

ICDAS Dental Caries Coding System

International Caries Detection and Assessment System (ICDAS) ×

Introduction

Restoration and Sealant Codes

- 0 = Not restored or sealed
- 1 = Sealant, partial
- 2 = Sealant, full
- 3 = Tooth coloured restoration
- 4 = Amalgam restoration
- 5 = Stainless steel crown
- 6 = Porcelain or gold or PFM crown or veneer
- 7 = Lost or broken restoration
- 8 = Temporary restoration

To record dental disease, you will use the International Caries Detection and Assessment System (ICDAS).

Caries Codes

- 0 = Sound tooth surface
- 1 = First visual change in enamel
- 2 = Distinct visual change in enamel
- 3 = Enamel breakdown, no dentine visible
- 4 = Underlying dentinal shadow (not cavitated into dentine)
- 5 = Distinct cavity with visible dentine
- 6 = Extensive distinct cavity with visible dentine

Missing teeth

- 97 = Extracted due to caries
- 98 = Missing for other reason
- 99 = Unerupted

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Tooth status: first number

A two-number coding system will be used to identify restorations. The system is as follows:

0 = Sound (use with the codes for primary caries)

1 = Sealant, partial

2 = Sealant, full

3 = Tooth colored restoration

4 = Amalgam restoration

5 = Stainless steel crown

6 = Porcelain or gold or PFM crown or veneer

7 = Lost or broken restoration

8 = Temporary restoration

9 = Used for the following conditions

97 = Tooth extracted because of caries (all tooth surfaces will be coded 97)

98 = Tooth extracted for reasons other than caries (all tooth surfaces coded 98)

99 = Unerupted (all tooth surfaces coded 99)

Caries status: Second number

0 = Sound

1 = First visual change in enamel (whitespot seen after 5 seconds air drying).

2 = Distinct visual change in enamel (whitespot seen without air drying).

3 = Localized enamel breakdown due to caries with no visible dentin

4 = Non-cavitated surface with underlying dark shadow from dentin

5 = Distinct cavity with visible dentin

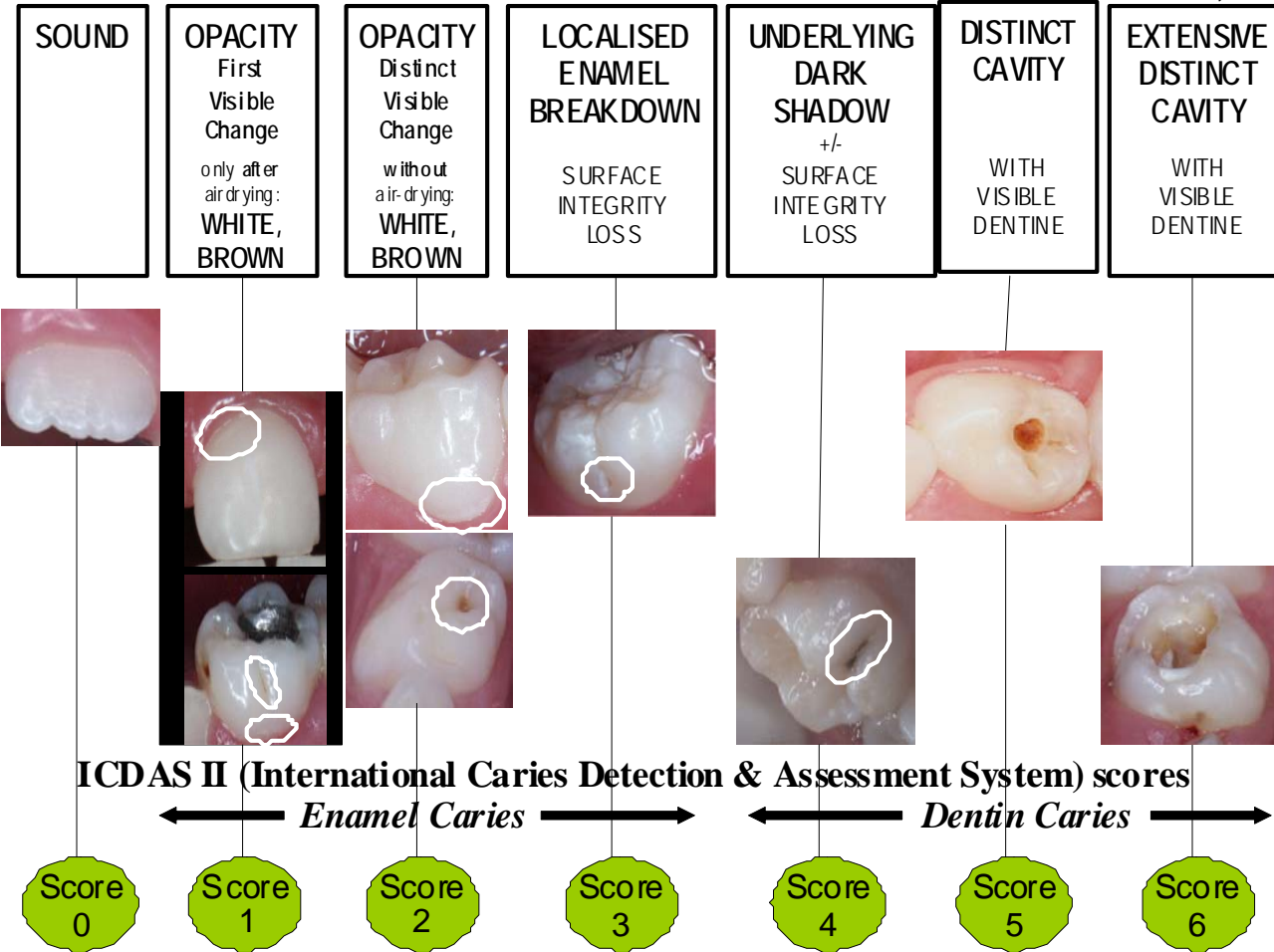
6 = Extensive distinct cavity with visible dentin. An extensive cavity involves at least half of a tooth surface and possibly reaching the pulp.

7 = Tooth extracted because of caries (tooth surfaces will be coded 97)

8 = Tooth extracted for reasons other than caries (tooth surfaces will be coded 98)

9 = Unerupted (tooth surfaces coded 99)

ICDAS-II detection criteria, 2005



Root caries (New in ICDAS II)

E = Excluded root surfaces (no gingival recession)

0 = Sound (no caries or restoration)

1 = Non-cavitated carious root surface— soft or leathery

2 = Non-cavitated carious root surface— hard and glossy

3 = Cavitated (greater than 0.5mm in depth) carious root surface— soft or leathery

4 = Cavitated (greater than 0.5mm in depth) carious root surface—hard and glossy

6 = Extensive cavity: an extensive cavity involves at least half of a tooth surface and possibly reaching the pulp.

7 = Filled root with no caries

9 = Used for the following conditions

97 = Tooth extracted because of caries (tooth surfaces will be coded 97)

98 = Tooth extracted for reasons other than caries (all tooth surfaces coded 98)

99 = Unerupted (tooth surfaces coded 99)

Root Caries Criteria

Codes for the detection and classification of carious lesions on the root surfaces

One score will be assigned per root surface. The facial, mesial, distal and lingual root surfaces of each tooth should be classified as follows:

Code E

If the root surface cannot be visualized directly as a result of gingival recession or by gentle air-drying, then it is excluded. Surfaces covered entirely by calculus can be excluded or, preferably, the calculus can be removed prior to determining the status of the surface. Removal of calculus is recommended for clinical trials and longitudinal studies.

Code 0

The root surface does not exhibit any unusual discoloration that distinguishes it from the surrounding or adjacent root areas nor does it exhibit a surface defect either at the cemento-enamel junction or wholly on the root surface. The root surface has a natural anatomical contour, OR

The root surface may exhibit a definite loss of surface continuity or anatomical contour that is not consistent with the dental caries process. This loss of surface integrity usually is associated with dietary influences or habits such as abrasion or erosion. These conditions usually occur on the facial surface. These areas typically are smooth, shiny and hard. Abrasion is characterized by a clearly defined outline with a sharp border, whereas erosion has a more diffuse border. Neither condition shows discoloration.

Code 1

There is a clearly demarcated area on the root surface or at the cemento-enamel junction (cej) that is discoloured (light/dark brown, black) but there is no cavitation (loss of anatomical contour < 0.5 mm) present.

Code 2

There is a clearly demarcated area on the root surface or at the cemento-enamel junction (cej) that is discoloured (light/dark brown, black) and there is cavitation (loss of anatomical contour ≥ 0.5 mm) present.

Caries associated with root restorations

When a root surface is filled and there is caries adjacent to the restoration, the surface is scored as caries. The criteria for caries associated with restorations on the roots of teeth are the same as those for caries on non-restored root surfaces.

The following diagram (Figure 3) will assist the examiner in deciding on the appropriate coding of caries adjacent to restorations on root surfaces:

Root caries activity

The characteristics of the base of the discolored area on the root surface can be used to determine whether or not the root caries lesion is active or not. These characteristics include texture (smooth, rough), appearance (shiny or glossy, matte or non-glossy) and perception on gentle probing (soft, leathery, hard). Active root caries lesions are usually located within 2mm. of the crest of the gingival margin

Whenever both a coronal and root surface are affected by a single carious lesion that extends at least 1 mm past the CEJ in both the incisal and apical directions, both surfaces should be scored as caries. However, for a lesion affecting both crown and root surfaces that does not meet the 1 mm or greater extent of involvement, only the coronal or root surface that involves the greater portion (more than 50%) of the lesion should be scored as caries. When it is impossible to invoke the 50% rule (i.e., when both coronal and root surfaces appear equally affected), both surfaces should be scored as caries.

When a carious lesion on a root surface extends beyond the line angle of the root to involve at least 1/3 of the distance across the adjacent surface, that adjacent surface also should also be scored as caries.

If more than one lesion is present on the same root surface, the most severe lesion is scored. Non-vital teeth are scored the same as vital teeth.

Caries Risk Assessment Form (Age >6)

Patient Name: □□□□□

Score: □□□

Birth Date: □□□□□

Date: □□□□□

Age: □□□□□

Initials: □□□□□

		Low Risk (0)	Moderate Risk (1)	High Risk (10)	Patient Risk
Contributing Conditions					
I.	Fluoride Exposure (through drinking water, supplements, professional applications, toothpaste)	Yes	No		□□□□ □
II.	Sugary or Starchy Foods or Drinks (including juice, carbonated or non-carbonated soft drinks, energy drinks, medicinal syrups)	Primarily at mealtimes		Frequent or prolonged between meal exposures/day	□□□□ □
III.	Caries Experience of Mother, Caregiver and/or other Siblings (for patients ages 6-14)	No carious lesions in last 24 months	Carious lesions in last 7-23 months	Carious lesions in last 6 months	□□□□ □
IV.	Dental Home: established patient of record, receiving regular dental care in a dental office	Yes	No		□□□□ □
General Health Conditions					
I.	Special Health Care Needs*	No	Yes (over age 14)	Yes (ages 6-14)	□□□□ □
II.	Chemo/Radiation Therapy	No		Yes	□□□□ □
III.	Eating Disorders	No	Yes		□□□□ □
IV.	Smokeless Tobacco Use	No	Yes		□□□□ □
V.	Medications that Reduce Salivary Flow	No	Yes		□□□□ □
VI.	Drug/Alcohol Abuse	No	Yes		□□□□ □
Clinical Conditions					
I.	Cavitated or Non-Cavitated (incipient) Carious Lesions or Restorations (visually or radiographically evident)	No new carious lesions or restorations in last 36 months	1 or 2 new carious lesions or restorations in last 36 months	3 or more carious lesions or restorations in last 36 months	□□□□ □
II.	Teeth Missing Due to Caries in past 36 months	No		Yes	□□□□ □
III.	Visible Plaque	No	Yes		□□□□ □
IV.	Unusual Tooth Morphology that compromises oral hygiene	No	Yes		□□□□ □
V.	Interproximal Restorations - 1 or more	No	Yes		□□□□ □
VI.	Exposed Root Surfaces Present	No	Yes		□□□□ □
VII.	Restorations with Overhangs and/or Open Margins; Open Contacts with Food Impaction	No	Yes		□□□□ □
VIII.	Dental/Orthodontic Appliances (fixed or removable)	No	Yes		□□□□ □
IX.	Severe Dry Mouth (Xerostomia)	No		Yes	□□□□

					<input type="checkbox"/>
TOTAL:					<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Patient Instructions:

*Patients with developmental, physical, medical or mental disabilities that prevent or limit performance of adequate oral health care by themselves or caregivers. Copyright ©2008 American Dental Association



Indicate 0, 1 or 10 in the last column for each risk factor. If the risk factor was not determined or is not applicable, enter a 0 in the patient risk factor column. Total the factor values and record the score at the top of the page.

A score of 0 indicates a patient has a low risk for the development of caries. A single high risk factor, or score of 10, places the patient at high risk for development of caries. Scores between 1 and 10 place the patient at a moderate risk for the development of caries. Subsequent scores should decrease with reduction of risks and therapeutic intervention.

The clinical judgment of the dentist may justify a change of the patient's risk level (increased or decreased) based on review of this form and other pertinent information. For example, missing teeth may not be regarded as high risk for a follow up patient; or other risk factors not listed may be present.

The assessment cannot address every aspect of a patient's health, and should not be used as a replacement for the dentist's inquiry and judgment. Additional or more focused assessment may be appropriate for patients with specific health concerns. As with other forms, this assessment may be only a starting point for evaluating the patient's health status.

This is a tool provided for the use of ADA members. It is based on the opinion of experts who utilized the most up-to-date scientific information available. The ADA plans to periodically update this tool based on: 1) member feedback regarding its usefulness, and; 2) advances in science. ADA member-users are encouraged to share their opinions regarding this tool with the Council on Dental Practice.

Caries Risk Assessment Form (Ages 0-6)

Patient Name:

Score:

Birth Date:

Date:

Age:

Initials:

		Low Risk (0)	Moderate Risk (1)	High Risk (10)	Patient Risk
Contributing Conditions					
I.	Fluoride Exposure (through drinking water, supplements, professional applications, toothpaste)	Yes	No		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
II.	Sugary or Starchy Foods or Drinks (including juice, carbonated or non-carbonated soft drinks, energy drinks, medicinal syrups)	Primarily at mealtimes	Frequent or prolonged between meal exposures/day	Bottle or sippy cup with anything other than water at bed time	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
III.	Eligible for Government Programs (WIC, Head Start, Medicaid or SCHIP)	No		Yes	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
IV.	Caries Experience of Mother, Caregiver and/or Other Siblings	No carious lesions in last 24 months	Carious lesions in last 7-23 months	Carious lesions in last 6 months	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
V.	Dental Home: established patient of record in a dental office	Yes	No		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
General Health Conditions					
I.	Special Health Care Needs*	No		Yes	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
Clinical Conditions					
I.	Visual or Radiographically Evident Restorations/Cavitated Carious Lesions	No carious lesions or restorations in last 24 months		Carious lesions or restorations in last 24 months	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
II.	Non-cavitated (incipient) Carious Lesions	No new lesions in last 24 months		New lesions in last 24 months	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
III.	Teeth Missing Due to Caries	No		Yes	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
IV.	Visible Plaque	No	Yes		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
V.	Dental /Orthodontic Appliances Present (fixed or removable)	No	Yes		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
VI.	Salivary Flow	Visually adequate		Visually inadequate	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>
TOTAL:					<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/>

Instructions for Caregiver:

*Patients with developmental, physical, medical or mental disabilities that prevent or limit performance of adequate oral health care by themselves or caregivers.

Indicate 0, 1 or 10 in the last column for each risk factor. If the risk factor was not determined or is not applicable, enter a 0 in the patient risk factor column. Total the factor values and record the score at the top of the page.

A score of 0 indicates a patient has a low risk for the development of caries. A single high risk factor, or score of 10, places the patient at high risk for development of caries. Scores between 1 and 10 place the patient at a moderate risk for the development of caries. Subsequent scores should decrease with reduction of risks and therapeutic intervention.

The clinical judgment of the dentist may justify a change of the patient's risk level (increased or decreased) based on review of this form and other pertinent information. For example, missing teeth may not be regarded as high risk for a follow up patient; or other risk factors not listed may be present.

The assessment cannot address every aspect of a patient's health, and should not be used as a replacement for the dentist's inquiry and judgment. Additional or more focused assessment may be appropriate for patients with specific health concerns. As with other forms, this assessment may be only a starting point for evaluating the patient's health status.

This is a tool provided for the use of ADA members. It is based on the opinion of experts who utilized the most up-to-date scientific information available. The ADA plans to periodically update this tool based on: 1) member feedback regarding its usefulness, and; 2) advances in science. ADA member-users are encouraged to share their opinions regarding this tool with the Council on Dental Practice.

Guideline on Caries-risk Assessment and Management for Infants, Children, and Adolescents

Originating Council

Council on Clinical Affairs

Review Council

Council on Clinical Affairs

Adopted

2002

Revised

2006, 2010

Purpose

The American Academy of Pediatric Dentistry (AAPD) recognizes that caries-risk assessment and management protocols can assist clinicians with decisions regarding treatment based upon caries risk and patient compliance and are essential elements of contemporary clinical care for infants, children, and adolescents. This guideline is intended to educate healthcare providers and other interested parties on the assessment of caries risk in contemporary pediatric dentistry and aid in clinical decision making regarding diagnostic, fluoride, dietary, and restorative protocols.

Methods

This guideline is an update of AAPD's "Policy on Use of a Caries-risk Assessment Tool (CAT) for Infants, Children, and Adolescents, Revised 2006" that includes the additional concepts of dental caries management protocols. The update used electronic and hand searches of English written articles in the medical and dental literature within the last 10 years using the search terms "caries risk assessment", "caries management", and "caries clinical protocols". From this search, 1,909 articles were evaluated by title or by abstract. Information from 75 articles was used to update this document. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

Background

Caries-risk assessment

Risk assessment procedures used in medical practice normally have sufficient data to accurately quantitate a person's disease susceptibility and allow for preventive measures.¹ Even though caries-risk data in dentistry still are not sufficient to quantitate the models, the process of determining risk should be a component in the clinical decision making process.² Risk assessment:

1. fosters the treatment of the disease process instead of treating the outcome of the disease;

2. gives an understanding of the disease factors for a specific patient and aids in individualizing preventive discussions;
3. individualizes, selects, and determines frequency of preventive and restorative treatment for a patient; and
4. anticipates caries progression or stabilization.

Caries-risk assessment models currently involve a combination of factors including diet, fluoride exposure, a susceptible host, and microflora that interplay with a variety of social, cultural, and behavioral factors.³⁻⁶ Caries risk assessment is the determination of the likelihood of the incidence of caries (ie, the number of new cavitated or incipient lesions) during a certain time period⁷ or the likelihood that there will be a change in the size or activity of lesions already present. With the ability to detect caries in its earliest stages (ie, white spot lesions), health care providers can help prevent cavitation.⁸⁻¹⁰

Caries risk indicators are variables that are thought to cause the disease directly (eg, microflora) or have been shown useful in predicting it (eg, socioeconomic status) and include those variables that may be considered protective factors. Currently, there are no caries-risk factors or combinations of factors that have achieved high levels of both positive and negative predictive values.² Although the best tool to predict future caries is past caries experience, it is not particularly useful in young children due to the importance of determining caries risk before the disease is manifest. Children with white spot lesions should be considered at high risk for caries since these are precavitated lesions that are indicative of caries activity.¹¹ Plaque accumulation also is strongly associated with caries development in young children.^{12,13} As a corollary to the presence of plaque,¹⁴ a child's mutans streptococci levels³ and the age at which a child becomes colonized with cariogenic flora^{15,16} are valuable in assessing risk, especially in preschool children.

While there is no question that fermentable carbohydrates are a necessary link in the causal chain for dental caries, a systematic study of sugar consumption and caries risk has concluded that the relationship between sugar consumption and

caries is much weaker in the modern age of fluoride exposure than previously thought.¹⁷ However, there is evidence that night-time use of the bottle, especially when it is prolonged, may be associated with early childhood caries.¹⁸ Despite the fact that normal salivary flow is an extremely important intrinsic host factor providing protection against caries, there is little data about the prevalence of low salivary flow in children.^{19,20}

Sociodemographic factors have been studied extensively to determine their effect on caries risk. Children with immigrant backgrounds have 3 times higher caries rates than non-immigrants.²¹ Most consistently, an inverse relationship between socioeconomic status and caries prevalence is found in studies of children less than 6 years of age.²² Perhaps another type of sociodemographic variable is the parents' history of cavities and abscessed teeth; this has been found to be a predictor of treatment for early childhood caries.^{23,24}

The most studied factors that are protective of dental caries include systemic and topical fluoride, sugar substitutes, and tooth brushing with fluoridated toothpaste. Teeth of children who reside in a fluoridated community have been shown to have higher fluoride content than those of children who reside in suboptimal fluoridated communities.²⁵ Additionally, both pre- and post-eruption fluoride exposure maximize the caries-preventive effects.^{26,27} For individuals residing in non-fluoridated communities, fluoride supplements have shown a significant caries reduction in primary and permanent teeth.²⁸ With regard to fluoridated toothpaste, studies have shown

consistent reduction in caries experience.²⁹ Professional topical fluoride applications performed semiannually also reduce caries,³⁰ and fluoride varnishes generally are equal to that of other professional topical fluoride vehicles.³¹

The effect of sugar substitutes on caries rates have been evaluated in several populations with high caries prevalence.³² Studies indicate that xylitol can decrease mutans streptococci levels in plaque and saliva and can reduce dental caries in young children and adults, including children via their mothers.³³ With regard to toothbrushing, there only is a weak relationship between frequency of brushing and decreased dental caries, which is confounded because it is difficult to distinguish whether the effect is actually a measure of fluoride application or whether it is a result of mechanical removal of plaque.³⁴ The dental home or regular periodic care by the same practitioner is included in many caries-risk assessment models because of its known benefit for dental health.³⁵

Risk assessment tools can aid in the identification of reliable predictors and allow dental practitioners, physicians, and other nondental health care providers to become more actively involved in identifying and referring high-risk children. Tables 1, 2, and 3 incorporate available evidence into practical tools to assist dental practitioners, physicians, and other nondental health care providers in assessing levels of risk for caries development in infants, children, and adolescents. As new evidence emerges, these tools can be refined to provide greater predictability of caries in children prior to disease initiation.

Table 1. Caries-risk Assessment Form for 0-3 Year Olds^{59,60}
(For Physicians and Other Non-Dental Health Care Providers)

Factors	High Risk	Moderate Risk	Protective
Biological			
Mother/primary caregiver has active cavities	Yes		
Parent/caregiver has low socioeconomic status	Yes		
Child has >3 between meal sugar-containing snacks or beverages per day	Yes		
Child is put to bed with a bottle containing natural or added sugar	Yes		
Child has special health care needs		Yes	
Child is a recent immigrant		Yes	
Protective			
Child receives optimally-fluoridated drinking water or fluoride supplements			Yes
Child has teeth brushed daily with fluoridated toothpaste			Yes
Child receives topical fluoride from health professional			Yes
Child has dental home/regular dental care			Yes
Clinical Findings			
Child has white spot lesions or enamel defects	Yes		
Child has visible cavities or fillings	Yes		
Child has plaque on teeth		Yes	

Circling those conditions that apply to a specific patient helps the health care worker and parent understand the factors that contribute to or protect from caries. Risk assessment categorization of low, moderate, or high is based on preponderance of factors for the individual. However, clinical judgment may justify the use of one factor (eg, frequent exposure to sugar containing snacks or beverages, visible cavities) in determining overall risk.

Overall assessment of the child's dental caries risk: High Moderate Low

Table 2. Caries-risk Assessment Form for 0-5 Year Olds^{59,60}

(For Dental Providers)

Factors	High Risk	Moderate Risk	Protective
Biological			
Mother/primary caregiver has active caries	Yes		
Parent/caregiver has low socioeconomic status	Yes		
Child has >3 between meal sugar-containing snacks or beverages per day	Yes		
Child is put to bed with a bottle containing natural or added sugar	Yes		
Child has special health care needs		Yes	
Child is a recent immigrant		Yes	
Protective			
Child receives optimally-fluoridated drinking water or fluoride supplements			Yes
Child has teeth brushed daily with fluoridated toothpaste			Yes
Child receives topical fluoride from health professional			Yes
Child has dental home/regular dental care			Yes
Clinical Findings			
Child has >1 decayed/missing/filled surfaces (dmfs)	Yes		
Child has active white spot lesions or enamel defects	Yes		
Child has elevated mutans streptococci levels	Yes		
Child has plaque on teeth		Yes	

Circling those conditions that apply to a specific patient helps the practitioner and parent understand the factors that contribute to or protect from caries. Risk assessment categorization of low, moderate, or high is based on preponderance of factors for the individual. However, clinical judgment may justify the use of one factor (eg, frequent exposure to sugar-containing snacks or beverages, more than one dmfs) in determining overall risk.

Overall assessment of the child's dental caries risk: High Moderate Low

Table 3. Caries-risk Assessment Form for >6 Years Olds⁶⁰⁻⁶²

(For Dental Providers)

Factors	High Risk	Moderate Risk	Protective
Biological			
Patient is of low socioeconomic status	Yes		
Patient has >3 between meal sugar containing snacks or beverages per day	Yes		
Patient has special health care needs		Yes	
Patient is a recent immigrant		Yes	
Protective			
Patient receives optimally-fluoridated drinking water			Yes
Patient brushes teeth daily with fluoridated toothpaste			Yes
Patient receives topical fluoride from health professional			Yes
Additional home measures (eg, xylitol, MI paste, antimicrobial)			Yes
Patient has dental home/regular dental care			Yes
Clinical Findings			
Patient has ≥1 interproximal lesions	Yes		
Patient has active white spot lesions or enamel defects	Yes		
Patient has low salivary flow	Yes		
Patient has defective restorations		Yes	
Patient wearing an intraoral appliance		Yes	

Circling those conditions that apply to a specific patient helps the practitioner and patient/parent understand the factors that contribute to or protect from caries. Risk assessment categorization of low, moderate, or high is based on preponderance of factors for the individual. However, clinical judgment may justify the use of one factor (eg, >1 interproximal lesions, low salivary flow) in determining overall risk.

Overall assessment of the dental caries risk: High Moderate Low

Furthermore, the evolution of caries-risk assessment tools and protocols can assist in providing evidence for and justifying periodicity of services, modification of third-party involvement in the delivery of dental services, and quality of care with outcomes assessment to address limited resources and workforce issues.

Caries management protocols

Clinical management protocols are documents designed to assist in clinical decision-making; they provide criteria regarding diagnosis and treatment and lead to recommended courses of action. The protocols are based on evidence from current

Table 4. Example of a Caries Management Protocol for 1-2 Year Olds

Risk Category	Diagnostics	Interventions		Restorative
		Fluoride	Diet	
Low risk	– Recall every 6-12 months – Baseline MS ^a	– Twice daily brushing with fluoridated toothpaste ^b	Counseling	– Surveillance ^x
Moderate risk parent engaged	– Recall every 6 months – Baseline MS ^a	– Twice daily brushing with fluoridated toothpaste ^b – Fluoride supplements ^d – Professional topical treatment every 6 months	Counseling	– Active surveillance ^e of incipient lesions
Moderate risk parent not engaged	– Recall every 6 months – Baseline MS ^a	– Twice daily brushing with fluoridated toothpaste ^b – Professional topical treatment every 6 months	Counseling, with limited expectations	– Active surveillance ^e of incipient lesions
High risk parent engaged	– Recall every 3 months – Baseline and follow up MS ^a	– Twice daily brushing with fluoridated toothpaste ^b – Fluoride supplements ^d – Professional topical treatment every 3 months	Counseling	– Active surveillance ^e of incipient lesions – Restore cavitated lesions with ITR ^f or definitive restorations
High risk parent not engaged	– Recall every 3 months – Baseline and follow up MS ^a	– Twice daily brushing with fluoridated toothpaste ^b – Professional topical treatment every 3 months	Counseling, with limited expectations	– Active surveillance ^e of incipient lesions – Restore cavitated lesions with ITR ^f or definitive restorations

Table 5. Example of a Caries Management Protocol for 3-5 Year Olds

Risk Category	Diagnostics	Interventions			Restorative
		Fluoride	Diet	Sealants ^z	
Low risk	– Recall every 6-12 months – Radiographs every 12-24 months – Baseline MS ^a	– Twice daily brushing with fluoridated toothpaste ⁷	No	Yes	– Surveillance ^x
Moderate risk parent engaged	– Recall every 6 months – Radiographs every 6-12 months – Baseline MS ^a	– Twice daily brushing with fluoridated toothpaste ⁷ – Fluoride supplements ^d – Professional topical treatment every 6 months	Counseling	Yes	– Active surveillance ^e of incipient lesions – Restoration of cavitated or enlarging lesions
Moderate risk parent not engaged	– Recall every 6 months – Radiographs every 6-12 months – Baseline MS ^a	– Twice daily brushing with fluoridated toothpaste ⁷ – Professional topical treatment every 6 months	Counseling, with limited expectations	Yes	– Active surveillance ^e of incipient lesions – Restoration of cavitated or enlarging lesions
High risk parent engaged	– Recall every 3 months – Radiographs every 6 months – Baseline and follow up MS ^a	– Brushing with 0.5% fluoride (with caution) – Fluoride supplements ^d – Professional topical treatment every 3 months	Counseling	Yes	– Active surveillance ^e of incipient lesions – Restoration of cavitated or enlarging lesions
High risk parent not engaged	– Recall every 3 months – Radiographs every 6 months – Baseline and follow up MS ^a	– Brushing with 0.5% fluoride (with caution) – Professional topical treatment every 3 months	Counseling, with limited expectations	Yes	– Restore incipient, cavitated, or enlarging lesions

Table 6. Example of a Caries Management Protocol for >6 Year-Olds

Risk Category	Diagnostics	Interventions			Restorative
		Fluoride	Diet	Sealants ^λ	
Low risk	<ul style="list-style-type: none"> – Recall every 6-12 months – Radiographs every 12-24 months 	<ul style="list-style-type: none"> – Twice daily brushing with fluoridated toothpaste^μ 	No	Yes	<ul style="list-style-type: none"> – Surveillance^χ
Moderate risk patient/parent engaged	<ul style="list-style-type: none"> – Recall every 6 months – Radiographs every 6-12 months 	<ul style="list-style-type: none"> – Twice daily brushing with fluoridated toothpaste^μ – Fluoride supplements^δ – Professional topical treatment every 6 months 	– Counseling	Yes	<ul style="list-style-type: none"> – Active surveillance^ε of incipient lesions – Restoration of cavitated or enlarging lesions
Moderate risk patient/parent not engaged	<ul style="list-style-type: none"> – Recall every 6 months – Radiographs every 6-12 months 	<ul style="list-style-type: none"> – Twice daily brushing with toothpaste^μ – Professional topical treatment every 6 months 	– Counseling, with limited expectations	Yes	<ul style="list-style-type: none"> – Active surveillance^ε of incipient lesions – Restoration of cavitated or enlarging lesions
High risk patient/parent engaged	<ul style="list-style-type: none"> – Recall every 3 months – Radiographs every 6 months 	<ul style="list-style-type: none"> – Brushing with 0.5% fluoride – Fluoride supplements^δ – Professional topical treatment every 3 months 	<ul style="list-style-type: none"> – Counseling – Xylitol 	Yes	<ul style="list-style-type: none"> – Active surveillance^ε of incipient lesions – Restoration of cavitated or enlarging lesions
High risk patient/parent not engaged	<ul style="list-style-type: none"> – Recall every 3 months – Radiographs every 6 months 	<ul style="list-style-type: none"> – Brushing with 0.5% fluoride – Professional topical treatment every 3 months 	<ul style="list-style-type: none"> – Counseling, with limited expectations – Xylitol 	Yes	<ul style="list-style-type: none"> – Restore incipient, cavitated, or enlarging lesions

Legends for Tables 4-6

α Salivary mutans streptococci bacterial levels.

χ Periodic monitoring for signs of caries progression.

ε Careful monitoring of caries progression and prevention program.

γ Parental supervision of a “pea sized” amount of toothpaste.

μ Less concern about the quantity of tooth paste.

β Parental supervision of a “smear” amount of tooth paste.

δ Need to consider fluoride levels in drinking water.

φ Interim Therapeutic Restoration.⁶³

λ Indicated for teeth with deep fissure anatomy or developmental defects.

peer-reviewed literature and the considered judgment of expert panels, as well as clinical experience of practitioners. The protocols should be updated frequently as new technologies and evidence develop.

Historically, the management of dental caries was based on the notion that it was a progressive disease that eventually destroyed the tooth unless there was surgical/restorative intervention. Decisions for intervention often were learned from unstandardized dental school instruction, and then refined by clinicians over years of practice. Little is known about the criteria dentists use when making decisions involving restoration of carious lesions.³⁶

It is now known that surgical intervention of dental caries alone does not stop the disease process. Additionally, many lesions do not progress, and tooth restorations have a finite longevity. Therefore, modern management of dental caries should be more conservative and includes early detection of noncavitated lesions, identification of an individual’s risk for caries progression, understanding of the disease process for that individual, and “active surveillance” to apply preventive measures and monitor carefully for signs of arrestment or progression.

Caries management protocols for children further refine the decisions concerning individualized treatment and treatment thresholds based on a specific patient’s risk levels, age, and compliance with preventive strategies (Tables 4, 5, 6). Such protocols should yield greater probability of success and better cost effectiveness of treatment than less standardized treatment. Additionally, caries management protocols free practitioners of the necessity for repetitive high level treatment decisions, standardize decision making and treatment strategies,³⁶⁻³⁸ eliminate treatment uncertainties, and guarantee more correct strategies.³⁹

Content of the present caries management protocol is based on results of clinical trials, systematic reviews, and expert panel recommendations that give better understanding to, and recommendations for, diagnostic, preventive, and restorative treatments. The radiographic diagnostic guidelines are based on the latest guidelines from the American Dental Association (ADA).⁴⁰ Systemic fluoride protocols are based on the Centers for Disease Control and Prevention’s (CDC) recommendations for using fluoride.²⁹ Guidelines for the use of topical fluoride treatment are based on the ADA’s Council on Scientific Affairs’ recommendations for professionally-applied

topical fluoride,⁴¹ the Scottish Intercollegiate Guideline Network guideline for the management of caries in pre-school children,⁴² a Maternal and Child Health Bureau Expert Panel,⁴³ and the CDC's fluoride guidelines.²⁹ Guidelines for pit and fissure sealants are based on ADA's Council on Scientific Affairs recommendations for the use of pit-and-fissure sealants.⁴⁴ Guidelines on diet counseling to prevent caries are based on 2 review papers.^{45,46} Guidelines for the use of xylitol are based on the AAPD's oral health policy on use of xylitol in caries prevention,³² a well-executed clinical trial on high caries-risk infants and toddlers,⁴⁷ and 2 evidence-based reviews.^{48,49} Active surveillance (prevention therapies and close monitoring) of enamel lesions is based on the concept that treatment of disease may only be necessary if there is disease progression,⁵⁰ that caries progression has diminished over recent decades,⁵¹ and that the majority of proximal lesions, even in dentin, are not cavitated.⁵²

Other approaches to the assessment and treatment of dental caries will emerge with time and, with evidence of effectiveness, may be included in future guidelines on caries risk assessment and management protocols. For example, there are emerging trends to use calcium and phosphate remineralizing solution to reverse dental caries.⁵³ Other fluoride compounds, such as silver diamine fluoride⁵⁴ and stannous fluoride⁵⁵, may be more effective than sodium fluoride for topical applications. There has been interest in antimicrobials to affect the caries rates, but evidence from caries trials is still inconclusive.⁵⁶ However, some other proven methods, such as prescription fluoride drops and tablets, may be removed from this protocol in the future due to attitudes, risks, or compliance.^{57,58}

Recommendations

1. Dental-caries risk assessment, based on a child's age, biological factors, protective factors, and clinical findings, should be a routine component of new and periodic examinations by oral health and medical providers.
2. While there is not enough information at present to have quantitative caries-risk assessment analyses, estimating children at low, moderate, and high caries risk by a preponderance of risk and protective factors will enable a more evidence-based approach to medical provider referrals, as well as establish periodicity and intensity of diagnostic, preventive, and restorative services.
3. Clinical management protocols, based on a child's age, caries risk, and level of patient/parent cooperation, provide health providers with criteria and protocols for determining the types and frequency of diagnostic, preventive, and restorative care for patient specific management of dental caries.

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ICDAS Dental Caries Coding System

International Caries Detection and Assessment System (ICDAS) ×

Introduction

Restoration and Sealant Codes

- 0 = Not restored or sealed
- 1 = Sealant, partial
- 2 = Sealant, full
- 3 = Tooth coloured restoration
- 4 = Amalgam restoration
- 5 = Stainless steel crown
- 6 = Porcelain or gold or PFM crown or veneer
- 7 = Lost or broken restoration
- 8 = Temporary restoration

To record dental disease, you will use the International Caries Detection and Assessment System (ICDAS).

Caries Codes

- 0 = Sound tooth surface
- 1 = First visual change in enamel
- 2 = Distinct visual change in enamel
- 3 = Enamel breakdown, no dentine visible
- 4 = Underlying dentinal shadow (not cavitated into dentine)
- 5 = Distinct cavity with visible dentine
- 6 = Extensive distinct cavity with visible dentine

Missing teeth

- 97 = Extracted due to caries
- 98 = Missing for other reason
- 99 = Unerupted

menu >

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ICDAS-II detection criteria, 2005

