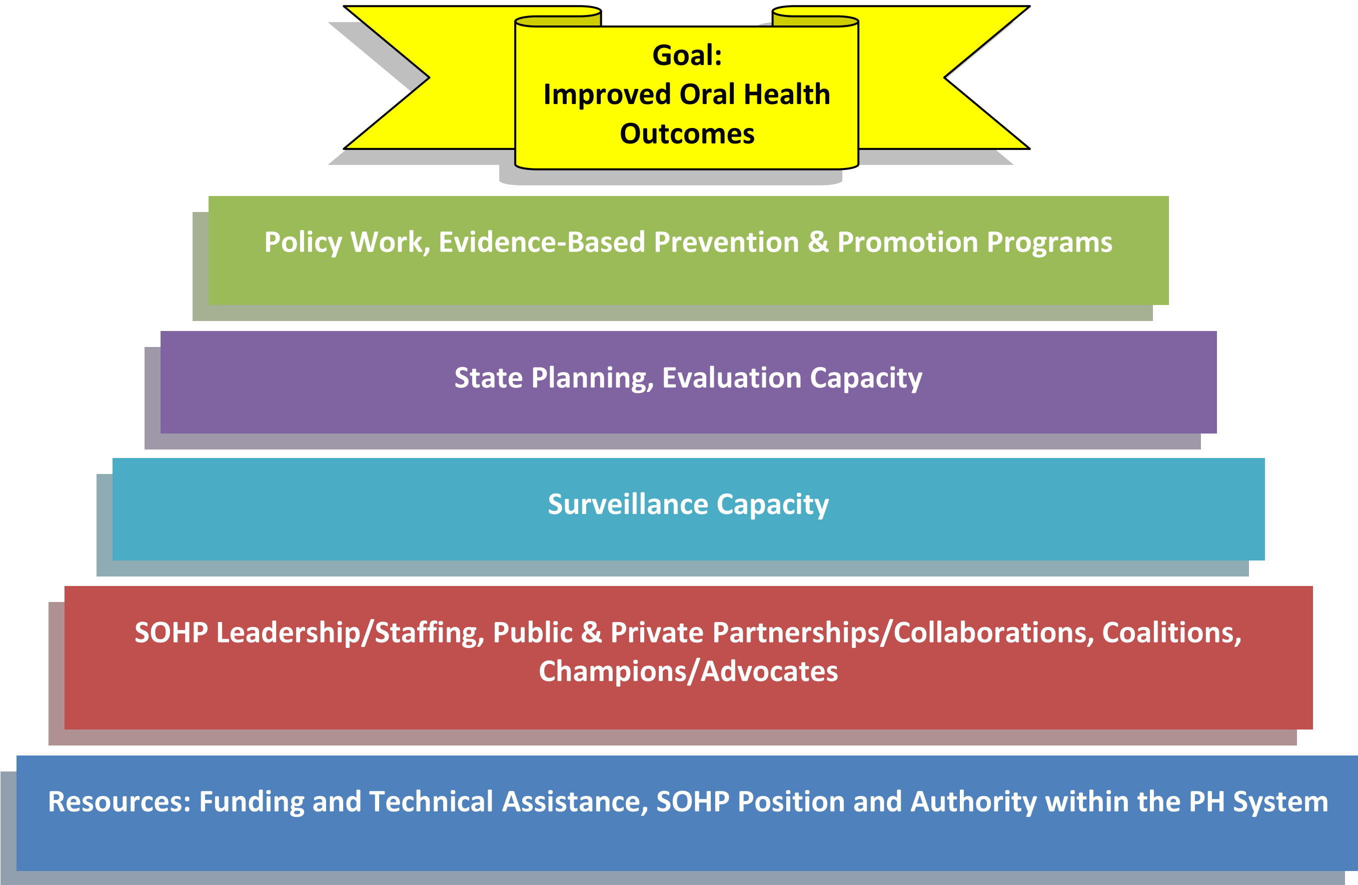
State Oral Health Infrastructure and Capacity:

Reflecting on Progress and Charting the Future



Association of State and Territorial Dental Directors 2012

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Foreword

Improved oral health infrastructure and capacity are needed at the national, federal, state and community levels to assure oral health for the US population. Strong and vibrant governmental oral health programs are a crucial component in the broader oral health and public health infrastructure. This report, produced by the Association of State and Territorial Dental Directors (ASTDD) and funded by the Centers for Disease Control and Prevention (CDC), looks at state oral health program (SOHP) infrastructure from 2000 to 2010 and the capacity to address Core Public Health Functions and deliver the 10 Essential Public Health Services to promote oral health. Although the US territories and jurisdictions have not submitted comparable data to review, most lessons learned and recommendations in this report might be adapted for their programs or lead to a similar review of their achievements. State oral health programs don't exist in isolation, so their place within the overall public health system and their relationships with partner groups and local communities is also discussed. The report also examines the role of ASTDD in collaboration with CDC and national organization partners in the evolution of state oral health programs. By looking at key SOHP elements over time and the impact of ASTDD, CDC and other technical assistance, resources and support, this report will help state agency staff, policymakers, coalitions, funders and others to better understand how to build, expand and sustain state oral health program infrastructure and capacity using existing resources and leveraging new ones, how to mitigate negative consequences and how to achieve positive oral health outcomes.

ASTDD wishes to thank the many individuals who provided guidance and critical review during the project. ASTDD is also indebted to the core team of consultants who compiled and analyzed the trend data, interviewed state stakeholders, compiled a draft report, and used reviewers' comments to revise this document and create additional shorter targeted versions and a short paper for publication. See the list of acknowledgments in Appendix 1.

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Abstract

Objective: This report looks at State Oral Health Program (SOHP) infrastructure from 2000 to 2010 and the capacity of SOHPs to address Core Public Health Functions and deliver the 10 Essential Public Health Services. The aim of this project is to review past efforts in infrastructure and capacity building and provide new information and recommendations to enhance and expand SOHP abilities to fulfill their critical role in achieving optimal oral health for all people.

Methods: The ASTDD project team 1) reviewed articles in the scientific literature, governmental publications and reports and data from the ASTDD State Synopses from 2000 – 2011, as well as numerous additional surveys (published and unpublished); 2) conducted targeted interviews with multiple and diverse key informants; and 3)analyzed quantitative and qualitative information to identify key elements contributing to successful programs

Findings: Federal and state governments, as well as other national and local partners, have invested significant resources over the past decade in state health agency oral health programs to improve the oral health of the US population. Many states have benefitted from tools, resources and funding opportunities developed for SOHPs, while others have encountered barriers to doing so. Prior to 2000 there were limited state oral health data. By the end of 2011, 44 states had submitted data to the National Oral Health Surveillance System. In 1999 only 16 states had a state oral health improvement plan; in 2009 30 states reported having oral health plans and 10 others had plans in process. States with full-time dental directors increased from 61% in 2000 to 80% in 2010. The percentage of states with two or fewer FTE staff decreased from 41% in 2000 to 12% in 2010 while those with five to 20 staff increased from about 20% to 41%. Most states now have access to epidemiology expertise and 74% to evaluation expertise. No one staffing model is appropriate for all states: access to people with the competencies/expertise to help the program meet the Essential Public Health Services is more important than numbers of staff. In 2011 only one SOHP had a budget of less than $100,000 compared to 7 states in 2000. States are realizing they need to diversify funding sources, yet only 30% report they have access to staff with grantwriting expertise. In 2000 about 193,000 children received dental sealants through 25 state sealant programs; in 2011 40 states had a sealant program that served almost 400,000 children. States also are focusing prevention strategies on pregnant women and young children. This reflects the increased focus on evidence-based primary prevention.

Conclusions: Oral health programs have improved significantly in their primary stated needs in 1999 for oral health surveillance capacity and access to epidemiology expertise. Without all states having strong surveillance systems to collect, analyze and disseminate oral health status and dental care data, however, it is impossible to monitor progress toward achieving oral health and reducing disparities. Many programs have strengthened their infrastructure and capacity to perform the 10 Essential Public Health Services to promote oral health, while others still are unable to do so. The battle for reducing oral health disparities through access to primary prevention, preventive services and affordable dental care has not yet been won. Without leadership, appropriate staff/consultant expertise, consistent and strong internal and external support, diversified partnerships and funding, sound planning, policies and evaluation to support their activities and decisions, programs may lack the ability to perform Essential Public Health Services, the resiliency to withstand economic instability and the flexibility to respond to future opportunities and transformations under health care reform.

Background

The oral health of the US population must be improved if we are to achieve our country's health goals. Several studies and documents have suggested that improved oral health infrastructure is needed at the national, federal, state and community levels to assure oral health for the US population.[1-4] Infrastructure is the basic physical and organizational structure and support needed for the operation of a society, corporation or collection of people with common interests. Infrastructure facilitates the production of services and provides resources required to perform a function. Public health infrastructure includes all governmental and non-governmental entities that provide any of the 10 Essential Public Health (PH) Services (See Table 1.)[5] Most current discussions of infrastructure also involve "capacity," defined as actual or potential ability to perform activities or withstand threats.

> Community- based oral disease prevention programs, access to comprehensive and coordinated oral health services, and financing systems that create affordable oral health care and sustainable oral health programs are crucial to ensuring oral health and overall health. Strong and vibrant governmental oral health programs at all levels are critical to achieving optimal oral health for all people. Good infrastructure increases capacity to enable basic programs to become strong, robust and resilient programs. Good infrastructure requires high levels of investment, expertise and political will. Investment in oral health infrastructure can result in health benefits and reduced treatment costs.

In 1988 an Institute of Medicine Report[6] defined three Core Public Health (PH) Functions: 1) *Assessment* efforts evaluate and monitor the health status and needs of communities and populations; 2) *Policy development* provides an environment to promote better health; and 3) *Assurance* activities improve the access and availability of quality health care, including prevention services. The Core PH Functions and the 10 Essential PH Services provide a framework for many national programs and guidelines, including the National Public Health Performance Standards Program[7], the Public Health Accreditation Board's voluntary accreditation standards and measures for health departments[8], and the *ASTDD Guidelines for State and Territorial Oral Health Programs.*[9] The *ASTDD Guidelines* contain a narrative overview of oral health issues and governmental state oral health program (SOHP) capacity and infrastructure, a matrix that describes state oral health program roles for each of the Essential PH Services, examples of specific activities for each role, and links to selected resources to help states accomplish these roles. The *Guidelines* promote integration of oral health activities into public health systems to assure healthy populations and communities for the future as promoted in the 2002 Institute of Medicine Report, *The Future of the Public's Health in the 21st Century*.[10] ASTDD recently revised the *Guidelines*

to be based on the 10 Essential Public Health Services to Promote Oral Health in the US that directly correlate with the 10 Essential Public Health Services (see Table 1); much of this report is framed around these services.

Table 1. Essential Public Health Services and Essential PH Services to Promote Oral Health[5,9]

10 Essential Public Health (PH) Services	10 Essential PH Services to Promote Oral Health in the US
Assessment	***Assessment***
1. Monitor health status to identify and solve community health problems	1. Assess oral health status and implement an oral health surveillance system
2. Diagnose and investigate health problems and health hazards in the community	2. Analyze determinants of oral health and respond to health hazards in the community
3. Inform, educate and empower people about health issues	3. Assess public perceptions about oral health issues and educate/empower people to achieve and maintain optimal oral health
Policy Development	***Policy Development***
4. Mobilize community partnerships and action to identify and solve health problems	4. Mobilize community partners to leverage resources and advocate for/act on oral health issues
5. Develop policies and plans that support individual and community health efforts	5. Develop and implement policies and systematic plans that support state and community oral health efforts
Assurance	***Assurance***
6. Enforce laws and regulations that protect health and ensure safety	6. Review, educate about and enforce laws and regulations that promote oral health and ensure safe oral health practices
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable	7. Reduce barriers to care and assure utilization of personal and population-based oral health services
8. Assure competent public and personal health care workforce	8. Assure an adequate and competent public and private oral health workforce
9. Evaluate effectiveness, accessibility and quality of personal and population-based health services	9. Evaluate effectiveness, accessibility and quality of personal and population-based oral health promotion activities and oral health services
10. Research for new insights and innovative solutions to health problems	10. Conduct and review research for new insights and innovative solutions to oral health problems

ASTDD developed *Competencies for State Oral Health Programs*[11] as a companion tool to the *Guidelines*. The document lists 78 competencies in seven domains that represent skill sets ASTDD recommends for a state oral health program to be successful. The domains are: 1) Build support; 2) Plan and evaluate programs; 3) Influence policies and systems change; 4) Manage people; 5) Manage programs and resources; 6) Use public health science; and 7) Lead strategically. The document also lists eight guiding principles that should be integrated throughout the program rather than devoting a single competency to each concept:

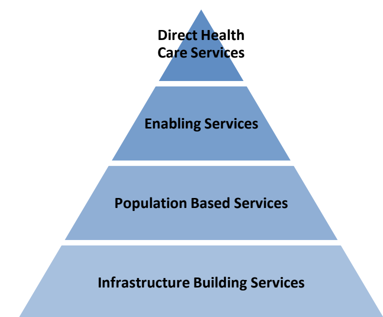
1. Integrating oral health and general health
2. Programming for all life stages (lifespan approach)

3. Recognizing and reducing oral health disparities
4. Identifying, leveraging and using resources
5. Social responsibility to advocate for/serve underserved populations
6. Demonstrating an understanding and respect for other professions, their goals and roles
7. Respecting diversity and attaining cultural competency, including fostering health literacy
8. Dedication to lifelong learning and quality improvement.

The Assessment Tools[12] that accompany the *Competencies* are designed to assist programs in assessing their strengths, gaps in skills and those they wish to develop, enhance or secure from other sources.

The Core PH Functions and the 10 Essential PH Services also have informed other constructs. One example is the pyramid of public health services developed by the Health Resources and Service Administration's (HRSA) Maternal and Child Health Bureau (MCHB).[13] The four levels of activities that form this pyramid, from the base/foundation to the apex, are displayed in Figure 1 and include: *infrastructure building services* (e.g., needs assessment, standards/guidance development), *population-based services* (e.g., school-based sealant programs), *enabling services* (e.g., care coordination among dental and non-dental health care providers), and *direct health services* (e.g., providing oral health care to children). This MCH model illustrates that a strong public health foundation is established through building infrastructure and increasing capacity to deliver population-based services and coordinating access to/support for local clinical services.

Figure 1. MCH Pyramid



In 2000, ASTDD released the report, *Building Infrastructure and Capacity in State and Territorial Oral Health Programs,* funded by the Centers for Disease Control and Prevention's (CDC), Division of Oral Health (DOH).[14] Forty-three directors of state oral health programs (aka state dental directors) guided the development of the report, each from a different perspective of what their state deemed feasible and critical to state oral health infrastructure and capacity. Despite differences, the directors identified 10 top infrastructure and capacity elements that were essential for state oral health programs to perform the Core PH Functions and the 10 Essential PH Services (see Figure 2 on the next page). The report also provided illustrative models of four state oral health programs' resource requirements for infrastructure and capacity elements, which varied fifteen-fold depending on state characteristics.

The 2000 *Infrastructure Report* led to the CDC DOH and the HRSA MCHB adopting the top infrastructure and capacity elements in their funding guidance for states and establishing cooperative agreements for state oral health programs to work with partners and coalitions to increase oral health infrastructure and capacity. The report also established the ASTDD Best Practices Project[15] to highlight successful strategies to improve state

oral health program activities, and emphasized the need for state oral health surveillance systems to contribute data to the National Oral Health Surveillance System (NOHSS).[16] In 2011 Martin Frazier performed a crosswalk of the ASTDD /CDC infrastructure elements with studies from the Turning Point Initiative to see how well they matched; the review depicts evidence that infrastructure activities increase program sustainability (see Appendix 2).[17]

Figure 2. Top 10 Infrastructure and Capacity Elements for State Oral Health Programs (2000)[14]

Assessment

Establish and maintain a ***state-based oral health surveillance system*** for ongoing monitoring, timely communication of findings, and the use of data to initiate and evaluate interventions.

Policy Development

Provide ***leadership*** to address oral health problems with a full-time state dental director and an adequately staffed oral health unit with competence to perform public health functions.

Develop and maintain a ***state oral health improvement plan*** and, through a collaborative process, select appropriate strategies for target populations, establish integrated interventions, and set priorities.

Develop and promote ***policies*** for better oral health and to improve health systems.

Assurance

Provide oral health ***communications and education*** to policymakers and the public to increase awareness of oral health issues.

Build ***linkages*** with partners interested in reducing the burden of oral diseases by establishing a state oral health advisory committee, community coalitions, and governmental workgroups.

Integrate, coordinate and implement ***population-based interventions*** for effective primary and secondary prevention of oral diseases and conditions.

Build ***community capacity*** to implement community-level interventions.

Develop ***health systems interventions*** to facilitate quality dental care services for the general public and vulnerable populations.

Leverage ***resources to*** adequately ***fund*** public health functions.

A 2004 assessment of the dental public health (DPH) infrastructure in the US, funded by the National Institute for Dental and Craniofacial Research, recognized that the DPH infrastructure needs an adequate workforce, sufficient administrative presence in health departments, adequate financial resources to implement programs, and legal authority to use personnel in an effective and cost-effective manner.[3] *Healthy People (HP) 2020* establishes building public health infrastructure as a national goal. *HP 2020* oral health infrastructure objective OH- 17.1 is to "Increase the proportion of states (and DC) and local health agencies that serve jurisdictions of 250,000 or more persons with a dental public health program directed by a dental professional with public health training." [18]

The Patient Protection and Affordable Care Act (ACA) (PL 118-148)[19] includes several provisions to improve oral health. Its authors recognized that state oral health programs (SOHPs) need to be better positioned to coordinate the variety of existing and new programs; provide meaningful leadership and guidance; implement dental public health strategies; and thoughtfully assess programmatic impacts through surveillance. ACA authorizes "such sums as necessary" for fiscal years 2010 through 2014 to expand the cooperative agreements between CDC and state oral health programs to all states, territories, and Indian groups. The purpose of these cooperative agreements is "to establish oral health leadership and program guidance, oral health data collection and interpretation, a multi-dimensional delivery system for oral health, and to implement science-based programs to improve oral health." The needed appropriations for the additional cooperative agreements and other aspects of the ACA have, unfortunately, not been forthcoming as of this report.

Genesis and Purpose of the Report

Despite recognizing the need for infrastructure, and many attempts to increase infrastructure and capacity, state and local health departments, university clinics, community health centers and other oral health programs are struggling during difficult economic and political times, with the sustainability of some programs in question. ASTDD decided to use the experience, knowledge and lessons learned from federal, national, state and local infrastructure-building efforts and to review the key elements from the 2000 *Infrastructure Report* to see if they are still relevant and if other key elements have emerged. Subsequently, ASTDD requested and was awarded supplemental cooperative agreement funding from CDC for 2010-11 to 1) study the question of what elements foster resiliency and progress in some programs while others encounter major obstacles to conducting the Essential PH Services and ensuring sustainability, and 2) provide a report with recommendations for state oral health programs, policymakers, advocates, funders and others

> The aim of the State Oral Health Program Infrastructure Enhancement Project is to review a decade of infrastructure and capacity building efforts and provide new information and recommendations to help state agencies and policymakers, funders, advocates and others better understand how to build and sustain state oral health program infrastructure and capacity using existing and new resources, and how to effectively use this infrastructure to leverage additional resources to achieve positive oral health outcomes in communities and diverse populations.

Study Methodology

Study methods using a non-experimental design included:

1. Review articles in the scientific literature and existing reports, including CDC and HRSA reports, Oral Health America and Pew Foundation "report cards."
2. Review 1999 Delphi findings from states for the 2000 *Infrastructure Report* and state data included in ASTDD *State Synopses Reports* from 2000 through 2011, and a *Synopses Trend Report* from 1998-2002.
3. Review selected ASTDD member survey findings (mostly non-published) from 2000 through 2011.
4. Compile a list of selected ASTDD and federal investments in states for oral health activities and programs, noting other monies or resources leveraged and some tangible outcomes.
5. Interview 20 state MCH directors about their state's investments in oral health; this information was primarily gathered for a HRSA-funded project but provided significant insights for this project.
6. Interview state dental directors and other key staff and partners in 10 very different states to highlight key successes and perceived barriers to achieving success.
7. Conduct committee and project team calls at all stages of the project.
8. Analyze quantitative and qualitative information to identify key elements that contribute to successful programs, activities and partnerships and factors that interfere with progress.
9. List key resources available for states to use in building, improving and sustaining their programs, activities and partnerships.
10. Identify gaps in knowledge and need for action at all levels.
11. Propose some possible recommendations for various stakeholders and specific next steps for ASTDD working with other partners.

The information collected represents the inputs that the project team felt were most relevant, valid and timely, and do not represent the infinite amount of information and data that could have been gathered over a longer period of time.

Two ASTDD Committees partnered initially to lead and direct the project: the Best Practices Committee and the State Program Assistance and Resources Committee. An ASTDD Project Team subsequently was responsible for planning the study and reviewing the report. An Advisory Committee of representatives of partner organizations reviewed the methods, findings and recommendations, and will help in promoting follow-up actions. The ASTDD Board of Directors also reviewed and approved the report. A Core Team of six ASTDD consultants conducted most of the analysis of data and interviews, considered all reviewer comments and wrote

the report. A short summary of preliminary findings was submitted as a background paper for the *Maryland Oral Health Summit: Pathways to Common Ground and Action* held on October 20-21, 2011. The paper has been accepted for publication as part of a special issue of the *Journal of Public Health Dentistry*.[20]

The current report is a detailed discussion that outlines selected trends and investments made since 2000, current status in states, lessons learned, elements that are key to success and resiliency and factors that impede progress. The recommendations and next steps are a call to action for SOHPs, federal/national/state/local partners, and other stakeholders to focus their attention and assert their influence to continue to build and sustain critical state oral health infrastructure and capacity.

Study Findings

State Oral Health Program Status in 1999-2002 (Baseline Data for this Report)

Results from the 1999 Delphi survey included in the 2000 *Infrastructure Report* showed that of the 43 responding states:

- 19% had a state-based oral health surveillance system
- 38% had a state oral health improvement plan
- 48% had an oral health advisory committee/coalition representing a broad-based constituency.[14]

The top two needs identified by more than 60% of respondents in 1999 were a state oral health surveillance system and leadership consisting of a state dental director and an adequate/competent staff; 40% reported a need for staff expertise and skills in epidemiology. In addition, states reported a need for resources to build community capacity and establish health systems interventions to facilitate quality dental care.

In a *State Synopses* trend analysis from 1998-2002,[21] states reported a decline in local government dental programs, while there was a three-fold increase in the number of community-based low-income dental clinics. Twenty states had the same dental director over this time period, while 20 states had from one to four turnovers in directors; 8 states had a vacancy for at least one year. Full time equivalent employees decreased while contract positions increased. About 50% of the programs in service areas of 250,000 or more people were directed by a dental professional with a master's degree or higher in public health. More SOHP budgets increased to greater than $500,000 during that short period of time.

In 1997 ASTDD was a long-standing but small national non-profit organization representing only the 60 state and territorial program members and led by a volunteer executive committee, an executive director and a financial assistant. That year ASTDD was awarded a cooperative agreement from the CDC DOH to provide technical assistance and resource tools to states. This allowed ASTDD to cultivate a cadre of experienced dental public health professionals as consultants to provide enhanced support to states and to expand its membership and nurture national partnerships to serve as powerful advocates for evidence-based public health approaches.

Investments Made Since 2000

Federal agencies such as HRSA MCHB and CDC DOH have invested significant resources in states to improve the oral health of the US population. Some of the resources were distributed directly to states through cooperative agreements, grants or technical assistance (TA), while other resources were provided to national organizations such as ASTDD, Children's Dental Health Project, Oral Health America, MCHB National Oral Health Policy Center, MCHB National Oral Health Resource Center, National Association of State Health Policy, National Governors Association, and National Conference of State Legislatures. States report via interviews and annual surveys that resources created by ASTDD, CDC, CDHP and others have helped them assess their infrastructure and capacity; build and enhance their programs, policies, and partnerships; evaluate their efforts and initiative quality improvement strategies. Appendix 3 summarizes the information on activities and projects for state oral health programs in which ASTDD used CDC or HRSA funds and was directly involved. The table includes the number of states benefitting, estimated dollars invested, other resources leveraged, and outcomes that resulted. In addition, Appendix 5 includes a list of key tools and resources for states, many of which were developed by ASTDD or CDC. Unfortunately it is not yet possible to attribute specific oral health status outcomes to these investments.

> Many resources have been developed for states (see Appendices 3 and 5.) States that have field tested and used a number of these resources and taken advantage of training and technical assistance appear to have programs that continue to be vibrant, use evidence-based approaches, and are generally "more successful" in carrying out the Essential PH Services and meeting Healthy People objectives.

In addition to MCH Title V Block Grant funds that many states receive, HRSA MCHB awarded funds to 49 states in 2003-07 for State Oral Health Collaborative Systems (SOHCS) grants and to 20 states in 2007-11 for Targeted Oral Health Service Systems (TOHSS) grants. Based on state input, ASTDD developed a minimum data set for sealants that informed the guidance for the SOHCS grants. MCHB also provided fluoridation systems

grants and sealant grants to a limited number of states. In 2006-08 HRSA's Bureau of Health Professions funded 18 states for three- year grants and 16 states for planning grants for oral health workforce activities; in 2009-11 they funded 25 states; currently there are 35 active grants in 30 states (some from the previous cycle are still active.) The US Public Health Service also detailed dental officers to fill dental director vacancies in three states for a short period of time.

CDC funded five states and one territory in 2001, seven states in 2002, and 12 states and one territory from 2003-08 for state infrastructure cooperative agreements. From 2008-13 CDC funded 16 states; in 2010 they added three additional states for three years, and in 2011 they added one additional state for two years, bringing the total in 2012 to 20 states. CDC also funded the Children's Dental Health Project for numerous activities, including to develop and provide assistance implementing a Policy Tool in the CDC grantee states. CDC also helped the National Association of Chronic Disease Directors fund a series of Healthy Aging grants to states over the years, some of which included an oral health focus.

Current Status and Trends

State Oral Health Program Infrastructure and Capacity

Placement and Authority in the Public Health Agency

Statutes in 20 states require a state oral health program in the public health agency, and 16 require a state dental director (13 require both).[22] Although having statutes mandating the state oral health program and the state dental director position are helpful in some states, other state situations demonstrate it is not sufficient for sustainability unless enforced and supported by the administration and outside organizations.

Oral health functions in the public health agency are most often organized as programs (21), followed by offices (9), units (5), sections (5), bureaus (4); the rest are branches, divisions or service areas.[23] The designations often change with health agency reorganizations. Some oral health programs fall under MCH Title V or are part of a Chronic Disease model, while others fall under functional categories such as Rural Health, Population Health or Community and Family Health Services. Because agency level designations differ so much among states, oral health program designations do not directly correlate with level of authority.

Lines of authority for the SOHP vary greatly, especially when comparing small vs. large states. Placement of the SOHP and level of authority of the dental director in the health agency are important for advocacy, policymaking

> State dental directors who have more direct communication with the health officer often have more successful programs and more resources than those who have to navigate multiple levels of bureaucracy to communicate their needs to high level administrators and get a "seat at the table."

and securing critical resources. In a 2007 ASTDD survey,[24] 20 state dental directors had two or less levels of bureaucracy between themselves and the health officer—some had direct access; seven states had more than four levels to navigate. Lines of authority and communication are further complicated by state models that use general management staff for multiple programs vs. professional management staff for more categorical programs. In some cases this management model also applies to individuals who lead the health agency or the SOHP.

The employment status of SOHP directors/managers also varies. In 2010 in seven states the director was appointed by the governor, health officer or other official, although these are not generally political appointments; three directors were in contractual positions; the rest were civil service positions (one state did not respond).[23] Data prior to 2009 are not available to determine changes over time. All arrangements have unique pros and cons that are not necessarily related to program successes.

SOHP Director Training, Experience, Competencies

In 2010 eight states (15.7%) reported they did not currently have a dental director; the same number reported vacancies in 2000.[23] Three of the vacancy states, however, employed a dental hygienist in the program, while the others did not have any dental professional on staff. For the 43 states/DC that reported having a dental director, 21 (48.8%) had held the position for less than five years, 13 (30.2%) for five to nine years, and nine (20.9%) for 10-24 years. Of concern is that in 2010 12 states had directors that had been in the position for less than one year, compared to four states in 2005.[23]

> Vacancies and repeated turnovers in SOHP directors and staff continue to interfere with program development and continuity.

States with a full-time director increased from 61% in 2000 to 80% in 2010.[23] Ten states (19.6%) did not have a dental professional as the director. Other data about directors show:

- 17 states (33.3%) had a dental professional with a public health degree
- 13 states (25%) do not require that the director have any public health experience
- Only five states had a director both with a dental and public health degree plus 10 or more years in the position.

HP 2020 OH-17 Objective notes that a state dental director ideally should be in a full-time position and be a dental professional with public health training.[18] Interview data reveal other factors that play a role include the ability of the director to:

- Gain the respect of supervisors, legislators, and others and be considered a credible authority

- Be able to work effectively within a bureaucratic and political environment
- Gain and use a historical perspective of oral health needs, policies and programs in the state to understand progress, barriers and opportunities
- Review lessons learned and best practices from other states and to decide if they can be replicated or adapted
- Identify and leverage available resources
- Work collaboratively with outside organizations to assure that the goals of the statewide oral health plan are being met
- Use current evidence to continually evolve and expand the oral health program and its activities
- Develop the skills of staff and have a plan for promotion and succession.

> Credentials don't always equate with the skills needed to lead and manage a successful state program; that is why ASTDD developed the *SOHP Competencies.*

State Oral Health Program Staffing

Staffing for a SOHP depends on several factors including state population, size and organization of the health agency, level of integration with other programs, state health agency relationship to local/other jurisdictions for preventive and clinical services and resources available within and outside the health agency. States that provide or support clinical service programs have larger staffs than those that don't, e.g., three states have more than 500 staff, 120, and 63 respectively. The percent of states with two or fewer FTE staff has decreased from 41% in 2000 to 12% in 2010,[23] while those with five to 20 staff has increased from about 20% to 41%. This indicates a significant increase in infrastructure. In addition to increased staffing, programs report improved access to staff within or outside their agency who have specific areas of expertise. For example, in 2009 94% of states reported having access to epidemiology or surveillance staff and 74% had access to staff with expertise in program evaluation.[25] Only 30% reported access to staff with grant writing skills, an important gap in times of economic volatility when diversified funding is crucial.

> No one staffing model is appropriate for all states. Numbers of staff aren't as meaningful as the competencies they possess or if these skills are matched to their job functions. SOHP capacity is more than just a human resources issue. The most competent dental director and staff can only be effective with adequate internal and external support.

One of the Essential PH Services is to "Assure an adequate and competent public and private oral health workforce." ASTDD created the *SOHP Competencies* and the associated assessment tools[11,12] as a way for states to 1)assess the skills of staff/consultants, 2) identify strengths to build upon, 3)identify gaps to fill via new hires

or existing resources inside or external to the health agency, 4) make assignments for annual workplans and 5) inform their strategic planning. States have used the *Competencies* to develop job description and interview questions to find candidates who are the best "fit" for the unique needs of the state. To ensure a competent state workforce, ASTDD, HRSA and CDC have regularly provided professional development opportunities to increase knowledge and skills. Hundreds of hours of training via workshops, webinars or audioconferences have been conducted for state oral health program staff and consultants in the past 10 years. With HRSA funding from 2008-10, ASTDD conducted a National Oral Health Leadership Institute (NOHLI) focusing on leadership and management skills. Follow-up evaluations documented the perceived value by participants of the Institute workshops in improving their skills in both their professional capacity and their personal lives.[26]

State Oral Health Program Budgets and Funding Sources

How programs are funded varies by state and over time. For states that provide direct clinical services or fund other organizations to provide direct services, it is difficult to accurately determine what portion of their budget is geared toward infrastructure. For example, data submitted to the *State Synopses* are not specific enough to show the amount spent on personnel versus the amount spent on program administration or on program activities.

Decreases or increases in budget amounts

Comparing *2011 Synopses* data with *2000 Synopses* data:[23]

- Only one state has a budget less than $100,000 compared to seven states in 2000.
- Only one state has a budget of $500,000-$1,000,000 (medium range budget) compared to 10 in 2000.
- 22 states have budgets greater than $1,000,000 compared to nine states in 2000. This reflects not only increases in grant funding but also diversification of funding sources.
- However, 21 states reported that their mean 2011 budget decreased compared to 2010. The two states with the largest percentage budget decline in one year lost their primary source of funding (state general fund dollars); one budget decreased from more than $3 million to less than $250,000.
- Also in 2010, 10 states reported no budget change; 16 reported a budget increase and four states did not provide information.

Because oral health program funding can easily fluctuate from year to year based on federal and other grant cycles, it is difficult to draw conclusions by just looking from one year to the next.

Sources of funding for director position

In August 2011 ASTDD queried state dental directors about how their positions were funded in 2010/11 and how they are funded in 2011/12; 46 states/DC responded:[27]

- 11 directors were funded 100% by the MCH Block Grant in both years. This may change with continued cuts to the block grant.
- Two to three directors were funded 100% by the Preventive Health and Health Services Block Grant, which has had uncertain or reduced funding for the past several years.
- Two directors were funded 100% by CDC state infrastructure grant monies, so those funds may be ending in 2013 or states may be given the chance to re-compete if funding is available.
- 17 directors were funded 100% by state general funds, which are rapidly dwindling in these difficult economic times.
- The other 14 states had more than one source of funding for the director; some have three or four sources, usually a mix of federal and state monies.

Sources of SOHP funding

According to *2011 Synopses* data:[23]

- 8 states received 100% of their funding from one primary source (Medicaid, Non-Medicaid state funds, HRSA or CDC).
- 10 states received more than 75% of their funding from non-federal sources (Medicaid and non-Medicaid state monies).
- The rest of the states have a mix of funding sources.
- 14 states receive no direct MCH Block Grant funding, while three have 100% MCH Block Grant funding.

Interviews with MCH directors and others, however, present a somewhat more complete and complex picture. Although some state oral health programs might not receive any funds directly from a program such as the MCH Block Grant, those sources may fund oral health activities through local grants, contracts, formula funding, etc. that are administered by the SOHP, such as school sealant programs or regional dental hygienists who are based in local agencies. Some of this funding may go to other fiscal agents or oral health coalitions. Referring back to the MCH Pyramid, in the 20 states where MCH directors were interviewed, 17 directly support infrastructure services, 13 support population-based services, six support enabling services and two support direct care services.[28]

Previous *Synopses* data may underreport funding for oral health infrastructure and activities directly or indirectly associated with the state oral health program. Additional questions have been added for the *2012 Synopses*.

States are reporting the need to diversify their funding sources to sustain their infrastructure and level of services.

State Oral Health Program Activities

States report funding or conducting the following programs in the *2011 Synopses.*[23] Data collection on these categories did not begin until 2002 and varied over the years (see table in Appendix 4.)

- Oral health education and promotion: (92%)
- Dental sealants: (78%)
- Dental screening: (74%)
- Early childhood caries prevention: (74%)
- Access to care: (64%)
- Fluoride varnish: (62%)
- Oral health programs specifically for pregnant women: (54%)
- Fluoride mouthrinse: (50%)
- Abuse/neglect education or PANDA: (20%)
- Fluoride supplements (tablets): (18%)
- Mouthguard/injury prevention: (10%).

Since 2000, one of the major programmatic changes has been an increase in the number of states with dental sealant programs and the number of children who have received sealants through these programs. In 2000, about 193,000 children received dental sealants through 25 state sealant programs. In 2010, 40 states had a sealant program that served almost 400,000 children.[23] There has also been an increase in the number of states with fluoride varnish programs, from 23% of states in 2002 to 62% of states in 2010[23]. Anecdotal reports suggest that fluoride varnish applications have especially increased in WIC and Head Start programs. Programs for pregnant women have increased from 45% in 2005 to 54% of states in 2010[23]. PANDA or other programs that focus on abuse/neglect, however, have decreased from 52% of states in 2002 to about 20% in 2010.[23] Variations generally relate to changes in perceptions of program effectiveness, available funding or dental insurance reimbursement targeted to specific activities

National expert panel recommendations, the ASTDD Best Practices Project and issue/research briefs from ASTDD and other national partners have helped translate research evidence into promising implementation models at the local level and evaluated impact, particularly for evidence-based preventive strategies such as community water fluoridation and fluoride and sealant programs in schools and other community settings. The Best Practices Project currently includes 11 Best Practice Approach Reports supported by more than 230 descriptive summaries of state/community examples.[15]

Preventive services in schools, Head Starts, WICs and other perinatal/early childhood programs that reach families and children early, are paired with referral and case management strategies and are linked to ongoing public and private dental care in the community seem to result in the best improvements in oral health. State programs play a key role in disseminating evidence-based recommendations and guidelines to local communities and in helping to institute policies and leverage funding to support effective activities.

Assessment

Oral health needs assessment and planning

Oral health data are crucial for identifying program and policy priorities, helping states monitor their progress toward *Healthy People* objectives and determining the effectiveness and efficiency of different interventions. Prior to 2000 there were limited state level oral health data. In response to the dearth of state data, the National Oral Health Surveillance System (NOHSS)[16] was established by CDC and ASTDD in 1999 as a first step in helping oral health programs in state health agencies meet expectations to routinely document population needs and program impact. In 1999 the Council of State and Territorial Epidemiologists (CSTE) approved seven oral health indicators: three for adults (most recent dental visit, most recent dental cleaning, total tooth loss); three for third-grade students (presence of treated or untreated dental caries, untreated tooth decay, dental sealants); and the percentage of the population served by public water systems that receives optimally fluoridated water. Two additional indicators relating to oral health are tracked through the cancer program: incidence of invasive cancer of the oral cavity or pharynx and mortality from cancer of the oral cavity or pharynx.

A substantial improvement has been made since 2000 in collecting core state oral health data for needs assessment and planning.

As of this report, 44 states have submitted qualifying oral health data to the NOHSS.[16] Of these states, 22 have collected data in multiple years using the Basic Screening Survey for children. Preschool and older adult BSS modules have since been added with states beginning to collect data on these groups.[29] States have taken advantage of CDC and HRSA funding and ASTDD TA to conduct surveys, acquire epidemiology support and develop surveillance systems, yet seven states still do not have any valid oral health data in NOHSS. Sufficient access to epidemiology staff is crucial to maintaining an oral health surveillance system and disseminating reports.

A question was asked during a 2009 Pew survey[25] to determine which states had published an Oral Disease Burden Document; 24 states noted they had done so, with 17 more in the process. The use and impact of oral disease burden documents has not been evaluated.

The use of Oral Disease Burden Documents to educate the public and policymakers about oral health needs and progress is important for program planning, support and evaluation.

An oral health surveillance system is more than having a snapshot of one subset of the population, and requires data about different aspects of oral health across the lifespan, conducted periodically to assess changes. Up to this point there has been no clear definition of indicators for a state oral health surveillance system. The ASTDD Data Committee recently convened a workgroup to develop a definition and the criteria that should be included in the definition. This has been submitted to CSTE for review and approval.

There is a need to reach consensus on a better definition of a state oral health surveillance system based on specific criteria.

Two of the NOHSS indicators that have documented change over time are prevalence of untreated decay and prevalence of dental sealants. Both of these indicators are *Healthy People 2010* and *2020* Oral Health Objectives and rely on local level interventions. For those 22 states that have collected oral health data over multiple years:

- Three states have had a substantial positive change (> 5 percentage points) in both indicators and came close to or met the *HP 2010* objectives for both indicators.
- Five states have had a substantial positive change in one indicator and came close to or met the *HP 2010* objectives for both indicators.
- Six states have not had a substantial change in indicators but came close to or met the *HP 2010* objectives for both indicators.
- One state had a substantial positive change in both indicators but did not come close to meeting the *HP 2010* objectives for both indicators.[23]

Reasons for some of these achievements can include MCHBG performance measure requirements for sealants, promotion of school-based sealant programs, community water fluoridation, building a pool of local providers, private/public collaborations such as Smiles Across America or Give Kids a Smile, care coordination and case management and increased Medicaid reimbursement rates in some states.

States perform a variety of activities to “Analyze determinants of oral health,” one of the Essential PH Services, especially through tracking dental services utilization, water fluoridation and through population surveys. Every other year the Behavioral Risk Factors Surveillance System (BRFSS)[30] includes three oral health

questions: dental visit, teeth cleaning, and number of teeth present. These data are part of the NOHSS. The Pregnancy Risk Assessment Monitoring System (PRAMS) is working towards inclusion of one or two oral health questions in the core PRAMS survey beginning in 2012.[31] Currently 20 states collect oral health data from their state's PRAMS.[32] Only one state includes oral health questions consistently in their Youth Risk Behavior Surveillance System (YRBSS).[33]

Other types of assessments

States monitor community water fluoridation status and quality in conjunction with other state and federal agencies. Currently 50 states are reporting water system status and updates, while 28 states report some level of monthly operational data to CDC's Water Fluoridation Reporting System (WFRS).[34] CDC offers training twice a year on community water fluoridation and on WFRS. Due to limitations on state travel and budgets, CDC is developing some online training modules.

An Essential PH Service is "Respond to health hazards in the community." In a 2007 survey of dental directors , only 12 of the 34 responding states had an emergency preparedness plan that included oral health professionals.[35] In 2010 ASTDD developed an online manual, *Emergency Preparedness Protocols for State and Territorial Oral Health Programs,*[36] to assist states in developing and using protocols to respond to health hazards or emergency situations. Only about five states have asked for and received technical assistance on its use, but other states have shared the document with state emergency management personnel and may participate in webinars. Some state and federal laws do not include dental professionals in their list of potential responders, so multiple groups are attempting to have this changed.

> Most state oral health programs generally do not yet appear to be prepared to contribute during a disaster, nor do they have a plan for their office or preventive programs in case of a disaster.

Another Essential PH Service is to "Assess public perceptions about oral health issues and educate/empower people to achieve and maintain optimal oral health." In addition to national surveys, some states, universities or other groups conduct small surveys or focus groups of population subgroups or key informants to assess awareness, knowledge, behaviors or public opinion about various issues. States have asked for consistent messaging for educating and empowering people about oral health; CDC and ASTDD are participating with other national groups in multiple initiatives to try to address this problem. Anecdotally, states

> Improving oral health literacy of all groups is an important goal that is starting to be addressed through coalitions at local, state and national levels.

seem to be doing better in responding to a multicultural society by creating and using culturally, linguistically and developmentally appropriate oral health activities and materials for selected populations. There still are gaps for certain immigrant and American Indian/Alaska Native populations, however. It is difficult to document how well SOHPs interface with programs where oral health messages can support or add to other health messages and vice versa, e.g., diabetes, MCH, tobacco, HIV, Children with Special Health Care Needs (CSHCN.) Most oral health programs produce oral health education materials for the public and have identified graphic arts expertise to assist in formatting. In 2010 ASTDD launched a *Communication Plan Template*[37] for SOHPs to help them plan key messages, formats, target audiences and evaluation strategies. Only a handful of states have actually used the template, although some intend to use it in the future and ASTDD is using it to plan their own communication strategies.[38] ASTDD and other national partners also have helped states develop materials to highlight their programs and the oral health needs of their populations. Using health communication specialists to help plan and evaluate more targeted communications for greater impact would help states increase the visibility and importance of oral health issues and visibility of the oral health program.

Currently states do not have a consistent way to assess or measure public perceptions about OH issues. Few states actually plan their communication strategies or evaluate the effectiveness of their materials or messages. Without the public's understanding of how oral health infrastructure and capacity improves oral health and overall health, continuing support for state and local oral health programs will be difficult to justify.

Policy Development

Oral health partners and coalitions

One of the Essential PH Services is to "Mobilize community partners to leverage resources and advocate for/act on oral health issues." Partnerships may exist at the federal, state and local level. SOHPs are part of a dynamic, complex, largely informal (or sometimes more structured) matrix of programs, people and organizations with whom they interact and strive to accomplish shared goals. The ASTDD *Guidelines* urge SOHPs to "build linkages with partners interested in reducing the burden of oral diseases by establishing a state oral health advisory committee, community coalitions and governmental workgroups."[9] Such linkages are interdependent, interactive, require ongoing communication and collaborations, but are crucial for policy development and advocacy.

In the 1999 Delphi survey, 20 of 43 responding states reported having an oral health coalition with a broad-based representation of stakeholders and constituents to guide, review and direct activities to improve oral health.[14] A 2003 Oral Health Report Card published by Oral Health America[39] showed that among the states/DC, 34 reported having a state oral health coalition that meets regularly and represents government agencies, health departments, private organizations, providers, communities and consumers; 10 states had coalitions but they were not as broad based; five states did not have coalitions and two states didn't respond. ASTDD produced a *Best Practice Approach Report on State Oral Health Coalitions and Collaborations* in 2004, with updates in May 2011.[40] The report is linked to 17 state practice examples of collaborative partnerships under the categories of 1) state oral health coalitions, 2) commissions and task forces and 3) those with a focus on a specific aspect of oral health such as oral cancer. In 2007, an Oral Health America survey showed 41 states with a state oral health coalition.[41] The American Network of Oral Health Coalitions (ANOHC), a group of state oral health coalitions, currently is collecting information to document the number of existing oral health coalitions and share success stories and lessons learned. As of 2011, 28 state coalitions had joined ANOHC.[42]

Coalitions serve as a vital link to community-level activities and often are the key to local successes such as community water fluoridation. Having a broad-based, active oral health coalition has emerged as a crucial element to achieving policy changes and positive oral health outcomes.

As a result of HRSA/ASTDD support for state oral health summits, forums and action plans during the past decade (see Appendix 3), numerous collaborations were developed around Early Head Start/Head Start, CSHCN and uninsured populations. Many state oral health programs have been successful in mobilizing community partners to leverage resources and advocate for/act on specific oral health issues, usually those involving children, adult Medicaid benefits or water fluoridation. SOHPs rely on other groups to help plan, prioritize and evaluate activities, advocate for evidence-based and meaningful policies and programs, and leverage resources to fund programs and activities. Another indicator of success is having oral health representation on other statewide coalitions (e.g., early childhood, chronic disease, tobacco, Healthy People) to highlight that oral health is integral to overall health. It is unclear how well SOHPs have evaluated their collaborative relationships. ASTDD has developed a *Handbook on Planning, Evaluating and Improving Collaboration for Oral Health Programs*[43] with hopes that the approaches and worksheets will motivate SOHPs to more comprehensively evaluate their collaborations.

State oral health programs need to actively pursue collaborations internal and external to the health agency. Integrating oral health messages and activities into other health-related programs allows consistent messaging to address determinants of health and can foster sharing of resources, in-kind contributions and joint funding proposals or activities. Oral health professionals and state oral health program staff cannot achieve successes such as fluoridating communities or other optimal oral health outcomes by themselves and must look to new constituencies to address current and emerging oral health issues. There is no single model for states to follow, or only one critical partner.

Strong, dynamic SOHPs have many (some multidimensional) partnerships that have been developed over time and represent the diversity of needs and activities unique to each program. Linkages may weaken at some point, with new linkages developed. This dynamic process will enable SOHPs to be viable and resilient, despite fluctuations in funding and politics.

Assessing and Prioritizing Potential Policies and Using Policies to Initiate Change

Development of socio-political systems and policy changes that support oral health interventions are important to the long-term sustainability of state oral health programs. The process of policymaking guides decisions about program priorities as well as resource allocation and appropriation. An important Essential PH Service is to "Develop and implement policies and systematic plans that support state and community oral health efforts." In 2005-2006 the CDC and CDHP partnered to develop a Policy Tool to assist states in assessing opportunities and developing a plan for policy and systems change.[44] Since that time 20 states have used the Policy Tool.[45] CDHP also has developed an environmental scan to determine what policies already exist; this will be important for establishing a state policy database.

States have dealt with several public health issues in the past decade, some of which were incorporated into policies, laws or regulations. Some examples include dental amalgam use and disposal, BPA in dental sealants, mandated oral screenings or exams for school entry, mandatory fluoridation of community water systems (12 states), regulations for mobile clinics, elimination of vending machines in schools, new oral health providers, dental loan repayment programs and Medicaid reimbursement to medical and dental providers for oral health services. Listserv discussions often include requests for copies of specific state policies and laws. CDHP is managing an extensive database of historical information on legal cases around fluoridation, the Fluoride Legislative User Information Database (FLUID).[46] The American Dental Association and the American

Dental Hygienists' Association as well as the American Association of Dental Examiners also maintain lists of statutes that are relevant to their members.

> Currently there is no comprehensive central database of state oral health policies, laws or regulations. Creating and maintaining a comprehensive database would require significant resources but would be extremely valuable to states and national partners.

ASTDD is a partner in the policymaking process and serves as the principle voice in promoting the leadership capacity of state oral health programs and the impact that their collective activities have on the nation's oral health. ASTDD develops and adopts a variety of policy actions including issue briefs, position papers, policy statements and resolutions to reflect the priorities and stance on specific issues impacting state oral health programs. The policy statements are used to comment on/respond to proposed policy actions by other organizations and federal, state and local decision makers. In the past few years ASTDD adopted policy statements on the following issues: community water fluoridation, coordinated school oral health, dental amalgam, dental sealants and BPA, fluoride varnish, health care reform, school-based fluoride mouthrinse programs, school-based and school-linked mobile and portable dental services, and school dental sealant programs to help guide policy actions in SOHPs. Issue briefs on fluoride varnish, health reform, mobile and portable dental services in pre-school and school settings, leadership for state oral health programs, and state dental laws on school screening for school age children have been developed to provide background for state policy and program development. Members are surveyed every year on their priorities for policy development as well as their use of the policy statements and issue briefs. Use of most policy materials is high.[47]

State Oral Health Plans

The 1999 Delphi Survey noted that only 16 states had a "state oral health improvement plan."[14] ASTDD asked states a number of questions in 2009 as part of their Pew Oral Health Initiative that were not part of the Oral Health Report Card project; one was existence of a state oral health plan.[25] At that time, 30 states had a written state oral health plan, eight did not have a plan, 10 had plans in process, and two states did not answer the question. In 2010 CDHP collected state oral health plans from 42 states to place in a database that includes 22 categories of activities.[48]

CDHP's database shows the categories most often addressed in the plan goals and objectives they collected include:

- Access to care (90%)
- Increasing policymaker and public awareness of oral health (88%)

- Fluoridation (88%)
- Surveillance/data reporting/outcomes targets (86%)

Those categories least addressed include:

- Disabled/special needs (50%)
- Seniors (52%)
- State leadership (48%)
- Pregnant women (52%)

At the time of this report, CDC's website lists 29 state oral health plans, 15 states that had no identified oral health plan, seven other types of plans (e.g., strategic plans, HP 2010 plans) and three plans listed "in process."[49] There appear to be different definitions for what constitutes a "state oral health plan," how comprehensive it is, whether it is the SOHP plan or a broader OH coalition/statewide plan, and whether it includes just MCH populations or other specific age groups.

> Few state oral health plans truly address the comprehensive needs of a state's population, and few states have evaluated their implementation and results/outcomes. It is important for states to have a comprehensive statewide oral health plan for a period of three to five years that is developed and supported by a broad-based group of key stakeholders. There should also be a specific annual workplan for the state oral health program.

Assurance

Reviewing, Educating About and Enforcing Laws and Regulations

As previously discussed, states have a number of policies, laws and regulations that directly or indirectly relate to oral health. In some cases the state oral health program is responsible for reviewing and monitoring laws and regulations, while in other cases the State Board of Dentistry (or equivalent) or some other group is given that responsibility. Regulations might include the use of radiation and radiation emitting devices for dental purposes, use of dental amalgam and amalgam disposal, licensing of dental professionals, and mobile dental practices. There has been much recent activity around evaluating impact of laws and regulations related to oral health workforce and access to oral health services. Since there is no central

> SOHPs should review existing and proposed state laws and regulations to assure they reflect current scientific knowledge and are framed to achieve a clear and desired public health outcome.

database of laws and regulations, most discussion of these issues occurs via listservs or at meetings. SOHPs report providing direction to state and local governmental bodies and professional associations on developing and disseminating oral health related guidelines, laws, policies and regulations after soliciting input from stakeholders. To promote oral health literacy, it is important for SOHPs to ensure that public information related to dental laws and regulations uses plain language.

Assuring Safe Health Practices

With support from CDC, ASTDD and the Organization for Safety, Asepsis and Prevention (OSAP) collaborated on an Infection Prevention & Safety Program (IPSP). The IPSP assessed the status of infection prevention and control in state oral health programs and developed recommendations to integrate current resources and policies into ASTDD projects, programs and emergency response activities. In the summer of 2011 ASTDD surveyed SOHPs about their roles in infection prevention and safety. Of the 30 states responding, 20 states reported having programs that include direct patient care through screenings, surveys, sealant and varnish programs, and community clinics.[50] Twelve of the states reported being involved in state infection prevention and safety activities by providing training, conducting clinic inspections, handling complaints of disease transmission, and assisting in the development of oral health infection control rules and protocols. As a result of this collaboration, OSAP also developed a public health portal on their website so dental public health practitioners will have access to important infection prevention and safety updates.[51]

Improving Access to Care and Use of Oral Health Services

Another Essential PH Service is to "Reduce barriers to care and assure utilization of personal and population-based oral health services." From 2003 to 2010 about 60-70% of SOHPs report having a variety of access to care programs.[23] These include providing subsidies or grants to community-based or school-based oral health programs; involving dental and dental hygiene students and residents in community-based clinics or mobile clinics; supporting home visiting and care coordination efforts; recruitment assistance, technical support and education to safety net dental providers; networking and resource information for providers and consumers; and loan repayment programs for providers. From the project interviews, states that report improved oral health outcomes in terms of untreated decay appear to have strong links with Primary Care Associations/Offices and local programs, especially community health centers. Some of these programs address the lifespan rather than just children. HRSA Bureau of Primary Health Care has invested significant resources in the past few years to increase the

> Access to oral health care and preventive services continues to be a major problem in states, especially in light of rising unemployment rates and reductions to state budgets, including Medicaid funding.

number of dental services offered through federally qualified health centers. At the same time, however, the National Association of County and City Health Officials reports a decline in dental services offered in local health departments to 27%, as opposed to 38% in 1990.[52] A 2011 report, *Local Oral Health Programs and Best Practices, Voices from the Field: The End-Users' Perspective,* by an ad-hoc advisory committee to the ASTDD Best Practices Committee, emphasized the importance of state/local linkages. [53] Local coalitions and advocacy groups are key to improving access to care for all population groups

Relationships between state oral health programs and dental consultants in the state Medicaid and CHIP programs vary. Some work together on reducing financial barriers to care and creating incentive systems for providers, while others have almost no communication, especially if they are housed in different agencies. Some state dental directors also serve as the state Medicaid consultant. ASTDD and the Medicaid State Dental Association are in the process of assessing the level of SOHP/state Medicaid program collaboration so they can promote strategies to increase collaboration and evaluate the impact on policies and access to care.

Creating a Culture of Evaluation

CDC reports that by the end of their second state grant funding cycle, 11 of 12 funded states reported using evaluation to improve programs vs. three states at the beginning. [54] ASTDD, CDC and HRSA have provided numerous workshops on evaluation, and many funders now require inclusion of process and outcome indicators in grant proposals or other requests for support. In a 2009 survey[25], most states indicated they had access to evaluation expertise, although 13 did not; in a previous 2007 survey 19 did not.[24] Currently there is no way to assess and track if and how non-CDC funded states are evaluating their programs, partnerships or policies.

> Although many states appear to have improved their understanding and use of program evaluation, it is unclear if they are approaching evaluation in a comprehensive way to look at their entire program or their state oral health plan.

Conducting and Disseminating New Research

Currently there is no mechanism that collects information on research conducted or supported by SOHPs. Anecdotal evidence suggests some programs partner with universities or other groups on various types of research including oral health surveys and data analysis, workforce surveys and mapping provider locations to populations with oral health needs. One way to document research is by tracking publications. Neither ASTDD nor federal funders currently collect that information in any

> ASTDD has discussed with national partners the need for translation and dissemination of research to end users but an effective mechanism for doing this has not yet been established.

systematic way from states.

Information about research organizations and about community-based participatory research, as well as resources such as the Cochrane online library,[55] is shared via various listservs. The extent that SOHP directors and staff read research articles in scientific journals or use the listserv information is unknown. Through anecdotal requests, some ASTDD members have asked for summaries of current research. The only way that research is disseminated to the program level on a consistent basis is through the Best Practices project, workshops and issue briefs.

Few SOHP or community-based program directors or their staff attend national or international research meetings such as those sponsored by the National Institutes of Health or the American/International Associations for Dental Research. They do, however, attend the annual National Oral Health Conference, which should be a bridge between research and practice/programs. Attracting more researchers to present at this conference in addition to dental research conferences or evidence-based dentistry workshops, could have a number of benefits: 1) increase the focus on evidence-based public health and clinical approaches, 2) encourage public health professionals to become involved in research projects, 3) provide feedback to researchers on the practicality/appropriateness of research approaches in various settings and with diverse populations, 4) garner more financial support for the conference, 5) increase the importance and credibility of the conference in the eyes of state agency administrators.

Lessons Learned

ASTDD and all SOHPs need to advocate and demonstrate the value of SOHP infrastructure to decision-makers and funders. In "making the case," SOHPs should demonstrate what their existing infrastructure has been able to accomplish, identify gaps that could be addressed through greater support, and provide a convincing rationale for what the state specifically needs to align goals and resources with partners and strengthen their infrastructure and capacity to improve oral health. It is important to ensure that oral health doesn't get lost among competing priorities and that oral health remains a strong focus when integrating with other health or disease issues.

Qualitative and quantitative data reviewed in the context of preparing this report supported and deepened our understanding of many of the infrastructure elements included in the 2000 *ASTDD Infrastructure Report*. While there is no single definitive study that assesses the impact of the elements taken as a whole and

no comparative evaluation across states with differing structures, histories, resource levels and environments, there is evidence that there are indeed some core infrastructure elements.

Furthermore, there is evidence that infrastructure elements are developmental and interactive, although they are not necessarily built one at a time, nor do they always evolve in the same order. Based on CDC's evaluation of the State-based Oral Health Infrastructure and Capacity Development Program, ASTDD has identified how the elements can build upon and relate to one another, as shown in Figure 3.

Figure 3. State Oral Health Program (SOHP) Infrastructure Elements

CDC and ASTDD found that funding was vital for infrastructure development, while leadership served as a foundation for activities to increase infrastructure and capacity. ASTDD's experiences with states indicate that developing and implementing policies and programs that are not guided by surveillance and evaluation data can lead to programs that are unsustainable, ineffective, and unable to meet the desired outcomes of promoting health equity and improving oral health. Consistent with this, CDC found that states utilized their surveillance data, partnerships, and coalitions to support and expand program efforts.

There is a need for further study of the core infrastructure elements, both individually and collectively, and their contribution to oral health outcomes. However, the CDC evaluation of its infrastructure program and

ASTDD interviews with SOHP directors/staff strongly suggest that these infrastructure elements contributed in a positive way to the growth and stability of the SOHP, increased their capacity to leverage additional resources, increased their visibility and environmental support, and contributed to policy change efforts and implementation of prevention programs. Project interviews also confirmed that within each of the infrastructure elements outlined in Figure 3 there are key factors associated with program success and improvements in oral health outcomes.

Summary: Key Factors Associated with Program Success and Improvements in Oral Health

Resources

A successful SOHP must have diversified funding that includes funding for local programs. Relying on just one funding source can jeopardize a program, especially during economic downturns. In recent years, several states that relied solely on state general funds have faced dramatic budget cuts resulting in the loss of state staff and local programs. Placement of the SOHP within the state's health division is also important. Successful programs tend to have a higher placement within the state's organizational structure giving them direct access to the health director and the ability to negotiate to be included in funding opportunities.

Leadership, Staffing and Partnerships

Successful oral health programs tend to have one thing in common—a continuous, strong, credible leader with the ability to create partnerships and leverage available assets to ensure that 1) the state program is addressing the 10 essential public health services and the Guiding Principles of the *SOHP Competencies*, and 2) clinical services are being provided at the local level. A SOHP does not need to be *big* but it must be *strong* and *forward thinking*. Strong SOHPs have broad-based coalitions that include partners with financial and political clout. State program staff need not be proficient in all SOHP competencies but should identify where gaps exist, determine if the gaps are crucial for program functioning, and identify resources outside the program to fill the gaps. Taking advantage of ongoing leadership and professional development opportunities is important for skill development and succession planning.

Surveillance Capacity

Data drives decision-making. Ongoing, high quality oral health surveillance with broad dissemination is an essential factor for a successful SOHP. Surveillance alone, although valuable, is substantially less effective than surveillance with sound analysis and dissemination. Sharing reader-friendly oral health surveillance data reports with partners and funders promotes understanding of the importance of oral health and disease prevention programs, as well as the need for and value of funding for these programs.

State Planning, Evaluation Capacity

For a SOHP to succeed it must have a current (within the last five years) and comprehensive state oral health plan with a practical evaluation component. Evaluation can assess a program's relevance, progress, efficiency, effectiveness and impact. Program evaluation engages stakeholders and is useful for continuous quality improvement. Carefully planned evaluation can yield new evidence. SOHP infrastructure is needed to build capacity for evaluation. Evaluation helps build infrastructure and enhance sustainability when results are used to improve programs, increase program visibility and demonstrate program achievements. Strong programs have evidence-based goals, conduct routine evaluation and alter their programs based on evaluation results.

Evidence-Based Prevention & Promotion Programs & Policies

States that have documented improvements in the oral health status of their residents have in common strong evidence-based local programs with quality guidance from the state. The directors/staff interviewed agreed that local level evidence-based programs such as dental sealants and fluorides targeted to high-risk populations were essential to oral health improvements. Local programs without guidance, however, were not always successful, partially because local programs may not understand the need for or use of evidence-based approaches. States with local programming limited to oral health education have not seen improvements in the oral health of the children they serve.

Resiliency

The ability of an SOHP to be resilient is important. Resilience of an organization relates to the ability to bounce back following some environmental, financial, political, public relations or other challenge, misfortune or disaster. A truly resilient program will not only respond to and recover from these circumstances, but over time may increase its ability to respond to unpredictable events. A resilient SOHP is able to carry out the essential public health services regardless of disruptions that may occur, and it may be able to anticipate potential disruptions, take action to reduce the magnitude and/or duration of such events or conditions, and absorb, adapt to and/or rapidly recover from them.

> The ability to scale programs up and down in response to the environment, and the ability to identify and sustain core elements can help to sustain programs in challenging times.

Recommendations and Next Steps

Based on the findings and lessons learned from this project, ASTDD has developed a list of recommendations for various stakeholders as well as some more specific Next Steps for working with its partners. The recommendations are summarized in the table on the next page under the five categories of key SOHP infrastructure elements and under the stakeholders that could take action. They are not prioritized. The stakeholders chosen include:

- Federal government agencies
- ASTDD, national organizations and partners (e.g., includes public and private advocacy groups, professional organizations and funders)
- State public health agency (e.g., health department or other designated agency)
- State oral health program (includes other designations such as offices, bureaus, etc)
- Other state organizations and partners (e.g., state department of education or aging, statewide coalitions, state dental or dental hygiene associations, advocacy groups and other groups with a statewide focus)
- Local public oral health programs (e.g., local or county health departments, public or private non-profit or for-profit programs, community health centers, volunteer efforts, university/college programs)
- Other local organizations or partners (e.g., schools, health boards, Head Starts, businesses, and many other local groups.)

The Next Steps follow the table of Recommendations and represent more specific steps that ASTDD and its partners can take to address some of the recommendations.

Recommendations

RECOMMENDATIONS *(in order of the infrastructure elements as shown in Figure 3, but not prioritized)*	STAKEHOLDERS						
	Federal Government	**ASTDD, National Organiza-tions & Partners**	**State Public Health Agency**	**State Oral Health Program**	**Other State Organiza-tions & Partners**	**Local Public Oral Health Programs**	**Other Local Organiza-tions & Partners**
RESOURCES							
1. Provide coordinated and sustainable base funding for federal, State and local oral health programs.	•		•	•			•
2. Identify and procure diversified funding sources for state and local oral health programs.		•	•	•	•	•	•
3. Leverage resources to support oral health programs and initiatives.		•	•	•	•	•	•
4. Expand and strengthen the availability of local oral health resources to bring public oral health programs to diverse and under-served populations.				•		•	•
5. Promote use of current tools and technical assistance to strengthen state and local oral health programs.	•	•		•		•	
6. Position public oral health programs in a prominent position within the public health agency structure.	•		•	•		•	
LEADERSHIP, STAFFING AND PARTNERSHIPS							
7. Develop and adopt a common vision and goals for oral health among federal, state and local agencies and national partners while acknowledging there are different strategies and structures for achieving the	•	•	•	•	•	•	•

RECOMMENDATIONS *(in order of the infrastructure elements as shown in Figure 3, but not prioritized)*	**STAKEHOLDERS**						
	Federal Government	**ASTDD, National Organiza-tions & Partners**	**State Public Health Agency**	**State Oral Health Program**	**Other State Organiza-tions & Partners**	**Local Public Oral Health Programs**	**Other Local Organiza-tions & Partners**
goals.							
8. Promote, provide and support leadership and professional development opportunities.	•	•	•	•	•	•	•
9. Staff federal, state and local oral health programs with qualified public health/oral health professionals whose skills match the job functions.	•		•	•		•	
10. Strengthen State oral health leadership, consistent with the ASTDD Competencies.	•	•	•	•	•		
11. Promote and support partnerships between the public and private sectors to improve oral health at the State and local levels.	•	•		•		•	
12. Promote and support partnerships between maternal and child health, chronic disease, and other public health programs and payors to address social determinants and other factors that impact public health.	•	•	•	•		•	
13. Increase emphasis on dental public health issues in undergraduate and graduate dental and dental hygiene programs, dental residencies, and any new specialty programs for dental hygienists.	•	•		•	•		
SURVEILLANCE CAPACITY							
14. Ensure that there is capacity for development, implementation, and evaluation of State oral health	•	•	•	•			

RECOMMENDATIONS *(in order of the infrastructure elements as shown in Figure 3, but not prioritized)*	STAKEHOLDERS						
	Federal Government	**ASTDD, National Organiza-tions & Partners**	**State Public Health Agency**	**State Oral Health Program**	**Other State Organiza-tions & Partners**	**Local Public Oral Health Programs**	**Other Local Organiza-tions & Partners**
surveillance systems; data analysis; and use of data to guide decision making and educate the public and policymakers.							
15. Ensure there is high quality oral health surveillance and broad dissemination as part of overall public health surveillance.	•	•	•	•	•		
16. Collaborate to integrate oral health data with other health survey data, e.g., height and weight	•	•	•	•	•	•	•
STATE PLANNING, EVALUATION CAPACITY							
17. Engage in ongoing and strategic collaborative state-level oral health planning to address the oral health of the population throughout the lifespan and to promote equity among all subpopulations.		•	•	•	•	•	
18. Develop and sustain capacity to conduct comprehensive evaluation of public oral health infrastructure and programs at all levels and use evaluation findings to guide decision making.	•	•	•	•			
EVIDENCE-BASED PREVENTION & PROMOTION PROGRAMS & POLICIES							
19. Develop and monitor public policies that promote oral health and evaluate the impact of policy changes.	•	•	•	•	•	•	•

RECOMMENDATIONS *(in order of the infrastructure elements as shown in Figure 3, but not prioritized)*	STAKEHOLDERS						
	Federal Government	ASTDD, National Organiza-tions & Partners	State Public Health Agency	State Oral Health Program	Other State Organiza-tions & Partners	Local Public Oral Health Programs	Other Local Organiza-tions & Partners
20. Assess public opinions, awareness, knowledge, and behaviors and use the data to design effective communication strategies targeted to the public and policymakers to promote oral health and the importance of oral health to the overall health of the population throughout the lifespan.	•	•	•	•	•	•	•
21. Promote and support the translation/transferring of research evidence into promising implementation models at State/local levels and evaluate the impact.	•	•		•	•		
22. Implement culturally relevant, evidence-based programs that prevent disease and promote oral health across the lifespan.	•	•	•	•		•	

Next Steps for ASTDD and Partners

ASTDD is a vital component of the dental public health infrastructure of the nation. It supports as the primary state operational unit of oral health surveillance, policy development and community disease prevention programs, as well as representing and advocating for with a broad base of national, state and local partners. ASTDD anticipates working with public and private partners to take the following next steps to address some of the recommendations and encourages partners to develop their own list of next steps. The next steps are listed in the same order as the infrastructure elements shown in Figure 3, but are not prioritized.

Resources

- Collect more accurate current information through the *State Synopses* about funding that supports SOHP activities
- Advocate for adequate base funding for all state and territorial oral health programs in keeping with the intent of the ACA.

- Develop an ASTDD position statement on location of SOHP within the public health agency.
- Develop an issue brief on types of funding/revenues needed for a) SOHPs and b) a variety of local oral health programs.
- Leverage resources to help states use existing tools and technical assistance offered by ASTDD and national partners.
- Provide training and TA to state stakeholders on ways to sustain state oral health programs.
- Continue to provide and enhance communication pathways to and among SOHPs such as listservs, newsletters and face to face networking.

Leadership, Staffing and Partnerships

- Encourage and support states in using the *ASTDD Competency Tools* to assess their staffing need and develop job descriptions, interview questions, staff/program professional development plans, performance evaluations and strategic plans.
- Create and promote leadership and professional development opportunities for SOHP directors and staff based on the *ASTDD SOHP Competencies*.
- Leverage resources to support ongoing leadership and professional development opportunities for state and local oral health program directors and staff, and connect them with broader health or community leadership development programs.
- Create issue briefs or tipsheets on ways SOHPs can collaborate with other groups in their state (e.g., state dental or dental hygiene associations, primary care associations) for mutual benefit.
- Involve more students and residents in ASTDD and state oral health program activities, and support service learning programs and use of oral health program staff in teaching public health approaches.

Surveillance Capacity

- Develop a standard definition of state oral health surveillance system that includes indicators and time intervals.
- Create a tipsheet or media template on how to use *State Synopses* and *NOHSS* data for program evaluation and education of advocates and policymakers.
- Determine how states disseminate and use oral disease burden documents and evaluate their impact on state policies and programs.
- Identify and help leverage resources that US territories and jurisdictions need to enable them to use the *BSS* to collect and submit data to the *NOHSS*.
- Provide training and resource tools for epidemiologists who provide their expertise to oral health programs.
- Share information via tipsheets, listservs or webinars on integrating oral health and other medical or public health data.

State Planning, Evaluation Capacity

- Identify and reach consensus on key indicators for assessing core infrastructure elements and for assessing the accomplishment of related short, intermediate, and longer term outcomes. Indicators should take into account the qualitative and quantitative differences and considerable variations in needs, resources, environment, and other factors among states and territories.
- Develop metrics and methods for collecting data on all 10 of the essential public health services to promote oral health that are not currently being monitored, and refine some existing metrics to be more valid representations of the concepts to be measured.

- Promote via tipsheets, webinars or presentations, the creation and tracking of state and local oral health objectives aligned with Healthy People 2020 objectives.
- Work with CDC to create a workbook on developing, implementing, and evaluating state oral health plans.

Evidence-Based Prevention & Promotion Programs & Policies

- Assist partners by communicating with states to create and maintain a comprehensive central database of state oral health policies, laws, and regulations.
- Promote use of CDHP/CDC policy tools by states.
- Work with national dental research groups to develop approaches and methods to disseminate research in an understandable and practical format to state and local oral health professionals.
- Promote use of tools such as the *ASTDD Communication Planning Template* and online oral health literacy and cultural competency resources to state and local programs for designing materials and messages for diverse audiences.
- Participate in national strategies (e.g., Ad Council Oral Health Campaign) to develop and disseminate key messages about evidence-based prevention approaches.
- Continue to collect and update state practice examples on priority topics for the ASTDD Best Practices collection.
- Continue to create ASTDD Best Practice Approach Reports on priority topics, e.g., oral health of older adults, perinatal oral health.

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Appendix 1. Acknowledgments

(in alphabetical order)

Core Writers

Beverly Isman, RDH, MPH; Reginald Louie, DDS, MPH; Kathleen Mangskau, RDH, MPA; Donald Marianos, DDS, MPH; Kathy Phipps, DrPH; Julie Tang, DMD, MPH; BJ Tatro, PhD

Project Team in addition to Core Writers

Cassandra Martin Frazier, MPH, CHES; William Maas, DDS, MPH

Advisory Committee

William Bailey, DDS, MPH; Diane Brunson, RDH, MPH; Catherine Dunham, EdD; Steven P. Geiermann, DDS; Harry S. Goodman, DMD, MPH; Lynn Douglas Mouden, DDS, MPH; Jim Pearsol, MEd; Bobby D. Russell, DDS, MPH; Margaret M Snow, DMD, MBA, MPH; Bradley J. Whistler, DMD; Christine Wood, RDH, BS

Appendix 2. Crosswalk of ASTDD Infrastructure Elements and Studies on State-Level Infrastructure and Sustainability: Overlapping Concepts

	Findings From Studies on Sustainability		**Findings From Studies on Infrastructure Activities**		
Name of Study	Successfully Maintaining Program Funding During Trying Times: Lessons From Tobacco Control Programs in Five States. Nelson et. al. 2007	Building Sustainable Public Health Systems Change at the State Level. Padgett et. al. 2005[1]	Making the Case: Leveraging Resources Toward Public Health System Improvement in Turning Point States. Bekemeier et. al. 2007[1]	Assessing the Capacity of State Physical Activity Programs—A Baseline Perspective. Calise et. .al. 2010	Public Health Infrastructure System Change: Outcomes From the Turning Point Initiative. Berkowitz et. al. 2003[1]
Identified Outcomes	Program Sustainability	Sustainable Infrastructure	Increased Resources	Meeting 5 Benchmarks[3]	Public Health Systems Change[4]
ASTDD Top 10 Infrastructure Element					
State-based oral health surveillance system	X			X	
Leadership	X			X	X
State *oral* health improvement plan			X	X	X
Policies					X
Communications and education	X	X	X[2]	X	
Linkages (with partners)	X	X	X	X	
Population-based interventions				X	X
Community capacity	X				X
Health systems interventions					

(Leverage) resources		X			
Additional Elements					
Evaluation	X			X	
Champion	X				
Institutionalization		X			
Catalytic events and factors					
Organizational Structure				X	X

Notes from the Matrix:

1. These studies were part of the Turning Point initiative, which focused on increasing the public health infrastructure as a whole – beyond individual programs.
2. The finding "making the case" means the ability to provide a convincing rationale to decision makers, which can be considered as effective communication.
3. 5 Benchmarks: (a) Develop and sustain diverse community partnerships; (b) Make use of public health data and scientific information as a tool in developing and prioritizing community based interventions; (c) Understand and implement the key components in a sound approach to planning and evaluating physical activity interventions; (d) Develop and implement evidence-based strategies at the information, behavioral and social, and environmental and policy level; and (e) Existence of an organizational structure that supports professional development and clearly illustrates the ability to network with both traditional and nontraditional partners
4. The matrix only included findings from the following study question. Which infrastructure strategies were used to influence public health system change?

Source: Martin Frazier C. CDC Division of Oral Health. Crosswalk of ASTDD infrastructure elements and studies on state-level infrastructure and sustainability – Overlapping Concepts. Unpublished. 2011.

Appendix 3. Selected Federal Investments with Direct ASTDD Involvement Made to States: 2000-2011

2000-2010 Sponsor/Funder	Effort/Project	# States Benefitting	$ Invested Since 2000 (Approximate)*	Other $/Resources Leveraged	Outcomes
CDC, HRSA, ASTDD	Best Practices Project (2000-2011)	All	$1,028,000 (does not include website development or revisions)	Committee members volunteer time	• 50 states/territories have shared more than 236 successful practice models • 11 Best Practice (BP) Approach Reports with updates • consulted to AMCHP, MSDA and NNOHA re BP • 2 documents: History of BP project, and Recs for Local OH Programs and BP • continued use by states for grant applications, policy development, implementing evidence-based prevention programs, developing coalitions
HRSA, ACF, ASTDD	Head Start OH Forums, State Action Plans and State TA and Resources (2002-2010)	50 states, DC and 4 territories for initial forums/action plans; 37 states, DC and 3 territories for follow up activities	$529,800 ($275,000 for forums/action plans, $102,500 for Follow Up, $152,300 for TA and resources)	States were required to leverage additional resources but don't have this data quantified; committee members volunteer time	• 55 statewide Head Start Oral Health forums/action plans • 41 implemented specific activities or held follow-up meetings to document progress in the plan • 15 descriptive summaries and 12 action plans included in Best Practices project • tipsheets on working with HS staff and parents; national HS committee; national, regional and state TA calls • Evaluation report
HRSA, ASTDD	CSHCN OH Forums and State Action Plans (2005-2009) and State TA (2003-10)	16 states and DC for initial forums/action plans; 11 for follow up activities	$211,795 ($85,000 for forums/action plans, $27,500 for FU activities, $99,295 for TA and resource tools)	States reported $94,066 additional financial and in-kind support; committee members volunteer time	• 17 statewide CSHCN OH forums/action plans • 11 implemented specific activities • tipsheet on strategies for promoting OH for CSHCN • 1 webinar and many formal presentations • inclusion of CSHCN objectives in state OH plans and state CSHCN plans • website links to other resources
HRSA, ASTDD	State Access Summits (2001-2005)	22 states and DC held summits and submitted final reports	$118,729) ($104,729 to states + $14,000 for evaluation consultant and report)	BHPr funded one summit; 1-11 orgs per state provided additional funds or in-kind ranging from $3,000 to almost	• 1 presentation to prep states • evaluation report • submissions to BP project • enhanced coalition development or broadening of partnerships, heightened visibility of OH among policymakers, development of additional OH

				$50,000	committees, work groups and task forces • development of state OH plans/strategic action plans
HRSA, CDC, ASTDD	State OH Program Reviews and TA (2000-2011)	9 onsite reviews and 2 self-studies: (14 additional ones done prior to 2000) Many states received formal or informal TA	$276,936	Multiple partners contribute in-kind resources to these; committee members and state dental directors volunteer time	• Training and TA Needs Assessment of States (2003) • Tipsheet on integration of OH into MCH, Guidelines on developing State OH Program Issue Briefs, Congressional fact sheet template, State Sealant program template; Grantwriting tipsheet and 2 workshops, GIS webcast, Recruiting and Orienting State Dental Directors document • Importance of SOHP, ASTDD Resources, ASTDD Website, Working with Dental Education Institutions PowerPoints • Joint ASTDD-AAPHD DPH Workforce Task Force • State and territorial pages on ASTDD website • 3 revisions to ASTDD Guidelines for State and Territorial OH Programs • State Oral Health Program Competencies and accompanying Assessment Tools • Assisted with Model Framework for Community Oral Health Programs • SOHP Review Manual and Team Manual and tools • Final state onsite review reports and FU with 3 states • 44 states have a state OH plan
HRSA,ASTDD	State Dental Director Mentoring Program (2000-2011)	16 states (some more than once) and 1 city	$58,235	Mentors volunteer time	• 20 pairs completed mentoring;
HRSA,ASTDD	Leadership and Professional Development and NOHLI (2000-2011)	All	$381,200	Committee members volunteer time; CDHP and CDC contribute resources	• ASTDD Leadership Self-Assessment • 25 pre-NOHC workshops • 3 years of National Oral Health Leadership Institute with 41 graduates** • travel stipends to CDC Eval and MCH Institutes, CDC fluoridation courses, and other prof development • 6 scholarships to national PHLI • Orientation and leadership development for BOD • CDC SDD summer workshops since 2006 attended by most state dental directors

					• new leadership responsibilities and better management and team building skills
HRSA, CDC, ASTDD	National Oral Health Conference (2000-2011)	All	$1,067,050	AAPHD, AACDP and other groups, Sponsors and exhibitors	• Attendance was 380 in 2000 and peaking at 767 in 2010; consistently above 600 now • CEUS given every year • rave reviews every year; premier DPH conference • use information to improve programs
HRSA, ASTDD	Online Mobile-Portable Dental Manual (2004-2011)	All	$83,900	NOHRC hosts and maintains, numerous authors and partners contributed their time and photos	• Manual has been posted since 2007 and updated annually • In 2010 36 support mobile or portable programs • Annual data gathered about use via annual survey and website statistics note increase and sustained use of website
HRSA, ASTDD, Altarum	SAW Program TA (2006-08)	6 states	Not available	ASTDD complimented HRSA funding to Altarum with in-kind TA from its HRSA CA	• 2 SWOT analyses, 2 issue briefs, Fluoride varnish training for providers of children in HS and going to FQHCs • FU survey in 2010
CDC, HRSA, ASTDD	BSS/OH Surveillance and State Synopses TA (2000-2011)	All states	$616,885	CDC state infrastructure funds (see below); some states have contributed their own expenses, but this has not been tracked; committee members volunteer time	• ASTDD Seven-Step Model for State Needs Assessment • BSS modules for preschoolers, school age and older adults • Formation of NOHSS website; 43 states now submitting 3rd grade OH data to NOHSS • 50 states and DC now submitting data for Synopses Report and Synopses website • 24 states have OH burden documents and another 17 are in progress • Five-Year Synopses Trend Data (1998-2002), History of NOHSS paper published, TA documents on BSS vs Research, IRBs and HIPAA, FERPA etc, State Data Template • Webinars, workshops and presentations on all aspects of Data projects • Website links to other resources
CDC, ASTDD	Communication Tools and Training (2003-	All states	$15,000	CDC staff serve as advisors and workshop faculty;	• Resources for Designing Materials and Matching Communication Approaches with Literacy Skills and Cultural Variations

	2011)			committee members volunteer time	• 2 webinars or audio conferences and 4 workshops including media training • Communication Planning Template for • Website links to other resources • SOHP and ASTDD brochure
CDC, ASTDD	Healthy Aging Training (2009-2011)	All States	$13,000	NACDD grants to states; committee members volunteer time	• Two webinars and two NOHC presentations • Tipsheet for states applying for NACDD Aging grants, website links to other resources
CDC, HRSA, ASTDD	Fluorides/Fluoridation tools (2000-2011; consultant started in 2008)	All states	$22,220	Other CDC and HRSA funding; committee members volunteer time	• 3 policy statements (included in Policies line total) • 2 BP reports (included in BP line) • Fluoridation fact sheet template, Fluoride Media Tools, Fluoride varnish fact sheet, resources guide and research brief • Travel stipends for CDC fluoridation training • cwf listserv for state staff • Annual CWF Awards and database of awards • Website links to other resources
CDC, HRSA, ASTDD	Evaluation Training and TA(2004-2011)	Most all states	$92,560	CDC state infrastructure funds (see below)	• 5 Workshops • TA to about 10 states and all ASTDD committees • Collaboration Evaluation Handbook and Workbook • Website links to other resources
HRSA, ASTDD	School and Adolescent Oral Health (2004-2011)	All states	$65,000	Committee members volunteer time	• 2 webinars • Multiple presentations • Tools for states and school nurses • State profiles
CDC/HRSA/ ASTDD	Emergency Preparedness (2008-11)	All states	$20,000	Committee members volunteer time	• Presentations • State OH Program Standard Operating Manual • Implementation TA to 2 states • Website links to other resources
CDC/HRSA/ ASTDD	Policies (2002-2011; consultant began in 2007)	All states	$27,570	Committee members volunteer time	• 8 Policy Statements • 5 Issue Briefs • Website links to Policy resources since 2007 • 3 workshops prior to 2007

*funding is an underestimate and only approximate based on available budgets and records and does not include most printing or most website costs, or administrative support except for the Mobile-Portable website. ** some of these workshops included under other categories

Appendix 4. State Oral Health Program Activities from FY 2002-2010[23]

Type of Program	Percent of Reporting States with a Program in FY 2002-2010								
	2002	2003	2004	2005	2006	2007	2008	2009	2010
Abuse/Neglect	52.1	47.7	37	33.3	30.6	37	30.6	22.4	20.0
Access to Care	66.7	72.7	78.7	73.5	71.4	71.7	67.3	61.7	64.0
Dental Screening	79.2	90.9	80.9	79.6	81.6	78.3	75.5	72.9	74.0
Dental Sealant	83.3	72.7	76.6	83.7	83.7	84.8	79.6	81.6	78.0
Early Childhood Caries	64.6	58.1	67.4	71.4	69.4	71.7	73.5	76.6	74.0
Fluoride Mouthrinse	77.1	77.8	72.3	71.4	73.5	71.7	71.4	63.3	50.0
Fluoride Tablet	31.3	31.1	31.9	32.7	28.6	30.4	22.4	22.4	18.0
Fluoride Varnish	22.9	25	31.9	40.8	42.9	52.2	51	61.2	62.0
Mouthguard/Injury Prevention	22.9	20.5	21.3	18.4	14.3	19.6	10.2	12.2	10.0
Oral Health Education	87.5	88.9	93.6	98	95.9	95.7	91.8	95.8	92.0
Pregnant Women	NA	NA	NA	45.2	42.9	41.3	42.9	53.1	54.0

Appendix 5. Important Resources for States

10 Essential Services to Promote Oral Health	Key Resources (all can be accessed via ASTDD website)
General Resources	• Guidelines for State and Territorial OH Programs • ASTDD Oral Health Assessment Seven Step Model • State Synopses • Best Practice Approach Reports and Practice Descriptions • State Oral Health Program Reviews and Manual • Access to consultants and peer consultation • ASTDD Listservs
OH Status and OH Surveillance	• Basic Screening Surveys: Children and Older Adults • Technical Assistance on OH Surveillance • NOHSS • State Data Template • BPAR State Based Oral Health Surveillance System • CDC OH Surveillance Logic Model • CDC Tool for Creating Oral Disease Burden Documents
Determinants of Health; Health Hazards	• HP 2020 • WFRS • CDC CWF Training • Emergency Preparedness Operating Manual
Public Education/Health Promotion	• ASTDD Communication Plan template • ASTDD Health Communication Webpage links
Mobilizing Community Partnerships and Resources	• Collaboration Evaluation Handbook • BP descriptions on State OH Coalitions and Collaborative Partnerships • BPAR on OH and Coordinated School Health Programs • CDC Oral Health Coalition Framework • CSHCN Forum reports, action plans, evaluation report and tipsheets • Head Start Forum reports, action plans, evaluation report and tipsheets • CDC Synergy • CDC Success Stories Workbook
Policies and Plans	• ASTDD Policies and Policy webpage • CDHP Policy Tool • CDHP State Plan Comparison Tool • BPAR on State OH Plans and Collaborative Planning • CDC Logic Model for a State OH Plan • CDC Examples of State Oral Health Plans
Laws and Regulation to Promote Health and Ensure Safe OH Practices	• OSAP Checklists and other resources • FLUID • State Laws on Dental Screening Issue Brief • Mobile-Portable Issue Brief
Access to care	• Mobile-Portable Dental Manual • Safety Net Dental Clinic Manual • BPAR CSHCN
Adequate and Competent Workforce	• SOHP Competencies and Assessment Tools • Mentoring Program

	• NOHC • Webinars and workshops
Evaluation and tracking of OH activities and services	• SEALS • Evaluation webpage resources of ASTDD and CDC • CDC Logic models
Conduct and Review Research for New Approaches	• Cochrane OH Group Reviews • NIDCR • CDC Guidelines and Recommendations