level of fluorosis in a tooth does not always remain constant. Scoring must be based on the current state of the condition.
- Staining per se of intact enamel is not a diagnostic criterion specific to any of the classifications. A stained area of fluorosis is considered the same as a non-stained area of

fluorosis in determining the total affected area. For example, a tooth that shows severe fluorosis may not necessarily be stained, whereas, another tooth that demonstrates moderate fluorosis may show staining.

- Fluorosed teeth do not erupt with pits. Instead, pitting occurs post-eruptively when the teeth are subjected to masticatory forces. A pit is defined as a discrete, focal loss of outermost enamel. The defect is partly or wholly surrounded by a wall of enamel. Initially, the enamel wall is usually intact. With wear, however, the enamel wall can be abraded away, so that often only part of the wall can be detected. In contrast to intact enamel on which the explorer tip can be moved easily across the smooth surface, pitted areas demonstrate a definite physical defect in which the base of the defective area may be either carious or sound. If it is sound, the base of the pit is rough and offers resistance to the lateral movement of the explorer tip, and a scratchy sound is detected when the explorer is moved across it. If the base is carious, it demonstrates softness upon being probed with moderate pressure. The pitted area is usually stained or demonstrates a different color compared with the surrounding enamel.

- Confluent pitting of the enamel results from the coalescence of two or more discrete pits. The walls of pits at the occlusal or incisal edges can be abraded, so that only the walls on the gingival aspect remain intact, often leading to an irregular "ledging" effect. In some cases, confluent pitting may advance to a point where such large areas of enamel are corroded that the anatomy of the tooth is altered.