

New competencies for the 21st century dental public health specialist

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Abstract

The American Board of Dental Public Health (ABDPH) currently recognizes 10 core competencies, which identify the skills, knowledge and understanding expected of all dental public health specialists. The last update to the competencies was 1998. The American Board of Dental Public Health, along with the American Association of Public Health Dentistry and its many partners, initiated a process to revise the competencies. This report presents the process and the new competencies for the dental public health specialist of the 21st century. Each of the developed competencies is supported by a “statement of intent”. These competencies take effect immediately. The new competencies will be used in testing candidates for specialty status beginning with the 2018 ABDPH examination.

Introduction

Dental public health (DPH) is one of the nine recognized specialties of Dentistry by the American Dental Association (ADA). Although there are approximately 160,000 professionally active dentists in the United States, there are only 145 or less than 0.1 percent board certified in DPH (1).

The American Board of Dental Public Health (ABDPH) currently recognizes 10 core competencies, which identify the skills, knowledge and understanding expected of all DPH specialists. The current set of competencies was written in 1998 and has not been reviewed or updated since that time. Current directors of the ABDPH, Diplomates of the ABDPH, DPH Residency Directors, as well as DPH educators have expressed the need for updated competencies as the specialty has evolved since 1998.

The objective of this project was to develop a set of core DPH competencies for the specialty of DPH. Competencies should be developed that would also allow for individual learning. This flexibility would allow for operating in a global and complex community or educational setting. The new DPH competencies should look to the future, not just focus on the behaviors and skills our specialty needs today. Some competencies may therefore be aspirational. Thus the development process should use a multidisciplinary panel of experts.

Then president of ABDPH, Dr. Jeffrey Chaffin appointed two ABDPH directors as co-chairs of the competency project. Co-chairs, Dr. Donald Altman and Dr. Ana Karina Mascarenhas coordinated the whole process and project, and worked with then American Association of Public Health Dentistry (AAPHD) president, Dr. Michael Monopoli, to determine

Table 1 Dental Public Health Competencies Initiative Project Expert Panel Roster; 2015-2016

Name	Affiliation
Dr. Don Altman	A.T. Still University, College of Graduate Health Studies
Dr. Ana Karina Mascarenhas	Nova Southeastern University, College of Dental Medicine
Dr. Jane Weintraub	University of North Carolina, School of Dentistry
Dr. Gary Rozier	University of North Carolina, Gillings School of Global Public Health
Dr. David Cappelli	University of Texas Health Science Center at San Antonio, (UTHSCSA) School of Dentistry
Dr. Frances Kim	Dental Public Health Consultant, San Antonio, Texas
Dr. Patricia A. Main	Royal College of Dentists of Canada
Dr. Howard Pollick	University of California San Francisco (UCSF) School of Dentistry
Mr. William Hendricson	University of Texas Health Science Center at San Antonio, (UTHSCSA) School of Dentistry

Special recognition to Dr. Rebecca King and Dr. Alex White who served as consultants to the Expert Panel during the July 2015 and January 2016 meetings.

the membership of the Expert Panel. The Expert Panel was comprised of eight members. Later a consultant Mr. William Hendricson well versed in competency development was recruited to the Expert Panel (Table 1). A larger Advisory Panel and Communities of Interest Panel (Table 2) represented 27 different organizations/agencies and were used for gathering input into the new competencies.

The Expert Panel had their introductory telephone conference in November 2014 to initiate the project and discuss how best to move forward. The Expert Panel was charged with developing a set of core DPH competencies by April 2016. The Expert Panel identified the need for a consultant with expertise in competency development in dental education as well as the need to secure a grant for the project. A grant proposal was written and secured from the DentaQuest Foundation that supported this project.

The Expert Panel was tasked with developing the new competencies and a final document that is presented in the next section. A multistep process was

used. Activities included reviewing current set of core competencies in dentistry and public health; identifying and synthesizing additional new core competencies in DPH; and verifying through validation by the Advisory Panel, Community of Interest Panel, and DPH Diplomates.

The current 10 DPH competencies developed by the ABDPH and AAPHD for DPH specialties was used as background material. Other documents used as background included documents by relevant organizations/agencies that have developed contemporary competencies (Table 3).

A needs assessment was performed on the utility of the current set of DPH competencies, and to identify any gaps in the current competencies using a nine-item self-administered survey. ABDPH Diplomates attending the annual Diplomates meeting at the 2015 National Oral Health Conference had an opportunity to complete the survey about current and future DPH competencies. Those Diplomates not in attendance were mailed a copy

Table 2 Organizations Invited to Participate on the Advisory Panel and Communities of Interest Panel

Academy of Pediatric Dentistry	Hispanic Dental Association
American Dental Association	Health Resources and Services Administration Office of Special Health Affairs
American Dental Education Association	International Association of Dental Research
American Dental Hygiene Association	Indian Health Service
Academy of General Dentistry	Medicaid-CHIP State Dental Association
American Public Health Association	National Dental Association
Association of Schools & Programs of Public Health	National Dental Practice-Based Research Network
Association of State & Territorial Dental Directors	National Institute for Dental and Craniofacial Research
Association of State & Territorial Health Officials	National Network of Oral Health Care Access
Centers for Disease Control and Prevention	Special Care Dentistry Association
Center for Oral Health	<i>Uniformed Services:</i>
DENTSPLY Corporation	US Army Dental Corps
DentaQuest LLC	US Air Force Dental Service
Diplomates Dental Public Health	US Navy Dental Corps
Directors Dental Public Health Residency Programs	United States Public Health Service

Table 3 Competency Documents Used in the Process

Article name	Source
A master of public health degree for the 21st century: key considerations, design features, and critical content of the core	ASPPH – Association of Schools and Programs in Public Health (18)
ASTDD competencies for state oral health programs	ASTDD – Association of State and Territorial Dental Directors (15)
Clinical prevention and population health curriculum framework	American Journal of Preventive Medicine (14)
CODA pre-doc standards	Commission on Dental Accreditation (19)
Excerpt from competency-based education workshop	CODA-ADEA Regional Workshop (PowerPoint-Bill Hendricson)
Competencies for dentists	Journal of Dental Education (10)
Competencies in geriatric dentistry	Special Care in Dentistry (20)
Competency objectives for dental public health 1990	American Journal of Public Health Dentistry 1990 (3)
Competency statements in dental public health	American Journal of Public Health Dentistry 1998 (4)
Core competencies in preventive medicine	American College of Preventive Medicine (21)
Core competencies in public health	The Council on Linkages Between Academia and Public Health Practice (17)
PHAC discipline competencies for public health in Canada	Public Health Agency of Canada (16)
Summit summary report 2009	American Association of Public Health Dentistry (22)

of the same survey through survey monkey for their input. Results were used by the Expert Panel to inform the process.

Once a draft of the new competencies was developed by the Expert Panel, the Advisory Panel, the Community of Interest Panel, and DPH Diplomates provided feedback on proposed competencies and intent statements, as well as provided additional competencies and ideas for incorporation into the document. The multidisciplinary balance of the panels was critical to achieving the appropriate vision for the core competencies.

Table 4 reports the new and the 1998 competencies. The new competencies will be used in testing candidates for specialty status beginning with the 2018 ABDPH examination. The expectation is that the new competencies will also be used in training the Dental Public Health specialist, and by the Commission on Dental Accreditation (CODA) in accrediting DPH graduate training programs. To this end, in summer 2016, the AAPHD president requested CODA to adopt the new competencies that affect the CODA DPH Standards 4-5. This request was forwarded by CODA to its Review Committee on Dental Public Health Education (DPH RC) for review. At their July 2016 meeting the DPH RC recommended to the Commission that the new competencies be adopted. The Commission adopted the revised competencies at their August 2016 meeting with immediate implementation.

Surveying DPH residency directors as well as evaluating the skills and pass rate of those challenging the ABDPH Boards will enable us to assess the new competencies. Ultimately, these competencies will provide a

DPH specialist with a set of skills and knowledge that is contemporary and will make a larger impact on the oral health status of people from all socioeconomic status' in this country and globally.

Report of the expert panel: Competencies for dental public health specialists

Preamble

Background

Competencies in DPH are dynamic and have been updated periodically since 1978 (2). The most recent update for Dental Public Health Specialists, hereafter referred to as “DPHS,” were published in 1998 (3,4). Periodic revisions are essential due to evolution of the specialty, financial, workforce and technological changes in health care delivery, changing characteristics of populations served, changing patterns of dental disease, developments in informatics, big data, and scientific advances. ABDPH and the AAPHD, supported by experts in DPH, initiated a process in 2014 to update competencies for DPHS. The goal is to align competencies with the roles and functions that DPHS play in 21st century oral health care.

Uses of competencies

The competencies communicated in this report provide guidance for the types of professional expertise and capabilities

Table 4 1998 and New Competencies in Dental Public Health Adopted by American Board of Dental Public Health and American Association of Public Health Dentistry for Examination in 2018

1998 competencies		New competencies	
1	Plan oral health programs for populations.	1	Manage oral health programs for population health
2	Select interventions and strategies for the prevention and control of oral diseases and promotion of oral health	3	Demonstrate ethical decision-making in the practice of dental public health
3	Develop resources, implement and manage oral health programs for populations	2	Evaluate systems of care that impact oral health
4	Incorporate ethical standards in oral health programs and activities	4	Design surveillance systems to measure oral health status and its determinants
5	Evaluate and monitor dental care delivery systems	5	Communicate on oral and public health issues
6	Design and understand the use of surveillance systems to monitor oral health	6	Lead collaborations on oral and public health issues
7	Communicate and collaborate with groups and individuals on oral health issues	7	Advocate for public health policy, legislation, and regulations to protect and promote the public's oral health, and overall health
8	Advocate for, implement and evaluate public health policy, legislation, and regulations to protect and promote the public's oral health	8	Critically appraise evidence to address oral health issues for individuals and populations
9	Critique and synthesize scientific literature	9	Conduct research to address oral and public health problems
10	Design and conduct population-based studies to answer oral and public health questions	10	Integrate the social determinants of health into dental public health practice

that DPHS provide. The competencies define the specialty for potential collaborators and employers, and increase the awareness of the specialty among colleagues within dentistry and other health professions. These competency statements also guide the definition of the standards for education and certification of DPHS. The competencies should be used by residency programs to establish curricula and define outcomes, and by graduates of these programs to prepare for examinations that lead to specialty certification by the ABDPH. The CODA accredits specialty education programs such as DPH in accordance with standards defined by CODA. The existing competencies for DPHS are the basis for the curriculum content and educational outcomes in CODA's advanced education standards for DPH. It is expected that the updated competencies proposed in this report will form the basis of curriculum content and educational outcomes in CODA's advanced education standards for DPH.

Definition of dental public health

DPH is defined by the ABDPH as: "the science and art of preventing and controlling dental diseases and promoting dental health through organized community efforts. It is that form of dental practice that serves the community as a patient rather than the individual. It is concerned with the dental education of the public, with applied dental research, and with the administration of group dental care programs as well as the prevention and control of dental diseases on a community basis. This population-based approach to professional

practice is different from the approach required for individual patient care in private practice, though both forms of practice are integral parts of the dental profession. Accordingly, DPH practice requires comprehension of an additional body of knowledge and a set of skills beyond those obtained in a predoctoral dental education (5)."

For example, specialists in DPH are educated to study and communicate the epidemiology of oral diseases and conditions, social determinants of health, and disease prevention and health promotion principles for individuals and populations. Accordingly, DPH practice requires comprehension of a body of knowledge and a set of skills beyond those obtained in predoctoral dental education or advanced education in other dental specialties, and also requires ability to apply these skills in an interprofessional context.

The discipline of DPH is broader in scope than providing dental services in community clinics to low-income populations, which is often described as community dentistry, but occasionally is referred to as DPH. Strategically planned community-based dental service can be a component of DPH practice, but does not by itself constitute the more comprehensive discipline of DPH. Further, although the specialty is called Dental Public Health, the focus of the specialty is more encompasses the intersection of oral health and public health, rather than the narrower focus on dental health, which generally pertains to teeth only. As defined by the ADA, "oral health is a functional, structural, aesthetic, physiologic and psychosocial state of well-being and is essential to an individual's general health and quality of

life” (6). In this document, the term health is used in many places to be inclusive of oral health, and also to encompass the broad definition of health.

Board certification

The term Board-eligible describes the status of a candidate whose application and supporting documents have been approved by the ABDPH (7). Eligibility criteria, the process for board certification and a description of the certification examination is available at the AAPHD website: <http://www.aaphd.org/assets/ABDPH/abdph-informational-brochure-2016-fin.pdf>

Guiding principles for dental public health practice

Educational programs in DPH are designed to graduate competent entry-level specialists who can independently practice as DPHS in an evidence-based manner and who can effectively and interprofessionally collaborate with other dental specialists, allied dental professionals, other health providers, regulators, elected officials, policy makers, legislative bodies, state and federal entities, community representatives and the public to improve the oral health of society. DPHS enter professional practice with the ability to apply their knowledge of the biological basis and epidemiology of oral disease as well as the systemic medical conditions that influence oral health at the population level. DPHS must value, and demonstrate through actions, a broad-based community-level vision of health issues that affect a population rather than only a one-on-one provider-patient perspective.

The competencies for DPHS that are defined in this report are based on these guiding principles:

- Protect the welfare and safety of the public.
- Focus on the community versus the individual.
- Promote equity in access to, and quality of, health services.
- Monitor and evaluate epidemiological factors and trends that affect oral health.
- Promote oral health.
- Prevent oral disease with focus on primary prevention.
- Analyze environmental and social determinants of oral health.
- Provide leadership to create vision, influence health policy, change practice, and advocate for action.
- Mentor the next generation of DPHS.
- Practice ethically.
- Practice cultural sensitivity.
- Develop and practice with teams across different disciplines to improve health.
- Recognize health implications of globalization.

Competency-based education

Advanced education in DPH employs a competency-based model consistent with contemporary best practices. In

competency-based dental education, the curriculum, which designates the knowledge, skills and values that students learn, is based upon clearly articulated statements of professional roles and tasks that trainees must be able to perform without faculty assistance. Capacity for unassisted quality performance of essential competencies, that consistently meet expectations, is an indicator of readiness for independent professional practice. Thus, competency statements typically describe the knowledge, skills, and professional values of beginning, or entry-level, practitioners (8,9).

Competency is a complex behavior or ability that is essential to begin independent and unsupervised practice of a professional role in society – in this case, the practice of DPH. A critical underlying assumption of competency is that the practitioner can self-monitor and self-regulate effectiveness in performance of job tasks, and has the disposition to do so. Competency is comprised of an intertwined array of numerous components: capacity to apply knowledge, experience, critical thinking capability, problem solving skills, ethical values, and capacity to perform tasks in accordance with established criteria (9,10). It is recognized that these competencies represent only a starting point for the public health dentist’s life-long professional journey – a journey that must include ongoing developmental activity to enhance, refine and maintain skills, and to develop new capabilities needed to serve the evolving oral health needs of the public. Life-long learning is required by the ABDPH in order to maintain specialty status.

The goal of advanced education programs in DPH is to educate dentists to move beyond the competencies obtained in their dental education to function as DPHS. This includes blending facets of dental competency and public health competency together into an integrated and cohesive whole, so that DPHS are ready to function independently after completion of residency education. Competency assumes that all behaviors are performed with quality consistent with professional standards, are performed to serve the needs of the community, and without regard for self-interest. Accordingly, the DPHS is able to self-assess appropriateness, accuracy, effectiveness of actions and decisions and make necessary modifications to enhance practice and improve public health. Thus, a primary tenet of advanced education programs in DPH is to instill in trainees a strong commitment to ethical principles such as professionalism, integrity and responsibility to respond to the oral health care needs of the communities they serve.

Competency development process

To implement the “*Dental Public Health Competency Initiative*,” a 8-member Expert Panel (Table 1) was established to review and update the existing competencies. The project was supported by a grant from the DentaQuest Foundation. The charges were to elicit feedback about the existing

competencies from the DPH community, consider other literature depicting DPH competencies and/or job functions and roles, and then propose modifications for consideration by the ABDPH, the AAPHD and communities of interest within oral and public health.

In the spring of 2015, the Expert Panel evaluated options for the review and updating of DPH Specialist competencies, and selected a process that relied substantially on input from Board Certified DPHS (i.e., Diplomates), review of recommendations from other DPH organizations in the United States and Canada, and rounds of external input from the broader public health community. To initiate the process, a survey administered to the 145 DPH Diplomates requested ratings of the importance and continued relevance of the 1998 competencies, elicited perspectives on the clarity of current items and asked for recommendations for new competencies. A 77 percent response rate was obtained ($n = 109/145$) and the data revealed insights for both the content and format of competency statements. The Expert Panel reviewed the survey findings and also reviewed nine reports from various organizations that described training outcomes, scope of practice, work responsibilities and competencies to guide DPH educational programs (2-4,11-22). During a two-day meeting in July 2015 in Chapel Hill, North Carolina, the Expert Panel considered findings from the survey and the literature review, which led to development of the competencies proposed in this report.

A new format for the updated competency statements was developed based upon Diplomate feedback about clarity, format and overlap in the sub-ordinate lists of knowledge, skills and values attached to the 1998 competencies, and the Expert Panel's own observations. The format proposed in this report parallels that used by CODA, and consists of a brief and behaviorally stated description of a competency supported by a "statement of intent" that explain the rationale, meaning and significance of the competency, and also discusses key knowledge, skills and values that are integrated into that competency. This format is intended to clarify the meaning of the competencies for those responsible for educational programs, for trainees, and for potential employers and collaborators in public health initiatives.

An Advisory Panel that included leaders in oral health delivery systems, dental practice, research and public health reviewed the proposed competencies. After review of feedback from the Advisory Panel and modifications, the resulting competencies were critiqued by a Communities of Interest Panel composed of leaders from organizations with common interests in improving population oral health, and were also submitted to the DPH Diplomates to elicit additional feedback. Organizations represented in the Advisory and Communities of Interest Panels are indicated in Table 2. At a second meeting of the Expert Panel in January 2016 in Chapel Hill, feedback from the several rounds of review by the Advisory Panel, DPH Diplomates and the Communities

of Interest Panel were considered to produce the recommendations communicated in this report.

Competency domains and intent statements

Each competency domain describes a core task or role performed by DPHS. The intent statements describe the components of each competency, in terms of "job responsibilities" or "core abilities" of DPHS. The intent statements explain the meaning of each competency domain and identify many of the core tasks and roles performed by DPHS pertinent to a particular competency. However, the tasks and roles indicated for each competency are not intended to be comprehensive; they provide representative examples of functions that DPHS can provide, but are not designed to be exhaustive in scope. The specialty will continue to evaluate these competencies for timeliness and relevance in the evolving health care environment.

Competency 1

Manage oral health programs for population health

Intent statement

Program management skills comprise an important competency domain for 21st century DPHS. The DPHS is able to effectively perform a population-based needs assessment, and choose between alternative interventions for prevention, early diagnosis and treatment. DPHS also plan, implement and evaluate programs in public health that assess and enhance oral health of the community and/or specific populations.

To implement this competency, DPHS:

- assess the need for programs or initiatives;
- develop and manage programs by allocating and adjusting resources;
- monitor and evaluate the impact of programs on population health;
- develop program goals, performance measures, and work schedules for task accomplishment;
- collaborate with health professionals and other stakeholders to develop effective oral health programs;
- create operational and training manuals;
- manage human resources including personnel recruitment and staff development;
- design and manage administrative information systems;
- implement quality assurance methods and evaluate program outcomes;
- provide financial management including identifying funding sources, writing grant applications, developing and negotiating budgets with funding agencies, and tracking expenses;

- incorporate clinical epidemiology, best evidence for health promotion and disease prevention, and clinical practice guidelines into public health programs;
- ensure that ethical practices, and public health laws, regulations and policies are implemented within the program; and
- develop plans for program sustainability.

Competency 2

Evaluate systems of care that impact oral health

Intent statement

Capacity to evaluate health systems is a core competency domain for the 21st century DPHS. DPHS are often engaged in efforts to assess the effectiveness of oral health care systems, analyze and report oral health disparities within communities and/or population groups, and compare availability of oral health services and providers in different communities. DPHS collaborate with other health providers, public health professionals and community representatives to identify health gaps and create recommendations for actions to alleviate these gaps. Developing a more diverse workforce that reflects contemporary society and reflects the populations served are key considerations in implementing public health goals.

To implement this competency, DPHS:

- collect and analyze data and other information to guide evidence-based policy and program development;
- monitor and evaluate the oral health workforce and their roles in health care systems;
- identify needs and opportunities for intraprofessional and interprofessional health care services and delivery;
- assist with implementation and monitoring of public health programs that involve health care providers and other practitioners from multiple disciplines; and
- evaluate health care financing, policy and delivery mechanisms used in private and public-funded programs in the context of ethical, political, scientific, socio-cultural, economic, health care workforce and financing considerations.

Competency 3

Demonstrate ethical decision-making in the practice of DPH

Intent statement

The principles of public health and the strategies of health promotion and disease prevention in society are based on core ethical values, which inform and shape the roles that

DPHS play in enhancement of community oral health. Public health values include commitment to equity, social justice, equivalent access to health care resources, sustainable development for all communities and population groups, recognition of the importance of the overall health of the community as well as the individual, and respect for diversity, inclusiveness, self-determination, empowerment and community participation.

A profession has an obligation to self-regulate based on an ethical code that identifies principles and standards for professional behavior. Standards of professional conduct represent behaviors that benefit society and are performed without regard for personal benefit. Fundamental ethical principles guide the professional practice of DPHS including autonomy (respecting individuals' self-governance rights), nonmaleficence (do no harm), beneficence (do good), justice (fairness), and veracity (truthfulness) (23-25).

To implement this competency, DPHS:

- use ethically grounded decision-making to guide judgment and action for issues that are complex, unique, challenging, potentially divisive, or where competing interests provide compelling arguments for course of action;
- ensure that the core ethical values of public health are consistently and uniformly implemented within programs;
- advocate for public health laws, regulations and policies consistent with the core ethical values of public health;
- develop and evaluate public health policies, programs, and priorities through processes that ensure an opportunity for input from diverse communities;
- advocate for the empowerment of disenfranchised communities, aiming to ensure that basic resources and conditions necessary for health are accessible to all; and
- incorporate a variety of approaches that anticipate and respect diverse values, beliefs, and cultures in the community.

Competency 4

Design surveillance systems to measure oral health status and its determinants

Intent statement

Public health surveillance is the continuous, systematic collection, analysis and interpretation of health-related data required for needs assessment, and the planning, implementation, and evaluation of public health practice. DPH surveillance involves monitoring a range of information such as demographics, oral health status, access to care, dental utilization, protective and risky behaviors that impact oral health, environmental, economic and psychosocial determinants, water fluoridation status, and oral health workforce data. Such information can serve as an

early warning system for impending public health emergencies, document the impact of an intervention, track progress toward specified goals; and monitor the epidemiology of health problems. Surveillance systems provide the basis for priorities to be established and inform public health policy and strategies.

To implement this competency, DPHS:

- identify appropriate metrics used in defining and monitoring health in a variety of patient populations;
- design systems to collect data;
- collect and interpret data by quantitative and qualitative processes;
- retrieve and interpret appropriate oral health-related data from the census, other federal, regional, state and local databases, electronic health records, electronic databases (e.g., PubMed), and insurance databases;
- interpret surveillance data in context of historical trends and current epidemiology of oral health and disease;
- protect the identity and confidentiality of individuals who provide surveillance and other data that includes protected health information (PHI);
- analyze data with appropriate statistical tests and qualitative analyses;
- calculate and interpret indices that depict oral health status; and
- collaborate with epidemiologists, biostatisticians, health services researchers, health informatics experts and community representatives for planning, collection and interpretation of surveillance data.

Competency 5

Communicate on oral and public health issues

Intent statement

The capacity to communicate (i.e., exchange information, ideas and opinions) effectively is a critical competency for DPHS. Competency in communication is intertwined with the roles performed by DPHS: planning programs, analyzing data, reporting findings, writing reports, proposals and grants, communicating the outcomes of literature searches and research projects, orienting, teaching, leading meetings, engaging the public, decision-makers and traditional and nontraditional health providers, participating in policy discussions and functioning in an advocacy role to motivate and mobilize groups for promotion, adoption and implementation of public health interventions. DPHS also serve as a knowledge resource for the community and for dental and other health care providers on oral health and disease prevention, societal issues that impact oral health, public health and oral health care systems. DPHS are able to effectively use

contemporary and traditional communication methods when providing these functions.

To implement this competency, DPHS:

- write and speak clearly and effectively;
- use information technology effectively to develop reports, presentations and informational/educational materials;
- provide and interpret appropriate information to different audiences at levels of health literacy that each group can comprehend including dental and public health colleagues, other health care providers, government officials and the lay public;
- disseminate information and advocacy strategies through print, television, radio, internet, and social media;
- communicate effectively during presentations to professional and lay audiences;
- produce oral health literature that is culturally appropriate, age-sensitive, and appropriate for the reading levels of the targeted population, and disseminate these materials in the predominate languages used by that population;
- recognize the challenges of low health literacy and implement strategies to improve the public's health literacy; and
- develop and disseminate evidence-based guidelines and tools to inform the selection and implementation of population-based interventions.

Competency 6

Lead collaborations on oral and public health issues

Intent statement

DPHS plays instrumental roles in developing, mobilizing and supporting partnerships and collaborations among educational, health system, governmental, private sector and community groups to share resources and responsibilities when implementing oral health and other public health programs. DPHS often are in positions to identify partners in addressing public health issues, and facilitate team building. Leadership skills are essential for DPHS involved in establishing coalitions to implement public health initiatives.

To implement this competency, DPHS:

- build intra and interprofessional coalitions to improve health;
- apply organizational development strategies to establish, motivate and support multi-disciplinary teams;
- lead teams of diverse coalition partners to create a shared vision to achieve specific objectives;
- facilitate goal setting by coalitions, community partners and other colleagues;
- provide mediation, negotiation, and conflict management for coalitions and other community initiatives;

- conduct productive meetings among community partners and other collaborators;
- implement program evaluation to analyze coalition performance; and
- conduct capacity-building activities for public programs, stakeholders and other community-based programs.

Competency 7

Advocate for public health policy, legislation, and regulations to protect and promote the public's oral health, and overall health

Intent statement

DPHS are often in positions to advocate for the adoption of public health policies and services that promote the well-being of communities. Advocacy involves persuasive speaking, writing or actions in support of a particular cause, policy, or strategy to reduce inequities in health status and reduce inequities in access to health services access. Awareness of the perspectives of policy-makers, and recognition of the issues, programs, values, and political goals that are priorities for these individuals aid DPHS in crafting advocacy messages to promote needed projects, especially for vulnerable populations without a voice in the legislative and governance deliberations of cities, counties and states.

To implement this competency, DPHS:

- design advocacy strategies in the context of the processes used by local, state and federal government to formulate health policies and allocate resources;
- build capacity for enhanced oral health by working with community agencies to identify oral health care service gaps, and document the impact of these gaps;
- raise stakeholder awareness of health status disparities and inequities in oral health services for specific communities and population groups;
- educate legislators and other decision makers about the value of prevention and the burden of oral diseases and its effect on health; and
- promote policies and services that benefit underserved or vulnerable groups.

Competency 8

Critically appraise evidence to address oral and public health issues for individuals and populations

Intent statement

DPHS assess research evidence pertinent to oral health, overall health and public health problems, questions and

uncertainties. To accomplish this role, DPHS apply a systematic critical appraisal process, and develop reports and presentations that summarize the findings. These findings inform dental and public health policies and programs. To accomplish these tasks, DPHS have a firm foundational knowledge of epidemiology and biostatistics.

To implement this competency, DPHS:

- formulate focused public health-related research questions;
- use a critical appraisal process to assess the efficacy and effectiveness of new interventions, technologies, policies and procedures relevant to public health, and compare the findings to current practices;
- use databases (e.g., PubMed, Cochrane Library, Google Scholar, Embase) to locate pertinent information;
- identify the best available evidence to answer research questions and report findings;
- critically appraise the quality of evidence and applicability to research questions;
- recognize study design limitations and identify factors that influence research validity;
- write reports and make presentations that summarize appraisal findings and the implications for health; and
- develop and disseminate evidence-based recommendations and tools to inform the selection and implementation of population-based interventions

Competency 9

Conduct research to address oral and public health problems

Intent statement

DPHS conduct research to explore and address oral and public health problems for populations. Developments in informatics and breakthroughs in the manipulation of integrated data sets, (i.e., big data), provide opportunities to expand the sophistication of public health research. DPHS training in research methods facilitates their participation in investigation of oral health and public health issues.

To implement this competency, DPHS:

- identify public health questions amenable to research;
- design, conduct and report primary quantitative, qualitative and mixed method research to evaluate oral and public health concerns;
- design and conduct research that examines access, cost, quality and outcomes associated with health care services;
- incorporate epidemiological principles into study designs and use indices that depict the oral health status of populations as outcome measures;

- use and interpret appropriate statistical tests and qualitative analyses to measure effects of oral health promotion, prevention and treatment programs, and outcomes of delivery systems;
- use secondary data sets to explore dental and public health questions;
- use sources of extensive electronic information to explore issues in oral health research;
- write manuscripts reporting research methods, outcomes, limitations and conclusions for peer-reviewed journals; and
- manage research processes so that ethical treatment of study participants and data are ensured.

Competency 10

Integrate the social determinants of health into DPH practice

Intent statement

Social determinants include, but are not limited to: diversity within populations and communities due to racial, ethnic, and language differences, mental and physical abilities, geographic, socioeconomic and educational backgrounds, the spectrums of age, gender, sexual orientation, culture and health status, and other factors such as health literacy, occupation and lifestyle. Analysis of the influence of these social determinants is essential for DPHS when assessing community oral health status, identifying health care access barriers, developing policy, forming partnerships, managing programs, analyzing outcomes and conducting oral health research.

To implement this competency, DPHS:

- evaluate how the social, cultural, environmental, political, legal, economic and other determinants influence oral health;
- include social determinants of health in designing DPH programs to reduce health disparities and inequalities; and,
- consider diversity, social justice and equity in contemporary society when designing public health programs and policies.

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References

1. American Board of Dental Public Health. Diplomates. [cited 2015 Sept 30] Available from: <https://aaphd.memberclicks.net/assets/ABDPH/abdph-diplomates-12-31-2013.pdf>
2. Hughes JT. Behavioral objectives for dental public health. *J Public Health Dent.* 1978;**38**:100-8.
3. Competency objectives for dental public health. *J Public Health Dent.* 1990;**50**:338-44.
4. Weintraub JA. The development of competencies for specialist in dental public health. *J Public Health Dent.* 1998;**58**(Suppl 1):114-8.
5. Commission on Dental Accreditation. *Accreditation standards for advanced specialty education programs in dental public health.* Chicago (IL): Commission on Dental Accreditation; 2015. [cited 2015 Sept 30] Available from: <http://www.ada.org/~media/CODA/Files/dph.ashxb>
6. ADA definition of oral health. Adopted by the 2014 ADA House of Delegates. [cited 2015 Sept 30] Available from: www.ada.org
7. American Board of Dental Public Health. Information Brochure for Eligibility Requirements; 2016. [cited 2015 Sept 30] Available from: <http://www.aaphd.org/assets/ABDPH/abdph-informational-brochure-2016-fin.pdf>
8. Hendricson WD, Kleffner JH. Curricular and instructional implications of competency-based dental education. *J Dent Educ.* 1998;**62**(2):183-96.
9. Chambers DW, Gerrow JD. Manual for developing and formatting competency statements. *J Dent Educ.* 1994;**58**:361-6.
10. American Dental Education Association. Competencies for the new general dentist. *J Dent Educ.* 2008;**72**(7):823-6.
11. Smith S, Dollase R. AMEE guide 14: outcome-based education. Planning, implementing and evaluating a competency-based curriculum. *Med Teach.* 1999;**21**:15-22.
12. American Association of Public Health Dentistry. Code of ethics and standards for professional conduct. *J Public Health Dent.* 1998;**58**(Suppl 1):123-4.
13. Hernandez L. *Who will keep the public healthy? Educating public health professionals for the 21st century.* Washington (DC): National Academy Press; 2003.
14. Allan J, Barwick TA, Cashman S, Cawley JF. Clinical prevention and population health: curriculum framework for health professions. *Am J Prev Med.* 2004;**27**(5):471-6.
15. Association of State and Territorial Dental Directors (ASTDD). Competencies for State Oral Health Programs; 2009. [cited 2015 Sept 30] Available from: <https://www.astdd.org/docs/CompetenciesandLevelsforStateOralHealthProgramsfinal.pdf>
16. Public Health Agency of Canada (PHAC). Core competencies for public health in Canada: release 1.0; 2008. [cited 2015 Sept 30] Available from: <http://www.phac-aspc.gc.ca/php-ppsp/ccph-cesp/pdfs/cc-manual-eng090407.pdf>
17. The Council of Linkages Between Academia and Public Health Practice. *Core competencies for public health*

- professionals*. Washington (DC): Public Health Foundation; 2010. [cited 2015 Sept 30] Available from: http://www.phf.org/resourcestools/pages/core_public_health_competencies.aspx
18. Association of Schools and Programs of Public Health (ASPPH). *Framing the future. The second 100 years of education for public health. A master of public health degree for the 21st century*. Washington (DC): ASPPH; 2014. [cited 2015 Sept 30] Available from: <http://www.aspph.org/wp-content/uploads/2015/02/MPH1.pdf>
 19. Commission on Dental Accreditation. Accreditation standards for dental education programs. Chicago (IL): Commission on Dental Accreditation; 2015. [cited 2015 Sept 30] Available from: <http://www.ada.org/~media/CODA/Files/predoc.ashx>
 20. Dolan T, Lauer DS. Delphi study to identify core competencies in geriatric dentistry. *Special Care Dent*. 2001;**21**(5):191-7.
 21. Lane DS, Ross V, O'Neill C. Core competencies for preventive medicine residents. *Am J Prev Med*. 1999;**16**(4):367-72.
 22. American Association of Public Health Dentistry. Summit on the Future of the Specialty. St. Louis, Missouri, August 4–6, 2009.
 23. Kass NE. An ethics framework for public health. *Am J Public Health*. 2001;**91**:1776-82.
 24. Thomas J, Sage M, Dillenberg J, Guillory J. A code of ethics for public health. *Am J Public Health*. 2002;**92**(7):1057-9.
 25. American College of Dentists. *Ethics handbook for dentists: an introduction to ethics, professionalism and ethical decision making*. Gaithersburg (MD): American College of Dentists Foundation; 2012.