White Paper:
Opportunities for Improving Oral Health and Chronic Disease Program Collaboration and Medical-Dental Integration
Association of State and Territorial Dental Directors (ASTDD)
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Problem

Oral health is essential to overall health.[1] Poor oral health is a contributing factor to and a symptom and consequence of many chronic diseases. Understanding the relationships between oral health and chronic diseases, and how strategies for health promotion, disease prevention, early intervention and coordinated clinical management can be collaboratively developed and implemented, will facilitate more efficient and effective public health approaches. However, the contribution that a healthy mouth provides to a person's overall well-being is often overlooked. Without a healthy mouth, important aspects of general health and health related quality of life are affected, including nutrition, self-image, willingness to interact socially, mental health, and physical health.[1,2] Oral health impacts systemic health, particularly for individuals with chronic diseases. When prevention of oral disease is disregarded or its progression is not addressed and managed in people with chronic diseases, serious adverse health outcomes can result.

Relationships exist between oral diseases and chronic diseases such as diabetes, cardiovascular disease, and obesity.[3,4,5] For example, people with diabetes who have periodontitis have six times the risk for poor glycemic control and also are at increased risk for other diabetes related health complications.[6] Engaging in behaviors such as using tobacco or consuming foods and beverages with high levels of added sugar can have adverse consequences for an individual's oral health as well as overall health.[7] However, few state and local public health programs in the United States "connect the dots" between oral health and chronic disease prevention interventions and health promotion messages. This omission creates missed opportunities for oral health and chronic disease programs to coordinate efforts that can lead to improved health outcomes for populations.

Almost 90% of total deaths in the United States can be attributed to noncommunicable chronic diseases (NCDs).[8] Of these, the four most common are cardiovascular diseases, diabetes, cancers, and chronic respiratory diseases; they share common risk factors. Tobacco and alcohol use and dietary behaviors associated with obesity and elevated blood sugar are the common risk factors these NCDs share with the most common oral diseases – dental caries, periodontal disease, and oral cancer.[8]

A recent environmental scan conducted by the University of Iowa in collaboration with ASTDD (Iowa report) and published in 2018 focused on medical-dental integration in public health settings.[9] The findings confirm that oral health activities in state health departments are frequently not well coordinated with work being conducted by the state chronic disease (CD) program. Even when they are co-located in the same unit, oral health (OH) and CD programs do not typically work together to promote disease prevention and health promotion messages and strategies that can achieve mutually beneficial outcomes.[9]

The "common risk factor approach," a coordinated approach to primary prevention, contends that coordinated primary prevention of oral and systemic diseases will increase efficiency and effectiveness and reduce programmatic costs.[7] However, the Iowa report concluded that "use of this coordinated approach to implement primary prevention activities in the U.S. is not well documented."[9]

The Iowa report also notes:

> *In response to growing evidence of the linkages between oral and systemic health, national public health priorities aim to increase medical and dental integration. Healthy People 2020 objectives[10] call for*

increasing the proportion of adults who receive chronic disease preventive services in dental settings, including:

- *Tobacco screening and cessation counseling (TU-9.3, OH-14.1)*
- *Testing and referrals for glycemic control (OH-14.3)*
- *Screenings for oral and pharyngeal cancer (OH-14.2)*
- *Dental visits for people with diabetes (D-8)*

Despite prioritization, baseline data for several objectives do not exist.

The Iowa report describes a number of programs and approaches to clinical screenings of patients for hypertension in community oral health settings, but there is no related Healthy People 2020 objective. With its focus on public health settings, the report does not address blood pressure screenings in private dental practices.

The separation of medicine and dentistry has a long history spanning several generations. Separate training programs, professional identities, payment structures and delivery systems have made connecting the mouth with the rest of the body increasingly difficult. Few standards exist to support communication and referrals between medical care providers and dental care providers.[2] The lack of interoperability between medical and dental records adds to segmentation of health care delivery.[3] Although many Americans regularly see a medical care provider for routine and/or urgent care, their non-traumatic acute or non-urgent oral health condition(s) frequently remain untreated for a variety of reasons (e.g., cost of care, lack of dental insurance, geographic or transportation issues that make access to a dental professional challenging).[2]

When medical providers do not include questions about unmet oral health needs during routine examination of a patient, opportunity for reinforcing the need for oral care is lost. This pattern of separation between medicine and dentistry has resulted in an increased number of patients seeking care for their untreated oral health conditions at hospital emergency departments (ED) at an estimated cost of $1.6 billion in 2012, with an average cost of $749 per visit.[2,11] Care received at the ED is usually palliative and does not address the underlying cause or treatment of their oral health problem(s).

As currently configured, the oral healthcare delivery system in the U.S. fails to reach those with the highest burden of oral disease, which exacerbates existing oral health disparities in this country, particularly for low-income, minority, rural and other underserved populations including those with special needs.[2,12] To reduce the burden of oral disease we need to find new ways to engage patients and families with health promotion information and make preventive oral health care more accessible.[2]

In public health settings, connecting oral health programs with chronic disease prevention and health promotion programs is a challenge. Aside from being traditionally separated, public health approaches for preventing tooth decay (water fluoridation, school-based fluoride mouth rinse and dental sealant programs, fluoride varnish applications, and reduced access to sugar-sweetened beverages) have not been well connected to population-based chronic disease prevention and health promotion strategies.

Inadequate funding coupled with capacity and infrastructure issues have limited the ability of OH programs to partner with CD programs in many states. Although many OH programs have attempted to partner with CD programs to help them achieve their priorities, they have done so with limited success.[9] Lack of understanding among CD program managers about the value that OH programs can add to their approaches and how chronic disease prevention and health promotion messages can be incorporated into and add value to oral health

messages may contribute to the lack of collaboration. Chronic disease prevention and health promotion funding opportunities also do not explicitly encourage partnerships with OH programs.

The Iowa report offers the following recommendations for future directions, based on examples found while conducting the scan: (1) patient referrals; (2) professional guidelines; (3) holistic targeting of risk factors; (4) prioritization of local community needs; (5) integration of health care teams; and (6) development of public health legislation to target chronic diseases and oral health. At the same time, it cautions, "The lack of robust evaluation and effectiveness data surrounding most of the activities described in this report may hamper widespread implementation, sustainability, and stakeholder support."[9]

Method

In public health settings, opportunities exist to better understand the relationships between OH programs and CD programs. Increased efforts to promote medical-dental integration will not only enhance the ability of state CD programs to implement many priority strategies but will also help to integrate and transform oral health programs from "siloed" programs into more mainstream public health efforts.

Primary care providers in a variety of healthcare delivery settings can identify underlying oral health conditions and risk factors that contribute to poor oral health and provide patient counseling and/or referral to an oral health care professional for follow up care. Co-location of medical and dental services, explicit protocols and shared electronic health records encourage bi-directional referrals of patients. Establishment of referral agreements between primary care providers and dental providers also facilitates care coordination.[9] In at least one instance, a strategy to provide dental benefits to individuals with multiple chronic conditions is reducing oral health related complications and is likely rooted in the potential cost-savings for the payer.[13]

Connecting oral health with whole patient care requires a coordinated and patient-centered approach that includes a multidisciplinary team of health care professionals and caregivers who are connected to clinical and community settings. New population-based strategies and policy approaches to promote and ensure access to and coordination of care are also needed. Frontline primary care providers (nurses, physicians, and physician assistants) are the members of the medical delivery system most likely to serve vulnerable and underserved populations with limited or no access to dental services. These primary care professionals have the capacity to incorporate oral health information and preventive oral health services into their day-to-day practice.[12]

In response to recommendations in two Institute of Medicine Reports published in 2011, the Health Resources and Services Administration (HRSA) released the Integration of Oral Health and Primary Care Practice (IOHPCP) report in 2014. It outlines strategies and recommendations to facilitate implementation of oral health core clinical competencies for non-dental primary care clinicians to improve the oral health of vulnerable populations. Similarly, dental professionals can serve as key players in detecting chronic diseases such as diabetes, hypertension, and hypercholesterolemia in dental practices.[14] A study published in 2014 showed the potential savings to the health care system from increased efforts to screen for chronic conditions in dental offices.[15]

At the state health department level, OH and CD program leaders have important roles to play in developing and promoting evidence-based strategies and joint health promotion messages. These strategies and messages can be supported and implemented by a diverse group of state and local partners, with an emphasis on promoting innovative medical-dental integration strategies for primary care settings. Increasing awareness among public health leaders in states and communities about the need for improved access to oral health

services for individuals across the lifespan is an important first step in creating oral health champions who can promote the importance of oral health as a contributing factor to general health and well-being.

ASTDD's Chronic Disease Collaboration Workgroup has identified a useful framework for state CD and OH programs to use in planning how to integrate oral health promotion strategies into priority chronic disease and health promotion initiatives. Modeled after the Four Domains of Chronic Disease,[16,17] Table 1 (below) provides some examples of how oral health prevention messages and risk reduction strategies align with the chronic disease domains.

Table 1. Aligning Oral Health to Evidence-Based Intervention Strategies Contained in the Four Domains of Chronic Disease Prevention – Some Examples

Domain 1: Epidemiology and Surveillance ➢ Conduct surveillance of behavioral risk factors (BRFSS, ATS, YTS) and social determinants of health, and monitor environmental change policies related to oral health and chronic disease risk factors. ➢ Collect cancer surveillance data to assess burden and trends and to identify high-risk populations (oral and pharyngeal cancer). ➢ Collect, use and disseminate data on oral diseases and use of preventive oral health services. ➢ Monitor social and environmental factors that influence health, as well as policies that affect chronic diseases, such as those related to smoking, access to healthy foods, and community water fluoridation. **Value Added:** Cross reference BRFSS data on obesity, tobacco use, diabetes, hypertension with oral health data. HPV vaccinations protect against oral and pharyngeal cancer.	**Domain 2: Environmental Approaches** ➢ Expand access to and availability of healthy foods and beverages through a variety of strategies to promote healthful nutrition and reduced consumption of sugar sweetened beverages and foods to reduce dental caries and obesity in children (and adults). ➢ Expand access to community water fluoridation. ➢ Support policies to reduce access and use of tobacco products to make smoking, chewing and vaping less attractive to youth and adults. ➢ Support for policies to reduce access to sweetened foods and beverages through school lunch programs, increased taxes, etc. **Value Added:** Water fluoridation protects children and adults from smooth surface caries.
Domain 3: Health Care System Interventions ➢ Expand access to and use of clinical and preventive oral health services for children and adults. ➢ Remove barriers to access to help ensure delivery of care to hardest-to-reach populations. ➢ Define high-impact preventive services and priorities (e.g., dental sealants or children). ➢ Establish patient/family-centered medical and dental homes. ➢ Implement integrated health care information systems with automated prompts for physicians/dentists and patient reminder letters for screening and follow-up clinical counseling or referral. ➢ Deliver tobacco use cessation services and make referrals for counseling and treatment. ➢ Screen for high blood pressure, diabetes and prediabetes in dental offices. **Value Added:** Annual dental exam can facilitate referral by a dentist to a primary care provider and vice versa (primary care provider to a dentist) for the treatment and management of chronic conditions (diabetes, hypertension, medication management).	**Domain 4: Community Programs Linked to Clinical Services** ➢ Deliver school-based and school-linked dental prevention and referral programs. ➢ Outreach to high-risk populations to increase use of clinical and other preventive services. ➢ Implement systems to increase provider referrals of people with prediabetes or multiple diabetes risk factors to sites offering a CDC-recognized lifestyle change program. ➢ Use health care providers (physicians, dentists, nurses, dental hygienists, pharmacists, etc.), community health workers, and/or patient navigators to support, prevent, and control risk factors for oral and chronic diseases (high blood pressure, high cholesterol, and high blood glucose levels). **Value Added:** 1) Evidence-based diabetes management programs should include oral care and recommended dental visit. 2) Dental care providers can screen high-risk patients for prediabetes and evaluate the oral health of patients with diabetes, referring them to their primary care provider for follow up as needed.

Medical and dental primary care and public health practitioners appear to be increasingly willing to collaborate. Several examples of robust partnerships between OH and CD programs have been documented; additional investments in states are underway and being evaluated.[9,18] In 2016, the Centers for Disease Control and Prevention (CDC) Division of Oral Health (DOH) awarded funds to six states to strengthen CD and OH program efforts for developing collaborative approaches to prevent and control chronic diseases such as hypertension and diabetes, and reduce related risk factors such as tobacco use, obesity and consumption of sugar-sweetened beverages.[19]

From 2016 to 2018, the six funded states tested innovative approaches to building communication between state CD and OH program staff. They incorporated oral health into chronic disease management systems such as those developed to manage diabetes and hypertension. They also increased collaboration between safety net medical and dental programs and fostered participation of OH program staff in developing state chronic disease prevention plans. Each state received $250,000 per year for two years.

- The Alaska Oral Health Program collaborated with the state Obesity Prevention and Control Program to train dental professionals and tribal dental providers to educate and counsel children and their caregivers to reduce consumption of sugar-sweetened beverages and promote increased consumption of water, including fluoridated water.
- The Colorado Oral Health Unit worked collaboratively with the state Diabetes and Cardiovascular Unit to develop and implement an enhanced model of care in which oral health and primary care providers collaborate to deliver comprehensive, patient-centered diabetes prevention and management in community health clinic settings.
- The Georgia Oral Health Program collaborated with the state Center for Chronic Disease Prevention to engage dental professionals to promote referrals to the state tobacco quitline for young women at high risk for tobacco use during pregnancy.
- The Maryland Office of Oral Health joined with the state Center for Chronic Disease Prevention to engage dental professionals to provide blood pressure screenings during routine dental visits and to counsel and refer patients with previously undiagnosed hypertension to medical providers for further evaluation.
- The Minnesota Oral Health Program partnered with the state Cardiovascular Health Unit to test a program to encourage bi-directional referrals by dentists and medical providers to increase access to dental and medical screening for periodontal disease and hypertension.
- The New York Oral Health Program and the state Chronic Disease Program collaborated to develop a healthy beverage social media campaign targeting African American and Hispanic teenage boys in Western New York. The messages focused on the contribution of sugar-sweetened beverages to chronic diseases such as obesity and tooth decay to encourage changes in beverage choices.

In 2018, CDC announced additional funding to support work in five states for a five-year project period with a focus on medical-dental integration related to diabetes and hypertension. Evaluation results from these two significant investments in states, when shared, will help to inform future emerging best practices.[20]

Examples of work being conducted by states[21] that are not receiving funding by CDC include:

- The Iowa Oral Health Program's "I-Smile Partnerships" have focused on oral health professionals detecting and referring patients with undiagnosed or uncontrolled hypertension to a medical provider and promoting obesity prevention by increasing access to water in schools. The newest addition to the Partnership focuses on increasing access to oral health care for older adults.

- The Vermont Oral Health Program has focused on identifying ways to connect oral health messages to the state's "3-4-50 Initiative" that focuses on three high-risk behaviors that lead to four diseases that result in 50% of deaths in Vermont. By linking these same high-risk behaviors (lack of physical activity, poor diet and tobacco use) and leading chronic diseases (cancer, heart disease and stroke, type 2 diabetes, and lung disease) to poor oral health, the Oral Health Program has leveraged a high-profile chronic disease prevention initiative to promote important messages about oral health to the public.

Using the Four Domains of Chronic Disease Prevention as a systems approach framework not only enhances the ability of CD programs to implement their strategies in a way that resonates with partners, payers, and policymakers, but also facilitates conversations with other program partners about ways they can support evidence-based interventions and chronic disease prevention and health promotion priorities. OH programs have been underutilized in helping to advance chronic disease prevention and health promotion priorities in states, in local and community-based initiatives as well as within state health agencies. OH programs can use the Four Domains framework to demonstrate how they contribute to statewide chronic disease prevention efforts and vice versa. Collaboration between OH and CD programs will result in better data collection and reporting, increased effectiveness of health promotion messages and health systems approaches, and better overall health through more efficient linkages between community and clinical resources.

Concluding Statement:
ASTDD supports the development of close working relationships between state health agency oral health programs and state chronic disease prevention programs so that collaborative approaches to preventing and controlling oral diseases and chronic diseases can be fostered and their impact maximized. Opportunities exist for strengthening the connections between medicine and dentistry using the Four Domains of Chronic Disease Prevention Framework by sharing data and using evidence-based approaches to promote healthy behaviors and reduce risk factors for both oral and chronic diseases.

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