

Public Health Dentistry and Dental Education Services: Meeting the Needs of the Underserved through Community and School-Based Programs

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One essential role of public health is to reduce the prevalence of disease in populations through proven preventive measures, thereby reducing the need for treatment services. The ongoing problems of the lack of access to quality oral healthcare, along with the difficulty of establishing a “dental home” for all North Carolina citizens, and especially for its children, continues to challenge dental care provider resources in North Carolina. Dentists in private practice deliver the majority of direct patient care services to all segments of the population. However, an increasing amount of care is now being rendered by numerous public health safety net dental clinics. Collaborations of publicly and privately-funded services have directed resources to augment the care provided by dentists in private practice. The collaborations are various combinations of state, local, and federal levels of government, non-profit agencies, faith-based community organizations, and volunteer efforts by concerned citizens. The result is that disadvantaged citizens who previously could not access a dental care provider can now more easily receive dental treatment and preventive services.

Perhaps the overarching description of the efforts of all dental public health and safety net providers is stated in the North Carolina Oral Health Section’s mission “to promote conditions in which all North Carolinians can achieve oral health as part of overall health.”¹

With a focus on the three principles of public health—assessment, policy development, and assurance—the North Carolina Oral Health Section and other dental public health agencies have developed strategies to address both the *supply* of available care and the *need* and *demand* for care. Efforts concentrate on:

- Oral health monitoring—assessment and surveillance of treatment and need,
- Dental disease prevention—policy development to reduce need,

- Dental health education and health promotion—assurance to reduce need while increasing demand, and
- Access to dental care—assurance to increase supply.

State Level Strategies: North Carolina Oral Health Section

The North Carolina Oral Health Section is the only public program in the nation that provides statewide dental health prevention and education services specifically for children. The Oral Health Section is in the Division of Public Health, Department of Health and Human Services. Its function is mandated by the North Carolina General Assembly under the statutory authority of G.S. 130A-366, with services delivered at the county level. The majority of staff is funded by 77% state

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appropriations and 23% Federal Financial Participation. In addition, one county funds four public health dental hygienist positions with county and Smart Start funds, and one county funds a hygienist position with Maternal and Child Health Block Grant funds.

Too many citizens, particularly children, experience preventable oral diseases. Prevention is the key to improved oral health. No matter how many treatment resources are established in the state, the treatment of dental disease cannot solve the problem.

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The vision is for North Carolina children to be cavity-free forever. The goal of the North Carolina Oral Health Section is to *prevent* dental disease, especially in children. To achieve this goal, the Section's programs are organized into five broad components: (1) Dental Disease Prevention Services, (2) Oral Health Monitoring Systems, (3) Dental Health Education/Health Promotion, (4) Access to Dental Care, and (5) Dental Public Health Residency Program. Section services are based on best practices as defined by the Centers for Disease Control and Prevention (CDC). Because of the limited number of staff, the Section primarily serves elementary school children, in order to have the greatest and longest-lasting impact. Since the 'patient' of dental public health is the community, the majority of the programs are geared toward the general public, including healthcare providers, with specific activities targeted to high-risk elementary and preschool school children. Eighty-three percent of the Section's staff—54 public health dental hygienists and two public health dentists—reside in the counties they serve and provide direct services in cooperation with local health departments. The Section serves over 288,000 children annually.

Programmatic Components of the North Carolina Oral Health Section

Dental Disease Prevention Services

The citizens of North Carolina continue to suffer from several oral diseases, including tooth decay, periodontal disease, and oral cancer. Tooth decay is the most prevalent childhood disease with more than 60% of North Carolina's schoolchildren still experiencing this disease. Several Section activities focus on decay prevention through the use of fluorides and protective dental sealants.

Community water fluoridation. Fluoridation of community water supplies continues to be the most effective evidence-based strategy for preventing dental decay. The CDC promotes community fluoridation as one of the two most effective public health measures to reduce dental decay, the other being school-based dental sealant programs. CDC's Water Fluoridation Reporting System (WFRS) database shows that 85% of North Carolina citizens served by municipal water supplies now receive fluoridated water. The Section provides technical assistance and uses federal Preventive Health and Health Services Block Grant funds to provide financial assistance to water systems wanting to fluoridate or to update older fluoridated water systems. These Block Grant funds have been reduced significantly over the last few years and are currently at risk for elimination by Congress. If that happens, other resources will have to be identified to support fluoridation and other proven dental preventive efforts.

The water systems that are not currently fluoridated are small and/or have structural or logistical problems that make it difficult to fluoridate. Systems that fluoridate often require hiring a water plant operator with a higher level certification than would be required if the system did not fluoridate. The higher level certification commands a higher salary, which is a burden

on a small system. If their water comes from multiple sites, these systems can require additional fluoridation equipment, placing an additional financial burden on a small system. Each site of the water systems that add fluoride must be checked at least daily. For example, a water system with six well heads, each requiring its own fluoridation equipment, must have a properly certified operator check each injection point daily. Most future growth in the proportion of the population served by community water fluoridation will be in response to (1) increased population in the fluoridated areas as the state becomes more urban, (2) fluoridated water systems extending into rural areas, and (3) small water systems merging with larger fluoridated systems.

Into the Mouths of Babes (IMB). The youngest North Carolina children at risk for tooth decay lack access to preventive oral care, as well as to dental treatment services. Except for that provided by the relatively few pediatric dentists in North Carolina, dental care for this group is practically nonexistent. A partnership of six North Carolina agencies addressed the issue by developing a medical model for the provision of preventive dental services to Medicaid-covered children under age three. This model, called *Into the Mouths of Babes*, trains physicians and other medical providers to perform an oral screening and refer children for dental treatment if necessary, counsel parents on taking care of their child's teeth, and apply fluoride varnish. Medicaid reimburses the medical provider for these preventive oral procedures up to six times per child before the third birthday.

IMB is part of the Section and continues to partner with the North Carolina Division of Medical Assistance (Medicaid), the North Carolina Pediatric Society, the North Carolina Academy of Family Physicians, and the University of North Carolina at Chapel Hill Schools of Dentistry and Public Health. Representatives from each of these agencies form the IMB Advisory Committee, which partners with the North Carolina Dental Society. IMB trainings occur through collaboration among the Oral Health Section trainer, the North Carolina Academy of Family Physicians, and North Carolina Pediatric Society.

As of June 2005, approximately 400 physician offices, residency programs, and health departments were providing the IMB preventive oral procedures, with approximately 40% of Medicaid-eligible children receiving the services. Section staff are working with Early Head Start to develop new training materials for teachers and educational materials for parents to emphasize the importance of preventing disease in the primary teeth and to seek early dental preventive services.

Because North Carolina data show that dental decay is on the increase in the preschool population, the Section is examining ways to effectively address the dental needs of this vulnerable group of children. Medicaid requires at least 90 days between IMB oral preventive procedures. Eliminating this requirement would allow more scheduling flexibility. In addition, children qualify for the oral preventive services only up to their third birthday. Extending the eligibility to allow children to receive the procedure at the three-year well-child checkup would increase the opportunity to receive all six encounters, resulting in an increased preventive benefit.

Preliminary North Carolina data analysis shows that children having four, five, or six of these fluoride varnish procedures before their third birthday need less treatment for tooth decay. The analysis shows a dose-related response, with some benefit seen even in children having fewer encounters. The proportion of children with repeat visits for IMB oral preventive services has increased, and we hope to see this trend continue. The dissemination of the data demonstrating the effectiveness of these early preventive procedures should encourage more physicians to participate in IMB and more parents of high-risk children to request these services.

Dental Sealant Initiative. The expanded use of protective dental sealants has great potential for reducing the rate of tooth decay, especially in areas of the teeth not as affected by fluorides. The CDC recommends school-based dental sealant programs as one of the two most effective public health measures to reduce dental decay. The Section's sealant initiative has two parts:

- School-based sealant projects are targeted to children in the elementary school setting. The projects are conducted by teams of the Section's public health dentists and dental hygienists, who set up a temporary "Dental Office" in the school. Patient examinations and treatment plans are provided for eligible children by the dentists and public health dental hygienists place sealants for these at-risk children at no cost to the participants.

This model received a recent boost by one of the recommendations of the 1999 North Carolina Institute of Medicine Task Force on Dental Care Access.² The recommendation led to a change in the North Carolina Dental Practice Act,³ which now allows public health dental hygienists, trained by the Section, to place dental sealants when the public health dentist, who is providing the legally required direction of this activity, is not on-site during the sealant project. Approximately 15,000 sealants are provided annually for children at high risk for tooth decay. While the projects deliver direct preventive services to children who are at high risk for decay, they are also designed to educate children, parents, and others in the community about the need for sealants and to encourage them to ask their private dentists about sealants.

- Sealant promotions that occur in offices of private dentists are a public/private partnership where privately practicing dentists use their facilities to place sealants for eligible children at no cost. Another public/private partnership model uses a private office facility or other site, such as a community college dental clinic, where sealants are placed by both private and public health practitioners working side by side.

Such sealant initiatives illustrate the Section's focus on prevention, coupled with dental health education/promotion and services.

Oral Health Monitoring Systems

The Oral Health Section has always used evidence-based monitoring systems to guide programmatic strategies.

Statewide Oral Epidemiological Surveys. North Carolina is the only state with a series of statewide oral epidemiological surveys dating back to the early 1960s. The Section conducts these surveys about every ten-to-15 years. The most recent survey was conducted in 2003-2004. These surveys assess the oral health needs of the citizens of the state, and the data are used to plan and evaluate the state's dental public health program. They also evaluate the effectiveness of specific public health efforts, such as community fluoridation, dental sealants, and fluoride mouthrinse.

Dental Health Assessment. State dental public health professionals assess more than 134,000 elementary school children each year for oral disease. Their calibrated assessment is useful for identifying and referring those children who need dental care, as well as conducting disease surveillance and tracking disease patterns. This surveillance technique is used annually for kindergarten and fifth grade children in North Carolina. Children who are in need of dental care are identified and, with the help of school nurses, are referred to local providers. The assessment collects data on cavities, past restorative treatment, and sealant prevalence. The collected data allow for the evaluation of goals established as part of overall community health-based objectives.

Dental Health Education/Health Promotion

Statewide school-based education programs include classroom education, videos and other audiovisual tools, educational materials, and interactive exhibits. Portable educational/promotional dental exhibits, educational videos and slides, and media promotion campaigns are used statewide.

Education for professionals includes programs, educational information and materials, and in-service training for teachers and allied health professionals. Other training and instructional materials are provided to healthcare professionals through local organizations, the university system and dental and medical publications. A comprehensive dental health curriculum, *Framework for Dental Health Education*, and innovative on-line educational materials are available to elementary school teachers.

Children's Services. In 2004-2005, almost 151,000 children were provided instruction on topics, such as dental care, sealants, nutrition, oral conditions, fluoride, plaque control, tobacco use, and injury prevention. Section field staff also emphasize teacher training and support so that classroom instruction on dental health will be an ongoing process during the school year.

Adult Services. More than 13,000 adults are provided educational services each year in keeping with the Section's emphasis on preventive dental education and promotion to parents and teachers.

Professional Services. Section staff provide a number of services to health professionals. These services include educational/informational programs for local and state healthcare professional meetings and state and local dental societies, training programs for health department staff and other health professionals, and consultation with healthcare professionals across the state and nation. Section staff work with dental programs in community

colleges as part of their public health curriculum. The Section mentors students and residents from the University of North Carolina at Chapel Hill Schools of Public Health and Dentistry.

Consultation Services. Educational consultation is provided by the health educators, upon request, to dental public health staff in addition to teachers and other healthcare providers.

Educational Materials. Approximately 500,000 pieces of educational materials are printed and distributed statewide each year, primarily to schools and health departments.

Educational Exhibits. Almost 5,000 people annually attend and receive information through point-of-contact dental health education exhibits used in various sites. With 11 different topics, the exhibits are used by individuals including Section staff, county staff, Department of Health and Human Services employees, community college staff, and related healthcare professionals.

Access to Dental Care

Access to dental care includes two aspects. These are (1) referral and follow-up for those persons in need of dental care and (2) improved access by the indigent population to dental care funded by third-party reimbursement. One measure of access to dental care in a population is the level of untreated dental cavities. According to the 2003-2004 North Carolina School Oral Health Survey, 19% of white, 30% of black and 38% of other (predominantly Hispanic) North Carolina children had untreated dental cavities. The Section's 2004-2005 kindergarten and fifth grade (K-5) statewide assessment data indicate that 22% of kindergarten children have untreated cavities in primary (baby) teeth, and 5% of fifth grade children have untreated cavities in permanent teeth.

In 2004-2005, almost 8,600 children received needed dental care as a result of follow-up by Section staff. Lack of access to appropriate dental prevention and treatment for the medically indigent is a major and worsening problem. Current access obstacles need to be reduced to improve participation from the private sector. Participation in Medicaid by privately practicing dentists has improved somewhat in the last few years as reimbursement has been increased, and paperwork has been streamlined.

The IMB program has increased access to oral preventive services and referrals for dental treatment for North Carolina's very youngest children. North Carolina 2003 Medicaid data show an eight-fold increase in the number of Medicaid-covered children under age three who received oral preventive services in a *medical* (i.e., physician's) office, with many referred for dental treatment.

The Section's successful collaboration with the North Carolina Dental Society continues with the North Carolina Dental Society-sponsored *Give Kids a Smile!* program. Statewide, dentists participate in and open their private offices to at-risk children for restorative care and sealant delivery. The 2005 *Give Kids a Smile!* Program provided 10,887 sealants for children. A variety of restorative services were provided, including 1,556 fillings. The approximate value of all of the services provided

for the children was \$1,170,000. The total number of patients treated was 4,832. Approximately 3,000 volunteers gave their time to provide these needed services. Collaborative projects enable public and private partners to work together to have an impact on access to dental care.

The American Academy of Periodontology states that periodontal (gum) disease is a risk factor for preterm and low birth weight babies. Medicaid pays for dental treatment for eligible pregnant women. However, many dental practitioners are reluctant to treat pregnant women. As part of professional education, the Oral Health Section needs to work more closely with the North Carolina Dental Society, UNC-Chapel Hill School of Dentistry, UNC-Chapel Hill School of Public Health, and North Carolina Area Health Education Centers to educate dental practitioners about the importance of addressing the oral health needs of pregnant women. These efforts would help expectant mothers decrease their risk of having low birth weight babies and reduce the transmission of decay-causing bacteria to their newborns.

In 1998, the North Carolina General Assembly charged the North Carolina Department of Health and Human Services to evaluate and recommend strategies to improve access to dental care for the Medicaid population and to improve the Medicaid program's provision of preventive services for their clients. The Secretary of the Department of Health and Human Services asked the North Carolina Institute of Medicine to convene a group to make recommendations to be reported back to the Legislature in April 1999. The resulting 23 recommendations have been reviewed every two years to document progress. The most recent review occurred in an Access to Dental Care Summit sponsored by the Section in April 2005. The Summit gathered community and dental care leaders to discuss potential strategies for improving dental care access, whether by further implementation of the original 1999 recommendations or through new strategies to improve access. The Summit report was published by the North Carolina Institute of Medicine in December 2005 as the "2005 NC Oral Health Summit Proceedings and Proposed Action Plan." If implemented, the updated action plan will help ensure access to dental care for more underserved North Carolinians across the state.

Dental Public Health Residency

The purpose of the North Carolina Dental Public Health Residency program is to allow dental practitioners with formal academic dental public health training, such as a Master's in Public Health (MPH), to gain valuable practical experience in the field of dental public health and to prepare candidates to become board certified in the American Dental Association accredited specialty of Dental Public Health. Dental public health residents participate in the planning, administration, and evaluation of programs that seek to reduce oral disease incidence and to improve the oral health of the community. The Section offers one of only two such residencies in the United States based in a state or local dental public health program. Chapter 130A-11 of the North Carolina Public Health Laws mandates the creation of a state

public health residency, while the Residency Advisory Committee is an official committee within the Department of Health and Human Services. The Section's residency program is accredited by the American Dental Association's Committee on Dental Accreditation and as such, adheres to the Association's *Standards for Advanced Specialty Education Programs in Dental Public Health*.

Local Government Strategies

Ninety-four of the 100 counties in the state have established some type of safety net dental care access facility or program, with many programs established within the past ten years.⁴

Most of these programs are operated by local health departments. Many of these programs combine mobile and fixed clinical facilities. They mostly serve children and adults with emergent care needs. Funding for these programs comes from local county budgets, grants, and reimbursement from third-party payers—mainly Medicaid and North Carolina Health Choice (S-CHIP). Recent increases in Medicaid fee-for-service reimbursements help

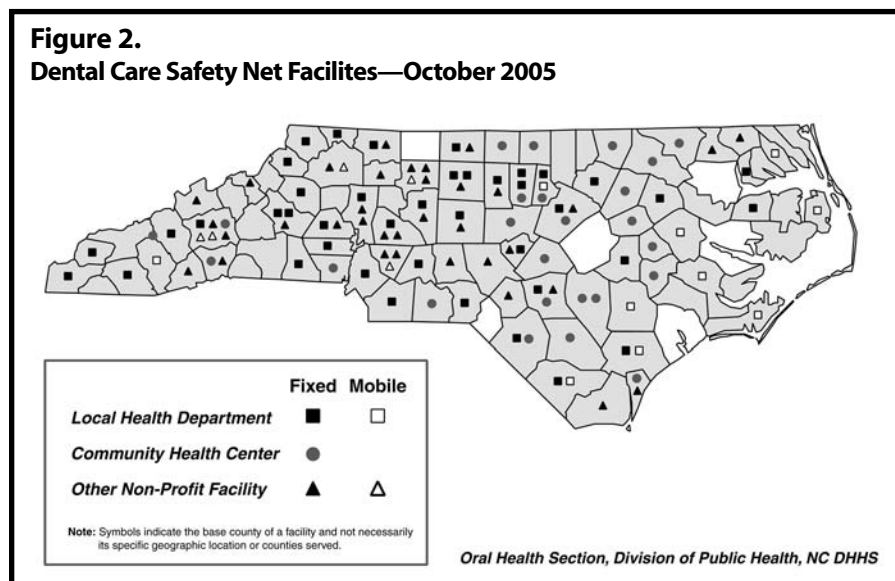
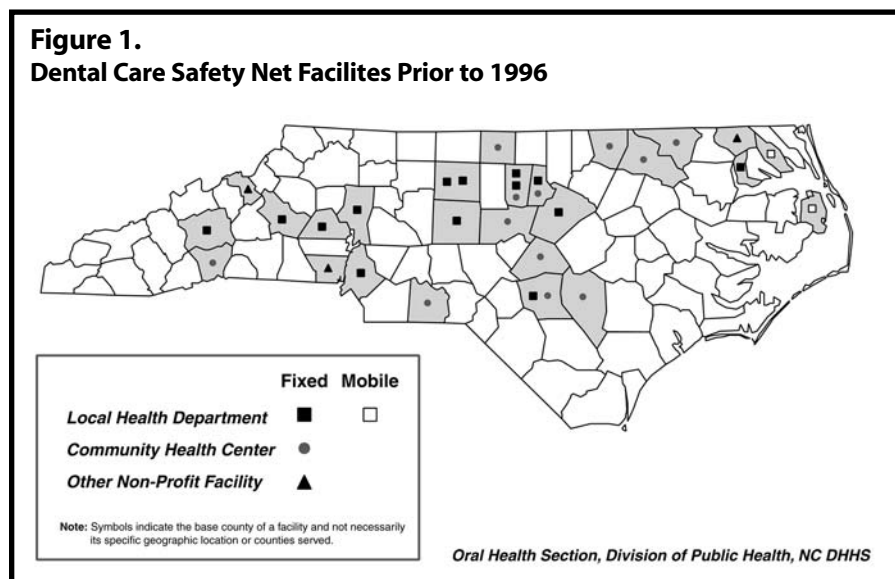
these programs maintain viability. Many of these local programs were planned and implemented with technical assistance from representatives of the Section. Annual data from the community's kindergarten and fifth grade students that is collected by the Section demonstrates the need for these treatment resources and their funding. By providing assessments, referrals, case-management, school-based sealant projects, and education, public health dental hygienists employed by the Section or by county health departments contribute to a comprehensive community-based dental public health program.

As previously described, one of the recommendations of the 1999 North Carolina Institute of Medicine Task Force on Dental Care Access³ resulted in recent changes in the North Carolina Dental Practice Act.⁴ These changes allow public health dental hygienists employed or contracted by county health departments to provide sealants and other specific preventive and therapeutic services for established patients already treatment-planned by the county's public health dentist, but without the on-site presence of that dentist.

Since 2000, the Section has certified 49 public health dental hygienists employed by local health departments to provide services without the on-site presence of a dentist. Thirty-three of these hygienists still work in dental public health programs. Of these, 17 provide clinical services to patients, and 31 provide community-based services, such as screenings for preschool and school age children.

Federal Funding for Dental Care Programs

Twenty-three federally qualified/community/rural health centers operate dental clinics in North Carolina. These clinics treat citizens in need, especially children, under guidelines established by the Health Resources Services Administration (HRSA). In Dental Health Provider Shortage Areas (DHPSAs), private and public health dentists are eligible to receive professional student loan repayments as an incentive to serve in geographic areas where the lack of access to dental care is documented. Coordinated by the North Carolina Office of Research, Demonstrations, and Rural Health Development, many DHPSAs have attracted and employed dentists to serve their residents. New federal guidelines require the construction of all new centers to include dental clinics.



Nonprofit Agencies and Volunteer Initiatives

Several communities rely on the dental services provided by local nonprofit agencies. Often these agencies collaborate with health departments to widen the scope of local resources. Also meaningful are open-door or “free” clinics staffed by volunteer dentists from the community. Most of these clinics are operated part-time, mostly in the evenings, and use either their own facility or another facility.

State Staffing Limitations

All of these activities are contingent on having qualified dental public health staff. Oral Health Section data indicate that improvements in dental health for permanent teeth have leveled off or are decreasing. Tooth decay in the preschool population is increasing. Additional staff (public health dentists, dental hygienists, health educators, and support staff) are needed to provide the preventive and educational services needed to reverse these trends. Yet, over the last 15 years, the Oral Health Section has lost almost 20% of its staff due to budget cuts. In addition, one-third of Section staff will be eligible for retirement in the next five years. The Office of State Personnel has acknowledged repeatedly since 1996 that salaries for Section dentists and dental hygienists are not competitive with private practice or local health departments, yet funding has not been identified to address these inequities. There are serious concerns about how the Oral Health Section will attract good staff to replace the retiring career dental public health practitioners as they leave the workforce.

Conclusions

Great strides have been made in reducing dental disease in the North Carolina population, particularly for our children. As described above, needed action steps include:

- Assuring adequate funding to support community water fluoridation and other dental preventive best practices.
- Increasing the proportion of young children at high risk for dental decay who receive the optimal number of IMB dental preventive services.
- Developing collaborations to educate dental practitioners about the importance of addressing the oral health needs of pregnant women to decrease the risk of low birth weight babies and to reduce the transmission of decay causing bacteria to their newborns.
- Supporting the action steps in the “2005 NC Oral Health Summit Proceedings and Proposed Action Plan,” released by the North Carolina Institute of Medicine in December 2005.
- Maintaining and strengthening state public health resources and services to assure access to needed oral health services and programs for those most in need.

It is critical that adequate resources be directed toward prevention so that all North Carolinians can achieve oral health as part of their overall health. **NCMedJ**

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