FACT SHEET

FOR OTHER HEALTH PROFESSIONALS

Understanding Dental Caries

Background

Dental caries, commonly known as tooth decay, is a prevalent and largely preventable disease affecting both children and adults worldwide. It is characterized by the cyclical demineralization and remineralization of the hard tissues of the tooth, the enamel, dentin, and cementum, often leading to cavities. The disease can damage both the tooth crown and, in later life, exposed root surfaces.

Caries is a biofilm-mediated, sugar-driven, multifactorial disease, meaning it involves several factors including diet and the presence of bacteria in the mouth that produce harmful acids. The balance between these disease-causing pathological factors and protective factors, such as the use of fluoridated toothpaste and regular oral hygiene practices, influences the initiation and progression of dental caries.[1]

Key components

Individual susceptibility to dental caries varies and can be categorized into risk groups. This categorization allows for personalized preventive measures and treatments so the disease can be more effectively managed and controlled. The daily use of fluoride toothpaste is a crucial preventive measure and is largely credited for the global decline in dental caries over recent decades.

Traditionally, dental caries was primarily managed through restorative dental surgery. However, current best practices involve a more holistic, patient-centred, tooth-preserving approach that emphasizes prevention and a focus on long-term oral health.

Determining caries risk

Caries risk refers to the likelihood that an individual will develop dental caries, or tooth decay, over a certain period. Dental Caries is a biofilm-mediated, sugar-driven, multifactorial, dynamic disease that results in the phasic demineralization and remineralization of dental hard tissues.

Different factors influence the dental caries risk and can be pathologic such as cariogenic (cavity causing) bacteria and frequent consumption of food and drinks rich in added sugars, or protective such as oral hygiene care, flow of saliva and fluoride exposure. Other factors, including age, socio-economic status, access to dental care, and genetic predisposition also contribute to an individual's caries risk. Assessing a person's caries risk allows healthcare providers to recommend tailored preventive strategies and treatments.

The chart below [Figure 1] allows healthcare professionals to assess quickly whether their patient is at high caries risk or not[2].

Caries Protective Factors

Fluoride Toothpaste
- Twice daily brushing with fluoridated toothpaste (at least 1000 ppm)

Dental Care
- Regular preventive-oriented dental care, including for example application of tropical fluoride

Systemic Fluoride
- Access to fluoridated drinking water or other community fluoride vehicles (where available)

Caries Risk Factors

Risk Factors, Social/Medical/Behavioural
- Hyposalivation, either drug-, disease-, head/neck radiation or/and age-induced
- High intake (amount/frequency) of free sugars from drinks (including fruit juice/smoothies), snacks and meals
- Low socioeconomic level, low health literacy, health access barriers
- Inability to comply, low motivation and engagement
- Special health care needs, physical disabilities
- Symptomatic-driven dental attendance

Risk Factors, Clinical
- Recent caries experience and presence of active caries lesion(s)
- PRS/prs*
- Poor oral hygiene with thick plaque accumulation
- Plaque stagnation areas (higher biofilm retention)
- Low salivary flow rate

Additional Risk Factors for Children
- Mother/caregiver with active caries lesions
- Bottle/non-spill up/pacifier containing natural or added sugar used frequently or at night (this includes milk and fruit juices/smoothies)
- Non-daily use of at least 1000 ppm fluoride toothpaste
- Erupting molar teeth

Particular Risk Factors for Elderly
- Exposed root surfaces (dentine)
- Reduced ability to deliver oral hygiene

At Lower Risk
- Protective factors are present
- None of the risk factors marked in red are present
- Any other risk factors are within 'safe' ranges (e.g. sugary snacks, oral hygiene practice, fluoride exposure)

At Higher Risk
- One or more of the risk factors marked in red are present
- The level or combination of other risk factors suggests a higher risk status
- With protective factors absent

*Pulpal Involvement-Roots-Sepsis Index (modified from PUFA/pufa): clinical consequences of untreated caries.
P/p: caries process reached pulp chamber. Roots (R/r): caries process destroyed tooth structures (non-restorable):
S/s: pus-releasing tract/tooth-related pus containing swelling.

Note: Risk factors in red will always classify an individual as high caries risk.

FIGURE 1. CHART 2020 © by Dr Marco Mazevet

Detecting dental caries

Dental caries is progressive [Figure 2], meaning that it can take up to several months or years for it to develop into a cavity (a hole) in the tooth. The sooner dental caries is detected, the sooner the progression can be reversed via preventive means.

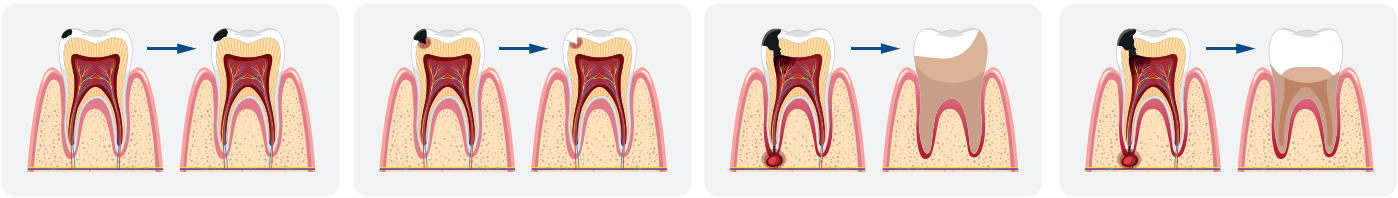

FIGURE 2. DENTAL CARIES PROGRESSION

Healthy Teeth | **White Lesions (Incipient Caries)** | **Moderate Caries** | **Severe Caries (Rampant Caries)**

FIGURE 3. HOW DENTAL CARIES PRESENTS IN THE MOUTH

It is important to note:

- a dark spot on a tooth doesn't necessarily mean that it is dental caries;
- not all dark spots need to be treated, as they can be inactive and pose no threat to the patient.

Oral healthcare delivery framework

Ask

Gather information about the patient's oral hygiene habits, diet, lifestyle, and past dental issues. This step includes understanding a patient's risk of developing dental caries as well as protective factors, such as oral hygiene routines and exposure to fluoride, whether in toothpaste or via a fluoridated water supply. Ask if there is any sensitivity to air, temperature or sugar.

Look

Perform a thorough visual examination of the patient's oral cavity. This includes checking for any signs of early caries (e.g. white spots, surface roughness) or advanced caries (cavities).

Decide

Use the information you have gathered to determine the individual's caries risk level and decide on the best course of action, whether preventive care or treatment is needed. This step may involve consulting with a dental professional.

Act

Implement preventive measures such as advising on dietary changes, improving oral hygiene practices, recommending fluoride toothpaste or mouth rinse, or if treatment is necessary, refer to a dental professional.

Document

Record all patient information, observations, decisions, and actions. Regularly update this documentation to track the patient's progress and adjust the care or treatment plan as necessary.

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References

1. Pitts N, Zero, D, Marsh P et al. Dental caries. Nat Rev Dis Primers 3, 17030 (2017). https://doi.org/10.1038/nrdp.2017.30
2. Martignon S, Pitts NB, Goffin G et al. CariesCare practice guide: consensus on evidence into practice. Br Dent J. 2019 Sep;227(5):353-362. doi: 10.1038/s41415-019-0678-8.

Other Resources

1. FDI World Dental Federation. Educational module for other healthcare professionals. Available from: Educational Module for Other Healthcare Professionals | FDI (fdiworlddental.org) [Accessed on 29 April 2024].
2. FDI World Dental Federation. Consensus on tooth brushing and oral health hygiene. Available from: https://www.fdiworlddental.org/consensus-toothbrushing

Disclaimer:

This fact sheet offers general information and may require adaptation to suit the scope of work and regulations governing other healthcare professionals in each country.

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