

Classification of Caries Lesions of Tooth Surfaces and Caries Management Systems [1]

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Introduction

Caries is a major global oral disease and its management should be based on our current knowledge of the disease process; its aetiology, prevention and control. Health promotion and well being across all communities are linked to caries control.

Background

The original classification of carious cavities in exposed tooth surfaces was proposed by GV Black in the early 1900s for use in operative procedures¹. A Century later, this system is still in widespread use by the majority of dentists.

Over the last 30 years there have been marked improvements in the understanding of the aetio-pathology and the nature of caries and the caries process. Dental caries is the localized destruction of susceptible dental hard tissue by acidic by-products from bacterial fermentation of carbohydrates. The caries process is the dynamic sequence of biofilm-tooth interactions which can occur over time on and within a tooth surface. Improvements in understanding also extend to the role of bacterial transmission in young children, the importance of common risk factors and the potential impact of caries on general health.

Scientists and clinicians now also recognize the need for a minimal intervention approach to surgical caries management, including the potential for arrest and remineralization of early lesions.

On the other end of the disease spectrum there is a need to recognize the consequences of untreated caries, both to the individual and society, since the evidence for the close interrelation between oral health, general health and quality of life is growing.

Current situation

- caries is a multi-factorial disease, which is largely preventable
- the disease process results in loss of mineral ions from the tooth surface and subsurface, which may lead to surface cavitation
- the disease becomes established prior to cavitation of the tooth surface
- the disease process can be treated and reversed in its earliest stages; early recognition and arrest or reversal is therefore highly desirable and possible in most cases, without restoration ('surgical treatment') of the tooth
- failure to intervene early may result in lesion progression, leading to irreversible damage to the tooth structure (i.e., cavitation) and an increasing burden to the patient throughout life
- modifiable and non-modifiable risk factors are important contributory factors
- social determinants of health play an important role in the risk assessment, prevention, surgical treatment and continuing management of a caries lesion
- the Black caries classification, as commonly implemented, is based on five standardized cavity designs, regardless of the stage or size of the lesion
- any revised classification should recognize the site, the stage, activity and size of lesions, for both primary caries and recurrent caries, associated with both restorations and sealants
- any new classification would ideally be relevant for deciduous and permanent teeth and also take into account the systemic consequences of untreated caries

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- any new classification should enable decision makers to understand the oral health status of the population, to identify needs and priorities in dental care and reflect the care that has been provided
- any new classification should be designed to give relevant and high quality information to clinical practice, for educational purposes and for researchers
- any new classification should relate to the need for early lesion arrest and reversal, to the ability to monitor preventive treatment, and to the complexity of a restoration, if a restoration is required
- caries management and monitoring of the disease progress should take into account local oral factors, and the general health status and environment of the individual patient

FDI World Dental Federation recommends:

- the continued development and adoption of a caries lesion classification and a separate caries management system including risk assessment and prevention, that are able to describe and document the total caries (clinical) experience at a population and an individual level
- that this caries classification and caries management system be used as the basis for communicating and educating patients, health professions and governments about caries, its prevention, control and management
- that the caries classification and caries management system should provide a framework for design of appropriate health policy and planning decisions, and relevant and cost-effective implementation of caries management planning
- that adequate and appropriate surveillance, record keeping and IT support systems be developed
- that implementation of existing, continuing and future research activities to improve the systems and their delivery be a priority

References

1. Black GV. Operative Dentistry, Vol 1 1908

[Science Committee](#) [2] **Classification:** [Caries](#) [3]
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