PEDIATRIC DENTISTRY

Costs of preventing dental caries

BACKGROUND

The prevention of dental caries is considerably more cost-effective than the treatment of carious lesions, which is both time and resource intensive and does not prevent future disease. The 2 methods for preventing dental caries in children are pit and fissure sealants (PFS) and fluoride varnishes (FV). Both have been associated with caries lesions prevention and both are recommended for children and adolescents. An analysis was done to determine which strategy is the most cost-effective in preventing dental caries lesions on the occlusal surface of the first permanent molar in children.

METHODS

A Markov model was used to simulate the progression of dental caries on the first permanent molar's occlusal surface in a hypothetical cohort of children over the course of 9 years. The cost-effectiveness data for resin-based PFS and 5% sodium fluoride (NaF) varnish in preventing the development of dental caries in this tooth were compared to the data for a no-intervention strategy. Two scenarios were used to assess cost-effectiveness: a base case scenario and a scenario in which a failed PFS was replaced. The Incremental Cost-Effectiveness Ratio (ICER) was calculated for PFS and FV.

RESULTS

Base Case Scenario

PFS strategy cost $80.17 more than no intervention and prevented 51% of the first episodes of caries compared to no intervention. The ICER was $156.87 per first episode of caries lesion averted over 9 years. FV was more expensive and 31% less effective than PFS.

Replacement Scenario

The incremental cost of the PFS strategy fell to $61.25, and the incremental effectiveness increased from 51% to 54%. ICER changed to $113.00 per first episode of caries lesion averted over 9 years. The FV strategy remained both more expensive and less effective than PFS.

DISCUSSION

Applying PFS was more effective in preventing the first episode of caries and less expensive than applying FV twice a year. With the emphasis on containing costs and getting greater results for each dollar spent, PFS should be recommended for children who are at higher risk for developing caries and who use dental services less often.

Clinical Significance

Persons who plan caries prevention programs should take note of the information found in this study. Currently the United States Preventive Services Task Force (USPSTF) recommends that primary care clinicians apply FV to the primary teeth of all infants and children beginning when the primary teeth begin to erupt. Although FV can cover all the surfaces, is easy to apply, and can be applied at any age, PFS is more cost-effective when the prevention of dental caries lesions is considered. Children of lower socioeconomic families, who are not only at higher risk for developing caries but who are also more likely to be covered by public programs such as Medicaid, should especially be covered by PFS rather than FV.

Khouja T, Smith KJ: Cost-effectiveness analysis of two caries prevention methods in the first permanent molar in children. *J Pub Health Dent* 78:118-126, 2018

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Glass ionomer cement versus composite resin in primary tooth restorations

BACKGROUND

Single studies find differing results for the clinical performance of glass ionomer cement (GIC) and that of composite resin (CR) in Class II restorations in primary teeth. A literature search was done to identify randomized controlled trials that compared the 2 materials and permit meta-analysis of the results.

METHODS

The PubMed, Scopus, Web of Science, VHL, Cochrane Library, Clinical Trials, and OpenGrey databases were searched. No limitations were instituted with regard to date or language of the study. Ten studies were identified, with 9 useful in meta-analyses. These studies included 6 using a split-mouth design and 5 using a parallel design. The number of restorations ranged from 73 to 344 restorations, and the number of participants ranged from 31 to 180 children age 3 to 11 years. Follow-up lasted 6 to 48 months. In 7 studies, the restorations were placed using rubber dam isolation; in 3, cotton roll isolation was used.

RESULTS

The GIC and CR materials demonstrated similar clinical performance with respect to percentage of failures that occurred, marginal adaptation, marginal discoloration, and anatomical form of the restorations. Isolation type did not influence the outcome. GIC had better clinical performance than CR with respect to the number of secondary lesions that occurred. The effect was more pronounced for resin-modified GIC used with rubber dam isolation. Resin-modified GIC is therefore considered a more suitable material for Class II restorations in primary dentition.

DISCUSSION

The paucity of studies comparing GIC to CR makes the conclusions difficult to apply widely. In addition, there were many subgroups to consider. Even though GIC is considered better than CR for Class II restorations in pediatric patients, the findings should be interpreted with caution. More studies that address relevant factors related to restoration longevity in primary teeth are needed.

Clinical Significance

The clinical performances of GIC and CR are similar in many respects. Both materials maintain tooth structure intact and require less invasive techniques. CRs are still more technique sensitive that GICs, require more steps, and are more sensitive to moisture. GICs release fluoride to the oral cavity and require less time for preparation, which make them highly useful for pediatric patients. Further study is needed to confirm the findings of this study, but it appears that resin-modified GIC may be a better choice for many Class II restorations in the primary dentition.

Dias AGA, Magno AB, Delbem ACB, et al: Clinical performance of glass ionomer cement and composite resin in Class II restorations in primary teeth: A systematic review and meta-analysis. *J Dent* 73:1-13, 2018

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REMOVABLE PROSTHODONTICS

Communication

BACKGROUND

Although implants are often considered the gold standard for replacing missing teeth, there are other options, including fixed prostheses and removal partial dentures, that meet the needs of the patient and serve as an excellent option. The fabrication of a removable partial denture (RPD) requires excellent communication between the patient and dentist, the dentist and technician, and the dental nurse and the dentist. The communication challenges facing each of these individuals were detailed.

PATIENT AND DENTIST

Dentists should assume a patient focus and really listen to what the patient needs and desires when considering an RPD. Patients need time to consider the information the dentist gives them and to express their thoughts on the matter. They may have questions that need to be answered, and the dentist must allow for these questions and do the best possible job answering the patient's concerns.

Communication should begin early in the care planning process. In addition to listening carefully to what the patient says, it's important to consider the patient's past denture wearing history, expectations of care, medical history, social history, and any negative views the patient holds regarding dentures. Understanding what the patient expects is especially vital. Dentures are not the same as natural teeth and can feel awkward in the patient's mouth, causing difficulty with speaking or eating, which leads to a lack of confidence in the denture. Taste perception can also be altered when the patient wears a RPD.