

Questions and answers in Evidence-based Dentistry Volume 14

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As in previous years we are highlighting the guidelines, questions and answers addressed by summaries in Evidence-based Dentistry. Evidence levels are only given for those papers achieving level 3A and above.

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Dental Evidence-based Topic (DEBT)

Topic Area	Question	Answer	Page
Restorative Dentistry	What is the role of Topical Fluoride application in preventing dental erosion?	Although the clinical evidence is limited, topical fluorides may still have a role to play in reducing dental erosion, as they can help remineralise enamel. Dental practitioners can help this process by applying topical fluoride varnish on teeth affected by erosion at recall appointments and ensuring patients use toothpastes containing fluoride. However dental practitioners must continue to educate their patients on the erosive affects of high dietary consumption of acidic food and drinks and the importance of optimal oral hygiene.	59–62

Summaries

Topic	Question	Answer	Evidence level	Page
Caries				
	What are the effects of different types of fissure sealants in preventing caries in permanent teeth in children and adolescents?	This review confirms the effectiveness of resin sealants. There is a need for more trials looking at the effectiveness of differing materials, especially glass ionomers, perhaps focussing on their use in less than ideal situations, because we already know resins work when isolation is not an issue.	1A	69–70
	How effective is fluoride varnish in preventing dental caries?	The main finding was that there was on average a 43% reduction in decayed, missing and filled tooth surfaces for permanent teeth, with a 95% confidence interval (CI) of 30-57%. For primary teeth surfaces the figure was 37% (95% CI 24-51%).	1A	72–73
	In unrestored primary and permanent teeth with dentinal caries, what are the effects of stepwise, partial or no dentinal caries removal compared with complete caries removal?	For management of dentinal caries, both stepwise and partial excavation showed clinical advantage over complete caries removal by reducing the incidence of pulp exposure in symptomless, vital, carious primary as well as permanent teeth. Due to the short-term follow-up, low reporting of patient-centred outcomes and high risk of bias, further high quality, long-term clinical trials are still required to assess the most effective intervention.	1A	74-75
	Is a school-based sealant programme effective in reducing caries?	The one-year effectiveness of the school-based program was demonstrated in low socio-economic areas. Selection of schoolchildren according to individual caries risk factors should be considered in school-based programmes.	1B	71
	What factors during the first year of an infant's life influence the initiation and progression of early childhood caries (ECC)?	Maternal factors and oral health behaviours affect the acquisition and colonisation of Mutans Streptococci and ECC.	2B	40–41
	Can school-based interventions aimed at changing toothbrushing and food consumption habits reduce caries?	Currently, there is insufficient evidence for the efficacy of primary school-based behavioural interventions for reducing caries. There is limited evidence for the effectiveness of these interventions on plaque outcomes and on children's oral health knowledge acquisition.	2B	42–43
	Are current caries risk-assessment systems predictive of future caries?	The available evidence on the validity of a number of existing systems for caries risk assessment is limited and weak.	NA	10–11

	How accurate are risk assessments in predicting caries?	Multivariate models and baseline caries prevalence performed better in pre-school children than in school-children/ adolescents. Baseline caries prevalence was the most accurate single predictor in all age groups. The heterogeneity of populations, models, outcome criteria, measures and reporting hampered the synthesis of results. There is a great need to standardise study design, outcome measures and reporting of data in studies on caries risk-assessment. The accuracy of prediction models should be validated in at least one independent population.	NA	102
Dental implants				
	What is the effect of different loading times on the outcomes of implant placement?	Overall there was no convincing evidence of a clinically important difference in prosthesis failure, implant failure or bone loss associated with different loading times of implants. More well-designed RCTs are needed and should be reported according to the CONSORT guidelines.	1A	109–110
Dental Public Health				
	What is the global burden of untreated caries, severe periodontitis and severe tooth loss in 2010?	Oral diseases remain highly prevalent in 2010 affecting 3.9 billion people. Untreated caries in permanent teeth was the most prevalent condition evaluated for the entire GBD (Global Burden of Disease) 2010 Study with a global prevalence of 35% for all ages combined. Severe periodontitis and untreated caries in deciduous teeth were the 6th and 10th most prevalent conditions, affecting, respectively, 11% and 9% of the global population.	2C	35
Dental trauma				
	What is the best way of managing displaced luxated permanent teeth?	No trials were found of interventions to treat displaced luxated permanent front teeth. Current clinical guidelines are based on available information from case series studies and expert opinions.	NA	83
Dentine hypersensitivity				
	What is the efficacy of three different interventions: 1) non-desensitising toothpaste, 2) desensitising toothpaste and 3) professionally applied dentine bonding agent in reducing dentinal hypersensitivity in a dental practice setting?	This small study found that dentine bonding agents provided the greatest improvement in dentinal hypersensitivity at two weeks and at six months. This reduction was greater than that achieved with the desensitising toothpaste tested and a non-desensitising toothpaste.	1B	105–106
	Are arginine-containing toothpastes effective for reducing dentine hypersensitivity?	Data identified indicate a potential role for arginine-containing toothpastes in managing dentine hypersensitivity. However, this conclusion is based on small sample sizes and the studies identified did not follow patients up in the medium to long term.	2B	44–45
Endodontics				
	In teeth with apical periodontitis does a one or two visit root canal treatment provide a better outcome?	This study provided evidence that a meticulously instrumented single-visit root canal treatment can be as successful as a two-visit treatment. There was no significant difference in radiographic evidence of periapical healing between single-visit and two-visit root canal treatment.	1B	48
Effective Practice and Organisation of Care				
	Is continuing dental professional development effective?	Multifaceted and mixed didactic-interactive methods in CPD are more effective ways to learn and change behaviour.	1A	67–68
	Does the use of audit and feedback improve processes and outcomes of care and what factors could influence their effectiveness?	Audit and feedback generally lead to small but potentially important improvements in professional practice.	1A	8–9
	What is the evidence for the benefits and risks of introducing direct access to DCPs for patients, into dentistry in the United Kingdom?	Although over-referral of patients to dentists was suggested and a need for training on assessment and referral skills, there was no evidence of significant issues of patient safety from the clinical activities of DCPs. There was strong evidence of improved access to dental care with direct access arrangements, cost benefits to patients/service providers and high levels of patient satisfaction.	3A	36–37
	In populations where non-dentists conduct diagnostic, treatment planning, and/or irreversible/surgical dental procedures, is there a change in disease increment, untreated dental disease, and/or cost-effectiveness in dental care?	The quality of the evidence was poor. They found that in select groups in which participants received irreversible dental treatment from teams that included midlevel providers, caries increment, caries severity or both decreased across time; however, there was no difference in caries increment, caries severity or both compared with those in populations in which dentists provided all irreversible treatment.	NA	38–39

Oral health				
	In mechanically ventilated critically ill adults does oral care using a toothbrush reduce the occurrence of ventilator-associated pneumonia (VAP)?	While this review shows that toothbrushing is associated with a trend toward lower rates of VAP in intubated, mechanically ventilated critically ill patients there was no effect on ICU mortality, hospital mortality, or ICU length of stay.	1A	89–90
	In patients receiving mechanical ventilation in intensive care units (ICUs) is oral health care (OHC) effective in reducing ventilator-associated pneumonia (VAP)?	The key finding of this review was that inclusion of chlorhexidine mouthwash or gel as part of the oral health care regime showed a 40% reduction in the odds of developing VAP. Toothbrushing versus no toothbrushing did not show a difference. However, there is no evidence of a difference in the outcomes of mortality, duration of mechanical ventilation or duration of ICU stay.	1A	91–92
Oral Medicine				
	Does stress have an impact on the onset and duration of recurrent aphthous ulceration?	In patients with a history of RAS, stressful events may mediate changes involved in the initiation of new RAS episodes. Mental stressors are more strongly associated with RAS episodes than physical stressors.	1B	25
	Does a daily multi-vitamin supplement have a positive effect on the number and duration of recurrent aphthous stomatitis (RAS) episodes?	In this study daily multivitamin supplementation, with the RDI of essential vitamins, did not result in a reduction in the number or duration of RAS episodes.	1B	26
	Are antiviral agents effective in the prevention of recurrent herpes labialis (RHL)?	This review found support for the use of systemic acyclovir and valacyclovir for the prevention of RHL. However, the findings from this review should be interpreted with caution, because the methodologic assessment of the quality of the included studies showed an unclear risk of bias in five out of the ten included papers, and a high risk of bias in four studies.	2A	54
	Are antidepressants effective for treating orofacial pain disorders?	The results of this study are not enough to negate or promote the use of antidepressants in orofacial pain.	2B	55–56
	What adverse drug reactions are associated with local anaesthetics?	This blanket report only alerts the clinician that there are multiple possible reasons for an adverse event due to local anaesthetic use.	3A	51
Oral Surgery				
	What is the effectiveness of local interventions used for the prevention and treatment of dry socket?	There is some evidence that rinsing with chlorhexidine (0.12% and 0.2%) or placing chlorhexidine gel (0.2%) in the sockets of extracted teeth provides a benefit in preventing dry socket.	1A	13–14
	In patients with impacted third molars does coronectomy when compared to conventional removal result in fewer complications?	Coronectomy is a promising procedure. However, it is highly questionable if the results from this systematic review, with a low power and based on studies with a high risk of bias, should already be incorporated routinely in the clinical practice.	2A	57–58
	What are the risk factors for alveolar osteitis?	This study found that previous surgical site infection, traumatic extraction and tobacco smoking are associated with an increased risk of alveolar osteitis.	NA	86
	What is the effect of corticosteroids on inflammation, pain and trismus following third molar extraction?	Well controlled clinical trials showed that corticosteroids statistically decrease pain, swelling and trismus. However, the outcomes concerning pain relief are variable and it is not clear that the magnitude of the decrease has a clinically significant effect on quality of life.	NA	111
Orthodontics				
	When bonding orthodontic appliances are one-step bonding approaches more effective than two-step approaches?	There is weak evidence indicating higher odds of failure with self-etch primer than acid-etch over 12 months in orthodontic patients, and there is strong evidence that a self-etch primer is likely to result in modest time savings (eight minutes for full bonding) compared with acid-etch.	1A	52–53
	Which initial arch wire is most effective for fixed appliance therapy?	There is no reliable evidence from the trials included in this review that any specific initial arch wire material is better or worse than another with regard to speed of alignment or pain. There is no evidence at all about the effect of initial arch wire materials on the important adverse effect of root resorption. Further well-designed and conducted, adequately-powered RCTs are required.	1A	114–115
	Which is the most effective orthodontic treatment for prominent lower front teeth in children and adolescents?	There is some evidence that the use of a facemask to correct prominent lower front teeth in children is effective when compared to no treatment on a short-term basis. However, in view of the general poor quality of the included studies, these results should be viewed with caution. Further randomised controlled trials with long follow-up are required.	1A	112–113

	In patients with palatally displaced canines does extracting maxillary primary canines improve alignment of the permanent canine?	There is currently no evidence of the effects of extraction of primary canine teeth in 10-13-year-old children with one or two palatally displaced permanent canine teeth.	2B	23–24
	What is the relative efficacy of two different types of mandibular advancement appliances (MAAs) for subjective and objective parameters in adults diagnosed with mild to moderate obstructive sleep apnoea/hypopnoea syndrome (OSAHS)?	Both MAAs resulted in clinically meaningful improvements for sleep clinic patients diagnosed with mild to moderate OSAHS, and the monoblock offered some advantages over the two-piece appliance for the patients. Dentists may have a role but should liaise with medical colleagues when considering use of these appliances.	2B	27
	Are remineralising agents effective in the treatment of post orthodontic white spot lesions?	There is a lack of reliable evidence to support the effectiveness of remineralising agents for the treatment of post orthodontic white spot lesions.	2B	76–77
	Is there any difference in relapse of orthodontic treatment results between three different retention methods, in patients who have completed orthodontic fixed appliance treatment for Class I crowding cases with extraction of four premolars?	This trial found that all three types of retention used prevented relapse within clinically acceptable levels. Most relapse took place within the first year of retention and changes during the second year were small or negligible.	2B	81–82
	Is there a relationship between dental crowding and caries?	There are no high-quality studies to resolve the possible association between dental crowding and caries.	NA	12
	Does orthodontic appliance-induced labial movement of lower incisors increase the risk of gingival recession?	There was no association between appliance-induced labial movement of mandibular incisors and gingival recession.	NA	21–22
	What are the failure rates of mini-screws used for orthodontic anchorage?	This review suggested that orthodontic miniscrew implants have a modest small mean failure rate, indicating their usefulness in clinical practice. However the quality of the available literature was low.	NA	78–80
	Which is the best intervention to manage relapse of the lower front teeth after first fixed orthodontic treatment?	There was no evidence from RCTs to show that one intervention was superior to another to manage the relapse of the alignment of lower front teeth using any method or index, aesthetic assessment by participants and practitioners, treatment time, patient discomfort, quality of life, cost-benefit considerations, stability of the correction, and side effects including pain, gingivitis, enamel decalcification and root resorption. There is an urgent need for RCTs in this area to identify the most effective and safe method for managing the relapse of alignment of the lower front teeth.	NA	116–117
Paediatric dentistry				
	Is mineral trioxide aggregate (MTA) effective for long-term endodontic therapy in primary teeth?	Based on the assessment criteria employed, there was no evidence that MTA was better than present materials and techniques as a pulpotomy medicament.	2B	46
Periodontal disease				
	Is chlorhexidine mouthrinse effective in reducing plaque and gingival inflammation compared with placebo?	CHX mouthrinses together with OH versus placebo, or control mouthrinse provide significant reductions in plaque (33%) and gingivitis scores (26%), but a significant increase in staining score.	1A	17–18
	In treatment of chronic periodontitis does the use of local antimicrobial agents as an adjunct to subgingival debridement improve outcomes?	While the review found evidence to support the adjunctive use of local antimicrobials to SRP in deep or recurrent periodontal sites the findings must be interpreted with caution because of the poor quality of the available studies.	1A	87–88
	What is the effect of pregnancy on systemically healthy women in terms of gingival inflammation?	Gingivitis increased in the second and third trimester compared to the first trimester and women who were not pregnant. Conversely, postpartum women had less gingivitis than women in their second and third trimester. These differences were statistically significant, and they validate the temporal nature of gingivitis during and after pregnancy.	NA	107–108

TOOLBOX

Restorative Dentistry				
	Does prosthetic margin placement have an influence on caries susceptibility?	This systematic review and meta-analysis failed to detect a significantly different secondary caries rate of subgingivally located prosthetic margins in the short to mid-term (≤ 10 years). Due to the small number and the limitations of the included studies the results do not provide conclusive evidence as to the effect of prosthetic margin placement on the incidence of secondary caries.	1A	103–104
	Do implant supported mandibular overdentures improve patient satisfaction and quality of life more than conventional dentures?	IODs significantly increase patient satisfaction, dental function and quality of life over and above those achieved with good quality CCDs.	1B	19–20
	Are four bar-connected implants as effective as six bar-connected implants in supporting a maxillary overdenture?	This study found that after one year a bar-connected maxillary overdenture on four or six implants results in a comparable treatment outcome with high implant survival, healthy peri-implant tissues and high patient satisfaction.	1B	49–50
	How long do porcelain veneers last?	Analysis suggests that 10-year survival may approach 95.6% (95% CI - 93.8-97.5). However owing to clinical heterogeneity cautions should be applied when considering these outcomes.	2A	15–16
	What are the clinical fracture rates of all-ceramic crowns in different tooth types?	Within the limitations of this study's protocol, the current evidence suggests that dental ceramic materials demonstrated acceptable five-year core and veneer fracture incidences when used for tooth-supported single crowns in both anterior and posterior segments. Higher fracture tendency for posterior crowns was the trend for all-ceramic crowns, while molar crowns showed a significantly higher fracture rate than premolar crowns.	2A	47
	In endodontically treated teeth are fibre posts more fracture resistant than cast posts?	This review of in-vitro studies suggests that cast posts had higher fracture resistance than fibre posts.	NA	84–85
Temporomandibular joint disorders				
	In patients with temporomandibular joint osteoarthritis what is the best surgical or non-surgical treatment?	There is a paucity of evidence for the effectiveness of interventions for the management of this condition.	1B	5–7
	Is counselling and self-management effective in reducing the signs and symptoms of TMD?	Counselling and self-management approaches may be effective strategies to manage TMD symptoms but high quality evidence on the topic is lacking.	NA	118–119