dental health services victoria
oral health for better health

Patients at High Risk to Dental Caries

Purpose

Evidence-based clinical guidelines are intended to provide guidance, and are not a standard of care, requirement, or regulation. However, the application of clinical guidelines in publicly-provided oral health services allows for consistency to occur across large patients cohorts with a variety of oral health clinicians.

The incidence of dental caries has been decreasing over the last 20 years, and the proportion of caries-free children is generally increasing. Nevertheless, disproportionate levels of decay are often found in children and adolescents from lower socio-economic families and recent immigrant families, who have difficulty in accessing oral health care. Targeting intervention to those most at risk is imperative.

An important element in the control of caries is the ability to evaluate the ongoing risk of an individual to caries, and the activity of any carious lesions. Risk is defined as the probability of an individual developing a given disease or suffering a harmful event. Caries-risk is therefore the probability that an individual will develop at least a certain number of carious lesions, or the probability of a lesion reaching a given stage of progression, during a specified period of time. Relevant factors influencing the development of caries include social history, medical history, dietary habits, fluoride use and environmental fluoride exposure, and clinical findings such as oral hygiene effectiveness, salivary consistency, and salivary flow rates. If the risk factors can be modified or eliminated before the disease has progressed, the carious process can be halted or prevented.

Management of dental caries involves prevention of new lesions, and treatment of existing lesions. Prevention involves the identification and modification of causative factors combined with an appropriate remineralisation program. Treatment of existing lesions may be operative or non-operative and depends on the extent of the lesion(s), diagnosis of lesion activity, and risk assessment of the individual. Caries-risk assessment is therefore an essential part of clinical care. Appropriate preventive strategies may then be proposed for patients according to caries-risk category.

Guideline

Currently Available Caries-Risk Assessment Tools

Many caries risk assessment tools have been developed and these are being continuously refined in an attempt to improve precision in identifying individuals at risk of caries. The majority of these assessment tools are tailored for particular age groups.

Early childhood patients

In young children, previous caries experience is not always a guide to caries-risk. Early childhood patients and youngest primary school children may not have been able to access dental treatment. The numbers of carious teeth alone do not necessarily indicate the caries-risk.

An alternative element has been developed to more accurately reflect the clinical condition of prior caries experience.[7]

Low Risk	where the dmfs (total decayed missing filled surfaces of deciduous teeth) is less than half the child's age
Moderate Risk	where the dmfs is greater than half the child's age
High Risk	where the dmfs is greater than the child's age

DHSV recommends that these elements replace the number of carious teeth counted, in early childhood, and Prep and Grade 1 children, i.e. approximately up to and including 7 years of age, where no previous dental experience has been encountered.

Children and adolescents

The American Academy of Pediatric Dentistry (AAPD) has adopted a caries-risk policy statement and caries-risk assessment tool (CAT) (Appendix 1).

- The CAT provides a means of classifying caries-risk at a particular point in time, and therefore needs to be reassessed as an individual's risk status changes.
- The CAT is intended to be used when Clinical Guidelines require a caries-risk assessment. DHSV is currently required to assess its child and adolescent patients as high, medium or low-risk, and a requirement for the use of a risk assessment tool is mandatory. The CAT does not determine the clinical management of any caries identified.
- The CAT can be used by dental and non-dental personnel, although the clinical presentation of caries, and the factors relating to caries progression, needs to be understood.

Clinicians using a CAT should:

- Be able to visualise the child's teeth and mouth, and have access to a reliable history of the non-clinical components.
- Assess **all** components of the CAT, being Clinical Conditions, Environmental Characteristics, and General Health Conditions.
- Understand that each child's ultimate risk classification is determined by the highest risk category where a risk category exists, i.e. risk indicators in both low-risk, and high-risk categories would mean overall classification as high-risk.

Monitoring and Reassessment of Caries-Risk at Recall

At each subsequent recall visit, patients should be re-evaluated for their caries-risk status using information gathered about the incidence or onset of new caries, and the progression of lesions since the last visit. If a year has passed without progression of caries or new caries activity, the patient can be considered to be in the low risk category, regardless of previous classification, unless new or other risk factors have been identified (e.g. starting orthodontic treatment).

If caries activity has continued, reasons for this continuation should be assessed. The previous interventions should be reviewed to determine if they have been appropriately implemented, what changes can be implemented, or whether other interventions are available and appropriate. Interventions should continue and outcomes monitored until there is evidence to justify a lower classification of caries-risk status.

Summary

The ideal treatment plan at an individual level is not practical when dealing with public oral health programs – the risk assessment methods are not yet sufficiently precise, and even when individuals are identified, there are logistical problems with schools and patients in achieving an ideal treatment plan.

Based on the above, DHSV has developed a modified assessment tool for use in public dental programs in Victoria. (Appendix 2). Only this tool should be used to identify the recall interval for children and adolescents at high-risk to dental caries.

Revision date	Policy owner
November 2016	Clinical Leadership Council
Approved by	**Date approved**
Director of Clinical Leadership, Education and Research	

References and related documents

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Identification of Patients at High Risk to Dental Caries - Appendix 1:

AAPD Caries-Risk Assessment Tool for Children[8]			
Caries Risk Indicators	Low Risk	Moderate Risk	High Risk
CLINICAL CONDITIONS	• No carious teeth in the past 24 months • No enamel demineralisation, i.e. white spot lesions • No visible plaque • No gingivitis	• Carious teeth in the past 24 months • One area of enamel demineralisation, i.e. white spot lesions • Gingivitis	• Carious teeth in the past 12 months • More than one area of enamel demineralisation, i.e. white spot lesions • Visible plaque on anterior teeth • Wearing both fixed and removable orthodontic appliances, space maintainers, or other devices remaining in the mouth continuously • Enamel hypomineralisation or hypoplasia • Radiographic enamel caries (approximal lesions) • High titres of streptococci mutans
ENVIRONMENTAL CHARACTERISTICS	• Optimal systemic & topical fluoride exposure • Consumption of foods containing simple sugars, primarily at mealtimes (soft drinks, biscuits, cake, sweets, cereal, potato and corn chips, French fries, pretzels, breads, juices, fruits) • High caregiver socioeconomic status • Regular user of dental services	• Suboptimal systemic fluoride exposure with optimal topical exposure • Occasional (once or twice) between-meal exposures to simple sugars or foods strongly associated with caries • Midlevel caregiver socioeconomic status • Irregular user of dental services	• Suboptimal fluoride exposure • Frequent (3+) between-meal exposures to simple sugars or foods strongly associated with caries • Low-level caregiver socioeconomic status, which may be exhibited amongst others, by recent migration, language barriers, or cultural diversity (Note: this element may be offset by the absence of other high-risk indicators) • No usual source of dental care
GENERAL HEALTH CONDITIONS			• Active caries present in the mother • Children with Special Needs, i.e. chronic physical, developmental, behavioural, or emotional conditions • Conditions impairing salivary flow, i.e. congenital or acquired conditions, post surgery or irradiation, medication affecting salivary function

Note 1: Fractured restorations (without decay) are not included in the count of teeth requiring restorations.

DHSV RECOMMENDATIONS FOR IDENTIFICATION OF HIGH CARIES-RISK CHILDREN AND ADOLESCENTS

Children and adolescents who have been identified at high-risk to dental caries are offered care more often, usually every 12 months.

The most significant factors in determining high risk for caries are:

- Clinical conditions, especially past caries experience
- Environmental characteristics
- Clinical judgment of the operator

The following criteria are offered as a summarised guideline of determination of high-risk:

1. For children having been previously assessed as high-risk, caries developing in the last 12 months*
2. For children recalled as part of the low-risk recall, 4 or more carious lesions requiring restoration*
3. For children up to and including 7 years of age, dmfs greater than the child's age
4. Children with special needs, or physical/medical conditions, or taking medication making more frequent monitoring desirable, including those with impaired salivary flow.

OR
2 or more of the following

5. More than one active area of white spot lesions**
6. Past smooth surface caries
7. Compromised oral hygiene
8. Current fixed or removable orthodontic treatment (by DHSV/CDP clinicians only)
9. Hypomineralised or hypoplastic teeth
10. Approximal or free smooth-surface lesions
11. No or little fluoride exposure***
12. Frequent (3+) between-meal sugar-exposure snacking
13. No usual source of dental care
14. Obvious anterior, untreated, active caries in the mother

* Fractured restorations (without decay) are not included in the count of teeth requiring restorations.

** An active white spot lesion is matt and rough, as if etched; an arrested lesion is glossy and smooth.

*** Use of a fluoride toothpaste nullifies this criterion.