A model for extending the reach of the traditional dental practice
The ForsythKids program

Richard Niederman, DMD, MA; Ellen Gould, RDH, MPA; Jennifer Soncini, DMD; Mary Tavares, DMD, MPH; Valarie Osborn, RDH; J. Max Goodson, DDS, PhD

ABSTRACT

Background. The authors describe and evaluate the short-term effectiveness of a community-based program for dental caries prevention in children.
Methods. The authors enrolled pupils in the ForsythKids program after receiving informed consent. They targeted children at six Massachusetts elementary schools, grades 1 through 3, with pupil populations at high risk of developing caries. The children underwent examination by dentists using calibrated technique and received comprehensive preventive care from dental hygienists. The authors determined effectiveness by means of comparing results of the initial examination with those of a second examination performed six months later.
Results. At baseline, 70 percent of the 1,196 participating children had decayed or filled teeth. More troublingly, 42.1 percent of the primary teeth and 31.1 percent of the permanent teeth had untreated decay. Six months after preventive intervention, the proportion of teeth with new decay was reduced 52 percent in primary teeth and 39 percent in permanent teeth. Furthermore, the percentage of children with newly decayed or restored primary and permanent teeth was reduced by 25.4 percent and 53.2 percent, respectively.
Conclusions. These results indicate that this care model relatively quickly can overcome multiple barriers to care and improve children's oral health.
Clinical Implications. If widely implemented, comprehensive caries prevention programs such as ForsythKids could accomplish national health goals and reduce the need for new care providers and clinics.
Key Words. Caries prevention; evidence-based; community-based.
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Among the most compelling points made in the surgeon general's report on oral health[1] was that caries is the most common chronic childhood disease—five times more common than asthma. Furthermore, the report indicated, 80 percent of the disease burden occurs in 25 percent of the population. In the wake of this disturbing report, and in keeping with the goals of Healthy People 2010,[2] The Forsyth Institute developed ForsythKids, an elementary school–based comprehensive caries prevention program for children. In this article, we present six-month outcome data on the ForsythKids program.

DENTAL CARIES: THE NEED FOR COMPREHENSIVE PREVENTION

Several systematic reviews make it clear that dental caries is a preventable infection.[3-10] More importantly, candidate solutions are available. For example, systematic reviews, as well as large-scale

Dr. Niederman is a senior member of the staff and the director, Center for Evidence-Based Dentistry, The Forsyth Institute, Boston, and is an associate professor, Goldman School of Dental Medicine, Boston University. Address reprint requests to Dr. Niederman at Center for Evidence-Based Dentistry, The Forsyth Institute, 140 The Fenway, Boston, Mass. 02115, e-mail "rniederman@forsyth.org".
Ms. Gould is an assistant clinical investigator, The Forsyth Institute, Boston.
Dr. Soncini is a staff associate and pediatric research dentist, The Forsyth Institute, Boston, and an assistant clinical professor, Goldman School of Dental Medicine, Boston University.
Dr. Tavares is a senior clinical investigator, Clinical Research Collaborative, The Forsyth Institute, Boston, an assistant professor, Goldman School of Dental Medicine, Boston University, and a clinical instructor, Harvard School of Dental Medicine, Harvard University, Boston.
Ms. Osborn is a research hygienist, The Forsyth Institute, Boston.
Dr. Goodson is a senior member of the staff and the director of Clinical Research, Clinical Research Collaborative, The Forsyth Institute, Boston, and an associate clinical professor of periodontology, Harvard School of Dental Medicine, Harvard University, Boston.

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trials, document the efficacy of fluoride varnish and toothpaste,[11-13] dental sealants[14-18] and temporary restorations,[19-21] but not of six-month recall visits.[22]

Paradoxically, however, in spite of the aforementioned trials demonstrating efficacy of prevention, large-scale community-based effectiveness demonstration programs thus far have failed to live up to their predicted benefit.[23-27] One reason for this may be that these programs focused on the delivery of only one or two preventive measures, or on populations with a low prevalence of caries.

Thus, the critical need for a comprehensive preventive oral health care plan, particularly for children at risk of developing caries, now is even clearer, from several perspectives. Demographically, dental caries remains the single most common disease of childhood.[28] It also is a social justice issue, because the impact of caries disproportionately affects children from families of low socioeconomic status.[1] Developmentally, children with severe caries have increased school absenteeism, have trouble paying attention in school and do not keep up with their peers academically.[29,30] Biologically, caries is an infection that can be prevented and can be transmitted and, if untreated, can adversely affect systemic health.[31] Finally, from an economic perspective, the Centers for Medicare and Medicaid Services estimated that the cost of dental care will rise by 50 percent between 2004 and 2014, placing oral health care farther out of financial reach for low-income households.[32]

In planning a strategy to control a prevalent disease as a public health measure, determining the availability of evidence-based, effective preventive interventions is only part of the answer. Getting these preventive measures to those in need of care—that is, dissemination and implementation of community-based programs—is even more critical. Barriers posed by society, culture, language, fear, education, experience, demographics and avoidance must be overcome before care can be delivered effectively. The implementation strategy we present in this report circumvents many of these barriers by bringing the providers to the patient rather than bringing the patient to the providers. In this article, we describe the procedures we used, how we brought them to the children in need of treatment and how effective these treatments appeared to be under these conditions.

METHODS, SUBJECTS AND MATERIALS

Basic precepts. In developing, implementing and evaluating the ForsythKids program, The Forsyth Institute adapted the following precepts.

- Care must be of the highest quality, as described in The Institute of Medicine's report, Crossing the Quality Chasm: A New Health System for the 21st Century.[33] This report articulates six characteristics of high-quality care: safe, effective, efficient, personalized, timely and equitable.
- The program must use the best clinical evidence, based on international standards. The Centre for Evidence-based Medicine at Oxford University, England,[34] developed a matrix to define the best clinical evidence. Variations on this matrix have been used internationally by a variety of agencies, including the U.S. Centers for Disease Control and Prevention. The evidence base for the preventive interventions consisted of systematic reviews on the following topics: fluoride toothpaste,[12] fluoride varnish,[11] and glass ionomer sealants and temporary restorations.[17,21,35,36]
- Meet goals of Healthy People 2010.[2] Objective 21 of Healthy People 2010 sets out the following goals for children: reduce the proportion of children with caries from 52 to 42 percent of children; reduce the proportion of children with untreated decay from 29 to 21 percent; increase the proportion of children with molar sealants from 23 to 50 percent.
- Address the needs of U.S. children articulated in the U.S. surgeon general's report on oral health.[1] This report identifies a need to increase access to care and improve oral health generally. Specifically, the report addressed the needs of populations at high risk of experiencing dental caries, including minorities and people with low incomes.
- Comply with regulations of the Massachusetts Board of Registration in Dentistry (BORID) and national guidelines on professional standards.

ABBREVIATION KEY. BORID: Board of Registration in Dentistry. **d:** Decay in primary teeth. **D:** Decay in permanent teeth. **df:** Decayed or filled primary teeth. **DF:** Decayed or filled permanent teeth. **Dx:** Diagnosis. **HIPAA:** Health Insurance Portability and Accountability Act of 1996. **OSHA:** Occupational Safety and Health Administration. **PF:** Prevented fraction. **Rx:** Treatment.

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