Contemporary operative caries management: consensus recommendations on minimally invasive caries removal

Banerjee, A., Frencken, J.E., Schwendicke, F., Innes, N.P.T.

Abstract

The International Caries Consensus Collaboration (ICCC) presented recommendations on terminology, on carious tissue removal and on managing cavitated carious lesions. It identified 'dental caries' as the name of the disease that dentists should manage, and the importance of controlling the activity of existing cavitated lesions to preserve hard tissues, maintain pulp sensibility and retain functional teeth in the long term. The ICCC recommended the level of hardness (soft, leathery, firm, and hard dentine) as the criterion for determining the clinical consequences of the disease and defined new strategies for carious tissue removal: 1) selective removal of carious tissue – including selective removal to soft dentine and selective removal to firm dentine; 2) stepwise removal – including stage one, selective removal to soft dentine, and stage two, selective removal to firm dentine six to 12 months later; and, 3) non-selective removal to hard dentine – formerly known as complete caries removal (a traditional approach no longer recommended). Adoption of these terms will facilitate improved understanding and communication among researchers, within dental educators and the wider clinical dentistry community. Controlling the disease in cavitated carious lesions should be attempted using methods that are aimed at biofilm removal or control first. Only when cavitated carious dentine lesions are either non-cleansable or can no longer be sealed, are restorative interventions indicated. Carious tissue is removed purely to create conditions for long-lasting restorations. Bacterially contaminated or demineralised tissues close to the pulp do not need to be removed. The evidence, and therefore these recommendations, supports minimally invasive carious lesion management, delaying entry to, and slowing down, the destructive restorative cycle by preserving tooth tissue, maintaining pulp sensibility, and retaining the functional tooth-restoration complex long-term.

British Dental Journal 2017; 223 (3): 215-222. doi: 10.1038/sj.bdj.2017.672. PMID: 28798430.

Management of non-cavitated and cavitated caries in primary, permanent, and mixed dentition. An evidence review

Long, J., Lee, C., Schwendicke, F., Farragher, A., Keane, M.

Abstract

The purpose of this overview of reviews is to provide evidence to assist with the development of clinical guidelines on the management of non-cavitated and cavitated caries in primary and permanent teeth. Cavitated caries include caries in both the crown and root of the tooth.

Caries (dental decay) is a disease of the hard tissues of the teeth caused by an imbalance in this process over time, where there is net demineralisation of tooth structure by organic acids formed from the interactions between cariogenic bacteria in dental plaque and fermentable carbohydrates (mainly sugars).

This overview updates an existing evidence review that was completed in 2019 and is based on 106 systematic reviews. The Health Research Board (HRB) found that there are effective alternatives to manage early carious lesions and avoid invasive restorative procedures through non-invasive (fluoride-based and other products) and microinvasive (sealants and resin infiltration) treatments. In addition, there are viable alternatives to using dental amalgam to restore cavitated caries through either direct or indirect restorations. The promising direct alternates to dental amalgam are resin-modified glass ionomer cement, compomers, and different composite resins. In addition, there are promising indirect alternates including ceramics and resin composites. Crowns fabricated from gold, metal ceramic, all ceramic, or zirconia are other alternates in specific situations. Some of these alternatives are not quite as successful as dental amalgam and some are more successful.

In addition, the HRB found that there are also improved support materials and techniques available to dentists to enhance the effectiveness of interventions and acceptability of their treatments. The techniques include methods (such as selective caries removal as well as chemical or laser caries removal methods) to maximise the conservation of dentine and reduce pain experienced by the patient. The support materials include using the most appropriate adhesive for the specific intervention.

Health Research Board 2022, Dublin. See: https://www.hrb.ie/.

Prevention and treatment of dental caries with mercury-free products and minimal intervention

WHO oral health briefing note series.

Overview

This publication, the first in a series of briefing notes on oral health, focuses on the prevention and treatment of dental caries (tooth decay) with mercury-free products and minimally invasive interventions. The prevalence of dental caries is a major public health problem globally. The publication, intended for non-specialists and the public at large, explains why mercury-free products and minimally invasive interventions are important in oral healthcare. It also describes six strategies using mercury-free products and minimally invasive intervention approaches to prevent and treat dental caries: fluoride toothpaste; fluoride varnish; glass ionomer cement sealants; glass ionomer cement restorations; silver diamine fluoride; and, composite resin restorations.

The document was developed in the context of the Conference of the Parties 4 (COP4) of the Minamata Convention on Mercury – a global treaty that aims to protect human health and the environment from emissions and releases of mercury and mercury compounds.

Almost half of cancer deaths are preventable

Guglielmi, G.

Nearly 50% of cancer deaths worldwide are caused by preventable risk factors, such as smoking and drinking alcohol, according to the largest study of the link between cancer burden and risk factors.
Using estimates of cancer cases and deaths from more than 200 countries, researchers found that avoidable risk factors were responsible for nearly 4.5 million cancer deaths in 2019 (see 'Global cancer deaths'). That represents more than 44% of global cancer deaths that year. Smoking, alcohol use and a high body mass index (BMI) — which can be indicative of obesity — were the biggest contributors to cancer.

Nature 2022; Aug 31. doi: 10.1038/d41586-022-02355-x. Epub ahead of print. PMID: 36045169.

Quiz answers

Questions on page 249.

1. D. 17 with 169 targets
Do you know your SDG? – https://sdgs.un.org/goals

2. C. May 2021
https://apps.who.int/gb/ebwha/pdf_files/WHA74/A74_R5-en.pdf

3. B. 14
(The last WHA at which a resolution for oral health was passed: WHA60.17 – action plan for promotion and integrated disease prevention.)

4. C. 2 and 520
Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019). Seattle: Institute of Health Metrics and Evaluation (IHME), 2020. Available from: http://ghdx.healthdata.org/gbd-results-tool.

5. D. 377 million
https://www.fluoridesandhealth.ie/faqs/