Best clinical practice guidance for management of early caries lesions in children and young adults: an EAPD policy document

Abstracted from

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Scope and purpose The guidance provides evidence- and clinically-based recommendations for detecting and diagnosing early/non-cavitated caries lesions, risk assessment and disease management.

Methodology The guidance development is based on three reviews[1-3] and an interim seminar and workshop organised by the European Academy of Paediatric Dentistry in Brussels in May 2015.

Review and updating No indication of a review or update schedule is given.

Recommendations Seven recommendations on caries detection and diagnosis, four recommendations on caries risk assessment and 11 on the management of the early carious lesion were made and they are briefly summarised in the table below.

Research Recommendations

Caries detection and diagnosis

- There is a need for more research in the primary dentition because most of the available studies consider only the permanent dentition
- Radiograph subtraction studies need to be conducted
- Ongoing evaluation of new methods and devices
- There is a need for well-designed prevention studies on early childhood caries which will provide sufficient and strong evidence of the cost-effectiveness
- There is a significant need to bring the knowledge and learning to regular dental practice, to all the paediatric health care providers, the children and their parents.

Caries risk assessment

- Clinical trials to assess the validity of models and single risk factors, as well as the role of confounding factors (eg age, lifestyle, socio-economy and socio-demography), for predicting caries.
- Further quantitative and qualitative health professional and parents would be helpful to identify perceptions and barriers to carrying out a CRA and to deliver a risk-based preventive care that could bridge the social inequalities in dental health.
- More research on the implementation of risk-based caries prevention and to establish the cost-effectiveness of such strategies.

Commentary

Clinical practice guidelines have been defined as:

statements that include recommendations intended to optimise patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options. [4]

The process for development of these type of guidelines have been developed in recent years and are clearly articulated in process manuals by well known evidence-based guideline developers such as NICE and SIGN. The SIGN process (http://www.sign.ac.uk/methodology/index.html) has eight key stages; topic selection, guideline development group formation, systematic literature review, formation and grading of recommendations and peer review, publication and dissemination, implementation and review. Over the past decade tools have also been developed for the appraisal of guidelines and the most methodologically robust is the Appraisal of Guidelines for Research and Evaluation (AGREE) Instrument.

The AGREE instrument uses 23 questions to appraise five domains; scope and purpose, stakeholder involvement, rigour of development, clarity of presentation, applicability, editorial independence. As this guidance document is presented in a short journal article it perhaps suffers in comparison to recent caries guideline documents from SIGN[5] and the Scottish Dental Clinical Effectiveness Programme,[6] which are large stand-alone documents that enable the developers to cover in greater details elements assessed in the AGREE instrument.

However it is clear that the process undertaken for the development of this guidance document differs markedly from the approaches taken by SIGN and SDCEP. While the scope and purpose of this guideline is relatively clear, the extent of stakeholder involvement is unclear. Ideally the target populations' views and preferences should be sought and there is no indication that parents or older adolescents have been involved. The initial reviews[1-3] on which the guideline is based have been carried out by academics and a wider group of dental professionals have been involved in the workshops, although these may not have been more broadly representative of the target users of the guidance. One of the three underlying reviews lacks details regarding the search strategies undertaken and provides a narrative summary of findings. It also does not mention a number of potential relevant systematic reviews.[6-9] If the full range of review evidence available was not available for the workshop participants this could affect the recommendations made raising important questions about the rigour of the guidance development process. It is unclear whether there was any opportunity for any additional evidence to be introduced during the workshop sessions.

Recommendations	Level of Evidence	Strength of Recommendation
Caries detection and diagnosis		
The detection at an early age and monitoring of caries lesions is important.		Strong
The selection of an appropriate recall interval for each patient is a decision based on many factors.	Moderate	Conditional
A careful, methodical visual tactile caries examination is required in order to detect and reach the correct diagnosis. A clinical examination of cleaned (no staining) and carefully dried, sealed and unsealed teeth with appropriate lighting must be carried out.	Moderate	Conditional
Appropriate radiographic examinations should be provided according to the EAPD Guidelines for the use of radiographs on children.	Moderate	Strong
When radiographs are not possible the Fiber-optic Transillumination (FOTI) device, separators or a combination should be used.		
The EAPD Guidelines recommend the use of a Condensed Scoring Caries Diagnosis System (condensed ICDAS).	Low	Conditional
The longitudinal monitoring of lesions may be facilitated by the use of simple intra-oral imaging (cameras, photographs).	Low	Conditional
Caries Risk Assessment		
A caries risk assessment (CRA) should be carried out at every child's first dental visit, and reassessments should be completed during childhood and adolescence.		Conditional
The assessed risk category should be linked to appropriate preventive and restorative care with recall examinations based on an individual need.		Conditional
Multivariate CRA models display a better accuracy than the use of single predictors.		Conditional
There is no superior method to clearly predict future caries and no evidence to support the use of one model, programme or technology over any other.		Conditional
Management of early caries lesions		
There is evidence to support the involvement of parents by motivational interviewing in improving paediatric health behaviours and outcomes.	Moderate	Strong
The twice-daily removal of the dental biofilm by brushing with a fluoride toothpaste prevents new caries lesions.	Strong	Strong
Fluorides have been proven to effectively arrest caries and should, therefore, be used to inactivate early caries.	Moderate	Strong
Pit and fissure sealing prevents new occlusal caries in permanent molars and micro- or minimally invasive treatment strategies on (early) caries lesions.	High	Strong
While arrested non-cavitated caries lesions require non- invasive intervention only, persistent active lesions might be considered for a 'sealing' strategy to establish a permanent protective barrier, and fissure sealants can be used to arrest non-cavitated occlusal caries. Non-cavitated caries lesions on proximal and smooth surfaces can be arrested by the caries infiltration technique; however, most of the available studies were performed in permanent teeth, and there is a need for long-term studies.	Moderate	Strong
The biofilm should be removed from cavitations, and a long-lasting seal of the cavity should be placed.	High	Strong

The recommendations regarding caries risk assessment are not directly linked with any evidence, and although there is a recommendation that multivariate tools were considered to be more effective a recent diagnostic systematic review of caries risk assessment tools[10] found only low quality evidence to support available methods and highlighted an urgent need to improve study designs. No information on how the recommendations were formed in the workshops is presented in the paper so it is difficult to assess the validity of the process. One concern is the potential for key individuals to influence the content of the recommendations in open sessions.

An overall summary of the quality of evidence supporting 11 of the 22 recommendations was provided using the GRADE system (http://www.gradeworkinggroup.org/). The GRADE system has also been used to classify the strength of recommendation. GRADE classifies recommendations as strong or weak.[9]

- Strong recommendations mean that most informed patients would choose the recommended management and that clinicians can structure their interactions with patients accordingly
- Weak recommendations mean that patients' choices will vary according to their values and preferences, and clinicians must ensure that patients' care is in keeping with their values and preferences
- Strength of recommendation is determined by the balance between desirable and undesirable consequences of alternative management strategies, quality of evidence, variability in values and preferences and resource use.

While GRADE uses the word weak, a number of organisations prefer to use the term conditional instead and this approach has been taken by EAPD.

The recommendations themselves are wordy and could be considered ambiguous and this could affect its implementation. Key recommendations are not highlighted and this approach can be contrasted with the SIGN 138 guideline that has 21 recommendations and good practice points but only six key recommendations.

In terms of applying the guideline there is no discussion of facilitators and barriers to its adoption advice or tools to improve adoption such as monitoring or potential auditing criteria. Potential resource implications have also not been considered. The guidance has been developed by the EAPD and there is no indication of whether there has been any funding support from them or from any other body.

As noted in this issue's editorial, the process of evidence-based guideline development is a resource intensive process. The Guidelines International Network Group (http://www.g-i-n.net/) lists 15 caries guidelines that have been published since 2007, and the TRIP database (https://www.tripdatabase.com/) lists 325. Given these large numbers of guidelines the need for new guidance that has a less than robust development process is questionable. Particularly in light of a number of earlier guidelines that have called for higher quality primary research to address gaps highlighted in previous guidelines.

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