# Using the Clinical Prevention and Population Health Curriculum Framework to Encourage Curricular Change

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**Abstract:** The Healthy People Curriculum Task Force was established in 2002 to encourage implementation of Healthy People 2010 Objective 1.7: "To increase the proportion of schools of medicine, schools of nursing and health professional training schools whose basic curriculum for healthcare providers includes the core competencies in health promotion and disease prevention." In 2004, the Task Force published a Clinical Prevention and Population Health Curriculum Framework ("Framework") to help each profession assess and develop more robust approaches to this content in their training.

During the 6 years since the publication of the Framework, the Task Force members introduced and disseminated it to constituents, facilitated its implementation at member schools, integrated it into initiatives that would influence training across schools, and adapted and applied the Framework to meet the data needs of the Healthy People 2010 Objective 1.7. The Framework has been incorporated into initiatives that help promote curricular change, such as accreditation standards and national board examination content, and efforts to disseminate the experiences of peers, expert recommendations, and activities to monitor and update curricular content. The publication of the revised Framework and the release of *Healthy People 2020* (and the associated *Education for Health Framework*) provide an opportunity to review the efforts of the health professions groups to advance the kind of curricular change recommended in *Healthy People 2010* and *Healthy People 2020* and to appreciate the many strategies required to influence health professions curricula.

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## Introduction

In 2002, representatives from seven national organizations representing dental, medical, nursing, pharmacy, and physician assistant education and training (the Healthy People Curriculum Task Force) began to meet regularly to help facilitate progress toward achieving Objective 1.7 from *Healthy People 2010*, "To increase the proportion of schools of medicine, schools of nursing and health professional training schools whose basic curriculum for healthcare providers includes the core competencies in health promotion and disease prevention." Objective 1.7 addressed the need for clinicians to improve their appreciation and understanding of prevention and population health to meet the health and healthcare needs of the U.S. population.[1] In 2004, the Task Force published a Clinical Prevention and Population Health Curriculum Framework ("Framework") to help each profession assess and develop more robust approaches to this content in their training.[2] The original Framework was developed by the Task Force and based on earlier work by the Association for Prevention Teaching and Research (APTR)—which was then the Association of Teachers of Preventive Medicine.[3] Because the breadth and depth of knowledge and skill varies by profession, the Framework did not identify competencies or learning objectives. Rather, 19 domains (topics) were identified under the four components (categories) of "Evidence base for practice," "Clinical preventive services-health promotion,"

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"Health systems and health policy," and "Community aspects of practice." (In the 2009 update of the Framework [Appendix A], the first and fourth components are called "Evidence-Based Practice" and "Population Health and Community Aspects of Practice").

Since the publication of the Framework, the Task Force expanded to include the Association of Schools of Allied Health Professions (ASAHP), and addressed other related issues, such as undergraduate public health education[4,5] and interprofessional prevention education,[6] topics that are examined in separate manuscripts in this special issue. Each professional group also continued to advocate for progress in the teaching of clinical prevention and population health in their own field. During the 6 years since the publication of the Framework, Task Force members introduced and disseminated it to constituents, facilitated its implementation at member schools, integrated it into initiatives that would influence training across schools, and adapted and applied the Framework to meet the data needs of the Healthy People 2010 Objective 1.7. The Framework has been incorporated into initiatives that help promote curricular change, such as accreditation standards and national board examination content, and efforts to disseminate the experiences of peers, expert recommendations, and activities to monitor and update curricular content. The publication of the revised Framework, and the release of *Healthy People 2020* (and the associated *Education for Health Framework*) provide an opportunity to review the efforts of the health professions groups to advance the kind of curricular change recommended in *Healthy People 2010* and *Healthy People 2020*, and to appreciate the varied, tailored strategies required to influence health professions curricula. The vignettes within this article provide examples of how organizations or institutions applied and tailored the Framework to further the teaching of clinical prevention and population health.

## Introducing, Disseminating, and Adopting the Framework

Each organization introduced its members to the Framework—although approaches varied from group to group. Most commonly, associations distributed the Framework or reprints of the Task Force article in the *American Journal of Preventive Medicine*[2] (or both) directly to the deans at member institutions. Information was received by the academic leader at each institution, and recipients realized that the Framework was being disseminated with the "blessing" of their professional organization. Some organizations also sent these materials directly to the faculty (e.g., the National Organization of Nurse Practitioner Faculties [NONPF] distributed the article to 1200 nurse practitioner educators). Additional strategies to introduce and disseminate the Framework included presentations at key meetings of the organizations, featuring the Framework in association newsletters, and posting the Framework on their websites.

Because the academic community relies on peer-reviewed literature to stay abreast of innovations in health education and training, members of the Task Force spearheaded several peer-reviewed articles in their professional journals. Table 1 features these publications, along with a sampling of work by other educators who have used the Framework. A citation inquiry run on September 30, 2010, showed that 36 articles had used the original Allan et al.[2] paper as a reference.

Each of the professional organizations is unique, and each health profession's educational program is governed by different standards and requirements. The Task Force did not strive for uniform responses from the national organizations or for the achievement of a common set of goals across the health professions curricula. Instead, Task Force members were encouraged to achieve whatever formal support was possible, given their organizational and political dynamics, and to weave the Framework into the fabric of the organization and/or profession in whatever ways possible. As a result, the status of formal adoption by the organization and profession varies. Three organizations (American Association of Colleges of Nursing [AACN]; American Dental Education Association [ADEA]; Physician Assistant Education Association [PAEA]) officially approved of or endorsed the Framework.

## Informing Clinical Prevention and Population Health Competencies and Standards

The Framework did not include learning objectives or competency statements. Professional groups could independently decide how to develop or revise clinical prevention and population health–related standards with the Framework as a guide. Although not all of the outcome statements that were developed by the health professions groups are part of official accreditation requirements, outcome or competency statements described in this section have been referenced by accrediting boards for health professions programs and schools. They can also influence the content of national board examinations. National accreditation requirements and examinations are key influences on the content of health professions education.

### Nursing

The AACN Board of Directors endorsed the Framework in 2004. Subsequently, the 2008 *Essentials of Baccalaureate Education for Professional Nursing Practice* revision

**Table 1.** A sampling of peer-reviewed literature citing the Curriculum Framework

| Articles authored by Task Force members | Other peer-reviewed publications |
|---|---|
| Allan JD, Stanley J, Crabtree MK, Werner KE, Swenson M. Clinical prevention and population health curriculum framework: the nursing perspective. J Prof Nurs 2005;21(5):259–67 | Brown JP. A new curriculum framework for clinical prevention and population health, with a review of clinical caries prevention teaching in U.S. and Canadian dental schools. J Dent Educ 2007;71(5): 572–8 |
| Cashman SB, Garr D. Education for all in clinical prevention and population health: an opportunity for family medicine educators. Fam Med 2006;38(2):84–5 | Kerkering KW, Novick LF. An enhancement strategy for integration of population health into medical school education: employing the framework developed by the Healthy People Curriculum Task Force. Acad Med 2008;83(4):345–51 |
| Cawley JF. A curriculum in clinical prevention and population health for physician assistants. Perspect Physician Assist Educ 2005;16(2):89–95 | Lenz TL, Monaghan MS, Hetterman EA. Therapeutic lifestyle strategies taught in U.S. Pharmacy Schools. Prev Chronic Dis 2007;4(4):A96. |
| Fincham JE. Clinical prevention and population health enabled through the prevention education resource center. J Public Health Manag Pract 2008;14(4):396–9. | Saxe JM, Janson SL, Dennehy PM, Stringari-Murray S, Hirsh JE, Waters CM. Meeting a primary care challenge in the U.S.: chronic illness care. Contemp Nurse 2007;26(1):94–103. |
| Johnson K. Meeting Health People 2010 Objective 1.7 in ASAHP Programs. J Allied Health 2010;39(4) | Zamani J, Vogel S, Moore A, Lucas K. Analysis of exercise content in undergraduate osteopathic education—a content analysis of UK curricula. Int J Osteopath Med 2007;10(4):97–103 |

includes Clinical Prevention and Population Health as one of the nine essential curricular areas. The *Essentials* monograph was first published in 1986 as the "first national effort to define the fundamental knowledge, values, and professional behaviors expected of the bachelor's-degree nursing graduate"[7] and provides curricular guidance to nursing programs. *Essential VII* is titled "Clinical Prevention and Population Health," and identifies 13 "expected outcomes" of all baccalaureate nursing programs (Table 2).[8] The Framework was one of the reference documents used to arrive at these expected outcomes.

## Advanced Practice Nursing

The 2006 *Essentials of Doctoral Education for Advanced Nursing Practice*, also published by AACN, provides curricular guidance for doctoral programs in nursing (DNP). The title of *Essential VII* is "Clinical Prevention and Population Health for Improving the Nation's Health"[9] and describes these expectations of DNP programs:

The DNP program prepares the graduate to:

- analyze epidemiologic, biostatistical, environmental, and other appropriate scientific data related to individual, aggregate, and population health;
- synthesize concepts, including psychosocial dimensions and cultural diversity, related to clinical prevention and population health in developing, implementing, and evaluating interventions to address health promotion/disease prevention efforts, improve health status/access patterns, and address gaps in care of individuals, aggregates, or populations;
- evaluate care delivery models and strategies using concepts related to community, environmental, and occupational health and cultural and socioeconomic dimensions of health.

## Pharmacy

In 2004, the American Association of Colleges of Pharmacy (AACP) Center for the Advancement of Pharmaceutical Education (CAPE) developed target educational outcomes for the "evolving" pharmacy curriculum. Within the CAPE document, "Provide Population-Based Care" is a subtopic within the first major section (Pharmaceutical Care) and "Public Health" is the third of the three major sections.[10] The 2004 CAPE document is cited as a reference for the Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree,[11] which include the following three sections:

Guideline 12.1: Graduates must possess the basic knowledge, skills, attitudes, and values to practice pharmacy independently at the time of graduation. In this regard, the college or school must ensure that graduates are competent to:

- provide population-based care, through the ability to develop and implement population-specific, evidence-based disease management programs and protocols based on analysis of epidemiologic and pharmacoeconomic data, medication use criteria, medication use review, and risk-reduction strategies;

**Table 2.** Essential VII—Clinical prevention and population health[8]

| |
|---|
| 1. Assess protective and predictive factors, including genetics, which influence the health of individuals, families, groups, communities, and populations. |
| 2. Conduct a health history, including environmental exposure and a family history that recognizes genetic risks, to identify current and future health problems. |
| 3. Assess health/illness beliefs, values, attitudes, and practices of individuals, families, groups, communities, and populations. |
| 4. Use behavioral change techniques to promote health and manage illness. |
| 5. Use evidence-based practices to guide health teaching, health counseling, screening, outreach, disease and outbreak investigation, referral, and follow-up throughout the life span. |
| 6. Use information and communication technologies in preventive care. |
| 7. Collaborate with other healthcare professionals and patients to provide spiritually and culturally appropriate health promotion and disease and injury prevention interventions. |
| 8. Assess the health, healthcare, and emergency preparedness needs of a defined population. |
| 9. Use clinical judgment and decision-making skills in appropriate, timely nursing care during disaster, mass casualty, and other emergency situations. |
| 10. Collaborate with others to develop an intervention plan that takes into account determinants of health, available resources, and the range of activities that contribute to health and the prevention of illness, injury, disability, and premature death. |
| 11. Participate in clinical prevention and population-focused interventions with attention to effectiveness, efficiency, cost effectiveness, and equity. |
| 12. Advocate for social justice, including a commitment to the health of vulnerable population and the elimination of health disparities. |
| 13. Use evaluation results to influence the delivery of care, deployment of resources, and to provide input into the development of policies to promote health and prevent disease. |

- manage medication use systems, through the ability to apply patient- and population-specific data, quality improvement strategies, medication safety and error reduction programs, and research processes to minimize drug misadventures and optimize patient outcomes; to participate in the development of drug use and health policy; and to help design pharmacy benefits;
- promote the availability of effective health and disease prevention services and health policy through the ability to apply population-specific data, quality improvement strategies, informatics, and research processes to identify and solve public health problems and to help develop health policy.

In March 2007, CAPE published supplemental educational outcomes for *Social and Administrative Sciences*[12] that include a section on public health that was informed in part by the Framework. Major headings from the Public Health section are included in Table 3.

## Implementing the Framework at Member Schools

Because accreditation standards vary in specificity across the professions with regard to clinical prevention and population health content, the curricular emphasis on these topics can differ at schools within a profession as well as across professions. Health professions schools have utilized the framework to assess their curricula and to develop new educational opportunities for their students.

### Medicine (DO)

During a recent curriculum review at the University of New England College of Osteopathic Medicine, the Framework was a reference for the curriculum-review committee, and curricular changes were made to integrate clinical prevention and population health tenets through all 4 years of teaching. A community-based population health and prevention exercise was incorporated into the 4th-year rural primary care area health education center (AHEC) clinical rotation. The Framework was utilized in the planning for the MPH degree within the college, which provides dual DO–MPH degrees as well as independent MPH education to health professional and other students within the university.

### Advanced Practice Nursing

The University of Hawaii at Manoa School of Nursing & Dental Hygiene used the Framework to guide the development and implementation of the Masters of Science in Nursing Advanced Public Health Nursing (APHN) program in 2007. The focus of the APHN program is on population-level health, wellness, and health promotion and disease prevention. Students learn critical community and public health skills such as community and population assessment, complex program management, epidemiology, biostatistics, community-based and health services research, disaster preparedness, and health policy analysis. The program is 36 credits, and graduates are eligible to take the American Nurses Credentialing Center (ANCC) national examination for Advanced Public Health Nursing (APHN-BC). More information can be found at www.nursing.hawaii.edu. This work was presented at the 2007 NONPF Annual meeting.

**Table 3.** Major headings from *Public Health* in *Social and Administrative Sciences Supplemental Educational Outcomes Based on CAPE 2004*[12]

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|---|
| **1. Assure the availability of effective, quality health and disease-prevention services.** |
| A. Assure access to rational, safe, and cost-effective drug therapy and pharmaceutical care. |
| B. Define and assess the health status of individuals and populations, including determinants of health and illness, factors contributing to health promotion and disease prevention, factors influencing the use of health services, and epidemiology (e.g., incidence, prevalence) of diseases. |
| C. Assess and monitor at-risk populations to identify and report health problems, and to prioritize interventions in collaboration with patients, other health professionals, members of the community, and policymakers. |
| D. Select and implement strategies to prevent or detect disease in the target population. |
| E. Identify methods to ensure that public health initiatives/programs continue to achieve stated goals. |
| F. Evaluate the outcomes of the program/intervention. |
| G. Advocate for improved polices that increase access to health services and reduce health risks. |
| **2. Develop strategic efforts to collaborate with policymakers, payers, members of the community, health providers, and other stakeholders and decision makers to promote public health and resolve public health problems.** |
| A. Collaborate with pertinent local and state organizations, healthcare providers, and policymakers responsible for the development of the public health initiatives and identify methods to stimulate their support. |
| B. Synthesize a solution through an action plan in collaboration with community leaders and organizations, such as the following. |
| C. Tailor activities by identifying clinical characteristics of the pharmacy practice and community and learning about diseases associated with the service population and community. |
| **3. Carry out duties in accordance with legal, ethical, social, economic, and professional guidelines.** |
| A. Describe local, state, federal, and international regulations affecting public health policy development. |
| B. Evaluate and resolve ethical dilemmas that arise in the development of public health policy or find a solution that is acceptable to all parties involved. |
| C. Describe legal and ethical implications of intervention in life threatening situations such as poisoning or drug overdose. |
| D. Demonstrate the ability to place healthcare and professional issues within appropriate historical, cultural, social, economic, scientific, political, and philosophical frameworks. |
| E. Display a respect and sensitivity for patient and family attitudes, behaviors, and lifestyles, paying particular attention to cultural, ethnic, and socioeconomic influences and incorporate cultural preferences and spiritual and health beliefs and behaviors into the patient care plan. |
| F. Incorporate the needs and perceptions of a culturally diverse society in public health policy. |
| G. Apply principles of pharmacoeconomics in public health policy development. |
| H. Evaluate public health policy in terms of costs and effectiveness. |
| I. Identify and collaborate with appropriate government agencies in the development of public health policy. |
| J. Explain the role of professional organizations in the development of public health policy. |
| K. Determine how professional standards and guidelines are incorporated into specific public health policies. |

## Medicine (MD)

The Brody School of Medicine at East Carolina University assessed their 2005–2006 curriculum against the components, domains, and items of the Framework in a matrix to inform their efforts to integrate population health into the medical student education. Educators at Brody defined a curricular "gap" as a Framework domain or item with only one or no educational offering identified. They discovered that although their curriculum offered instruction in many clinical prevention and population health topics, gaps were identified in domains within three of the components. In response, interactive case studies in population-oriented prevention that addressed gaps within Evidence Base for Practice (i.e., passive surveillance/reportable diseases and active surveillance for epidemics and bioterrorism) and Community Aspects of Practice (i.e., evaluation of health information and public health preparedness) were integrated into the curriculum.[13]

## Integration into Other initiatives

In addition to the efforts described earlier, the health professions associations have incorporated the Framework into other initiatives to enhance clinical prevention and population health curricula.

### Pharmacy

The AACP's project on care for the underserved was directly linked to the Framework. In April 2006, "Caring for the Underserved: A Delineation of Educational Outcomes Organized Within the Clinical Prevention and Population Health Curriculum Framework for Health Professions" was published.[14] This document's learning objectives on care for the underserved are linked to the topics included in the Framework's 19 domains. Table 4 provides an example from the Framework's first component (Evidence Base of Practice at the time; now Evidence-Based Practice).

### Dentistry

Multiple health professions organizations in the oral health community have worked with the Framework. The House of Delegates of the American Dental Education Association unanimously passed a resolution to approve the Framework, and the American Association of Public Health Dentistry has endorsed it as a purposive policy. Although the American Dental Hygienists' Association (ADHA) has not yet formally endorsed the Framework, the Council on Education (COE) of the ADHA has used specific topics from each of the four Framework components as a resource in making recommendations to the Commission on Dental Accreditation (CODA) regarding updating the Standards for Dental Hygiene Education Programs. Several of the Standard revisions proposed by the COE reflect broad concepts included in the Framework, whereas others contain literal Framework language. The Framework has also served as an important resource in developing the core competencies for Graduate Dental Hygiene Education. The CODA has recently approved new Accreditation Standards for Dental Education Programs that incorporate three of the four framework components to be implemented in June 2013.

**Table 4.** "Health Surveillance" from "Caring for the Underserved: A Delineation of Educational Outcomes Organized Within the Clinical Prevention and Population Health Curriculum Framework for Health Professions"[14]

| |
|---|
| a. Describe how vital statistics and legal documents are used in epidemiologic studies to determine health needs of an underserved population. |
| i. Identify characteristics of the selected underserved population that would facilitate, and those that would hinder access to these data and documents. |
| b. Describe how epidemiologic surveillance is used to track distribution and determinants of notifiable diseases. |
| i. Use this information to evaluate health risks and address health needs for an underserved region or population. |
| c. Propose how disease surveillance could be effectively conducted in a selected underserved population and then used to identify and treat or prevent a non-notifiable disease. |
| d. Integrate surveillance data to tailor the provision of pharmacy services to an underserved population. |
| e. Determine how an underserved population may be affected by biological, social, economic, geographic, and behavioral risk factors. |
| f. Identify needs of individuals in underserved communities that compete with health care (e.g., housing, food, transportation, literacy, security) and analyze their potential impact on the ability to secure and adhere to quality care services. |

### Medicine (DO)

The American Association of Colleges of Osteopathic Medicine (AACOM) established the Core Competency Liaison Group in 2007, which includes a faculty member from each college of osteopathic medicine and a five-member steering committee, to facilitate collaboration across schools regarding the teaching, learning, and assessment of the osteopathic core competencies. In 2010, they agreed that their work should reflect the Healthy People 2020 curriculum objectives. They will draft student performance indicators that reflect the six curricular subobjectives and deliberate their inclusion into the core competencies. They will also identify goals, objectives, and evaluation tools that all osteopathic medical schools could use to measure their students' level of competence in the topic areas proposed for Healthy People 2020, while providing several recommended teaching methods that could be modified to comport with each school's unique curriculum.

### Medicine (MD)

The Framework has been used as a reference document in two Calls for Proposals released by the Association of American Medical Colleges (AAMC) to develop "Regional Medicine–Public Health Education Centers," funded through AAMC's cooperative agreement with the CDC. In 2006 and 2007, the guidance for applicants identified the Framework as one of the references to guide the improvement of population health education in medical schools and in residency programs. Some of the medical school grantees then used the Framework as one of the reference materials to draft the list of population health competencies for medical students that will be used at their schools.[15]

## Curriculum Tracking for Healthy People 2010 and 2020

When *Healthy People 2010* was released in 2000, Objective 1.7 was a "Developmental Objective." Developmental objectives were those that did not have national baseline data or operational definitions at the time *Healthy People 2010* was first published.[16] Developmental objectives identified areas of emerging importance and were intended to stimulate the development of data systems to measure them. According to the USDHHS, most developmental objectives had a potential data source in 2000 with "reasonable expectation of data points by the year 2004 to facilitate setting year 2010 targets in the mid-decade review." Developmental objectives with no baseline at the midcourse were to be dropped during the mid-decade review.

Among the seven initial health professions groups, the availability of pre-existing data collection activities to track curriculum content varied. AACOM and AAMC could assess curricular content annually through institutional surveys that are required to maintain accreditation. Both of the physician education groups also could indirectly assess curricula through annual surveys of their graduating students. AACN and NONPF did not have regular surveys in place, but had fielded surveys in recent history that could provide baseline data. Because the other organizations did not have baseline data available, the physician (AACOM, AAMC) and nursing associations (AACN, NONPF) used their data sources to provide the required baselines at the midcourse review.

The terminology and wording of the survey questions varied among the four organizations. Along with federal partners from the Office of Disease Prevention and Health Promotion, the Agency for Healthcare Research and Quality, the National Center for Health Statistics, and the Health Resources and Services Administration, representatives of the four associations reviewed the data that were reasonably consistent across the four professions. During this process, the organizations began to recognize that the terminology used to describe some of the domain areas was not uniform across professions (e.g., "Health education" for nurses was generally equivalent to "counseling for behavior change" in physician education). "Counseling for behavior change" and "cultural diversity" were the content areas in which data were available for all four professional groups, and were chosen as the "sentinel" domains to be measured for Healthy People 2010. Each association contributed data to two "subobjectives" of Objective 1.7. In light of the limited domains that were chosen for tracking, the wording of Objective 1.7 was revised to "Increase the proportion of schools of medicine, schools of nursing, and other health professional training schools whose basic curriculum for health care providers includes the inclusion of sentinel core competencies in health promotion and disease prevention in health profession training"[17] during the Midcourse Review of *Healthy People 2010*. The four participating associations agreed to track the number of schools or programs that included the sentinel domains in their required curricula (as opposed to including the content in elective opportunities only). The standard "10% improvement" goal was applied to all of the subobjectives, resulting in a 100% end-of-decade goal for the subobjectives that had very high baseline levels. At the end of Healthy People 2010, all four groups had made improvements, but not all had reached their assigned end-of-decade goals (Table 5).

Although not all of the professional organizations had pre-existing data sources available, all groups believed that tracking curricular information for their schools would be of value. A Data Collection Working Group was established, composed of a representative from each profession. The goal of this working group was to identify the framework content areas that the group would like to track within and among the professions. The working group recognized that the two topic areas chosen for Healthy People 2010 were important to track for continuity, but did not (as currently worded) identify areas that were underrepresented in their members' curricula. To reflect the breadth of the framework, and to include topics that traditionally have been omitted in health professions education, the workgroup identified six topics to follow as a group: counseling for behavior change; cultural diversity; environmental health; evaluation of health sciences literature; global health; and public health systems. The chosen domains represent all four components of the Framework and include the two domains that had been tracked for Healthy People 2010. Additional professions aimed to collect data to participate in Healthy People 2020 and to inform Task Force activities.

Associations have improved or established data collection systems to track the curricula among their constituents. The AAMC compared the Liaison Committee on Medical Education (LCME) Part II and Graduation Questionnaire Surveys to the 19 domains of the original framework and requested the inclusion of the missing domains within each of the surveys. AACN and NONPF fielded an electronic survey to gather end-of-decade data for Healthy People 2010 and potential baseline data for Healthy People 2020. ASAHP, the eighth organization to join the Task Force, fielded its survey in late 2008,[18] and the dental group is working with both the ADEA and American Dental Association to encourage them to include questions in their regular surveys.

**Table 5.** Curriculum tracking in Healthy People 2010

| Profession | Data sources | Survey questions | HP 2010 baseline (year collected) | HP 2010 end of decade (year collected) |
|---|---|---|---|---|
| Baccalaureate Nursing | AACN Survey on Women's Health in the Entry-Level Baccalaureate Nursing School Curriculum (Baseline)<br>AACN survey of entry-level baccalaureate nursing schools (end of decade) | Please use the following descriptive categories to indicate how each of the following topics is included in your baccalaureate nursing curriculum: indicate if it is taught in one or more required courses and/or if it is taught as part of an existing required course, as a separate required course; as an elective course; or not offered or included in baccalaureate nursing curriculum. | | |
| | | –*Health assessment and teaching: patient education/teaching appropriate to the age, gender, and cultural status of women* | 91% of schools require (1999) | 99% of schools require (2008) |
| | | –*The impact of race/ethnicity/culture on health status, health beliefs and behaviors, and healthcare utilization* | 98% of schools require (1999) | 98% of schools require (2008) |
| Medicine—DO | Annual Osteopathic Medical School Questionnaire, part 3 (and predecessor surveys—name varied over time) | Please supply the number of students receiving instruction during the current academic year in the following topics include in the curriculum during any of the 4 years of medical school. Indicate the number of students receiving instruction in each of the categories (covered in required courses, covered in elective course, covered in clerkship rotation) | | |
| | | –*Prevention and health maintenance* | 95% of schools require (2004) | 100% of schools require (2009) |
| | | –*Cultural competencies across diverse cultures.* | 35% of schools require (2004) | 100% of schools require (2009) |
| Medicine—MD | LCME Annual Survey, Part II | For each of the following topics within the general subject area of clinical prevention and population health, indicate if it is taught in one or more required courses and/or if it is taught in elective courses: | | |
| | | –*Counseling for health risk reduction* | 79% of schools require (2004) | 95.2% of schools require (2008) |
| | | Indicate whether the topics below are included in your curriculum in a required course and/or an elective course. | | |
| | | –*Cultural diversity* | 87% of schools require (2000) | 99.2% of schools require (2008) |
| Nurse Practitioner | Collaborative Curriculum Survey, AACN and NONPF (Baseline)<br>NONPF NP Program Curriculum Survey (end of decade) | Indicate if the following content areas are included in your school's core master's courses. Graduate core is defined as the foundational curriculum content deemed essential for all students who pursue a master's degree in nursing regardless of specialty or functional focus. For those areas that are included in the curriculum, indicate if the content area is offered as a separate course or if the content is integrated in other core courses. | | |
| | | –*Health promotion and disease prevention* | 94% of schools require (2001) | 95.8% of schools require (2008) |
| | | –*Sociocultural diversity* | 97% of schools require (2001) | 96.6% of schools require (2008) |

AACN, American Association of Colleges of Nursing; HP, Healthy People; LCME, Liaison Committee on Medical Education; NONPF, National Organization of Nurse Practitioner Faculties

### Allied Health Professions

The ASAHP conducted a web-based survey of chairs and program directors to ascertain the degree to which Framework domains were taught in required or elective courses, students understood the concepts contained in the domains, and faculty were familiar with and utilized the Framework in their courses.[18] Respondents reported that students leave with a reasonably good understanding of evidence base for practice, clinical preventive services, health promotion, health systems, health policy, and community aspects of practices. Program directors estimated that roughly half of all allied health faculty are unaware of the Framework, and even fewer have used it in developing their curricula or courses.

The curriculum tracking objective has been moved from the *Healthy People 2010*'s "Access to Quality Health Services" chapter to *Healthy People 2020*'s "Educational and Community-based Programs" chapter. The wording has been revised to more accurately reflect the information that will be followed through the decade: "Increase the inclusion of core clinical prevention and population health content in health professions training." In addition to the two nursing and physician groups, the Physician Assistants collected data that could serve as baselines for Healthy People 2020 (Table 6). Additional professions may be able to join the data tracking for this objective before the end of the decade.

The new data show that the level of inclusion in curricula ranges from 46% to 100%, depending on the topic and profession. By the turn of the decade, at least 90% of schools across the represented health professions required studies in the evaluation of health sciences literature, counseling for behavior change, and cultural diversity. Comparisons were discouraged across professions because of the use of different surveys, but general conclusions can be made based on these data: Global health was the least likely topic to be included in required curricula, with environmental health and public health systems being additional topics that were not likely to be included. Although the percentages varied widely across the professions, the rankings did not. These findings can inform faculty and other stakeholders regarding the priority needs in clinical prevention and population health curricula within their profession.

Limitations exist for these data. Identical survey instruments are not used across professions, and all data are based on self-report. Response rates also vary for the instruments. AAMC's data source has a 100% response rate because completion is a requirement for accreditation. The response rates for the other instruments ranged from 70% to 100%.

## Discussion

The need for health professionals whose primary responsibilities are in clinical, one-on-one encounters to better understand and apply prevention and public health knowledge and skills has been documented previously[19,20] and over many years.[21] Clinicians with improved appreciation for their role in prevention and population health efforts, including interactions with public health systems, could collaborate more effectively with public health colleagues to improve the health of both individuals and communities. Together, the public health and

**Table 6.** Data collected for Healthy People 2020—Percentage of schools where instruction in the topic is required

| | Professions | | | | |
|---|---|---|---|---|---|
| **Proposed topics tracked for Healthy People 2020** | **Baccalaureate nursing[a]** | **Medicine—DO[b]** | **Medicine—MD[c]** | **Nurse practitioner[d]** | **Physician assistant[e]** |
| Counseling for behavior change | 99 | 100 | 95.2 | 95.8 | 97 |
| Cultural diversity | 98 | 100 | 99.2 | 96.6 | 99 |
| Environmental health | 94 | 64.3 | 85.7 | 74.3 | 53 |
| Evaluation of health sciences literature | 97 | 92.9 | 93.7 | 98.1 | 99 |
| Global health | 93 | 46.4 | 77.8 | 72.5 | 49 |
| Public health systems | 97 | 82.1 | 78.6 | 81.5 | 89 |

*Note:* The wording of these topic areas varies by data source and professional group.
[a]Data source: AACN survey of entry-level baccalaureate nursing schools, 2008
[b]Data source: Annual Osteopathic Medical School Questionnaire, Part 3, 2009
[c]Data source: Liaison Committee on Medical Education Annual Survey, Part II, 2008
[d]Data source: NONPF NP Program Curriculum Survey, 2008
[e]Data source: PAEA Curriculum Survey, 2010
AACN, American Association of Colleges of Nursing; NONPF, National Organization of Nurse Practitioner Faculties; PAEA, Physician Assistant Education Association

clinical communities could more effectively address societal health challenges like obesity, the aging population, disaster preparedness, and health systems reform. Efforts to improve health professions education in clinical prevention and population health were underway prior to the establishment of the Task Force and the development of the Framework.[22] Although individual health professions have attempted to address this gap in training within their own professions, the Task Force is unique in its effort to address this challenge simultaneously across multiple health professions.

The Framework provided a uniform tool for the desired curricular reforms and was used differently within each health profession. Although the use of "core competencies" in the original objective was not accurate, the Framework was an important reference in the development of "outcome" or competency statements, which play important roles in contemporary health professions education. Competencies are used to plan and to evaluate curricula, for institutional accreditation, and to assess learner progress. For nursing and pharmacy, the Framework came at an opportune time because efforts were already underway to better define the scope of practice in their fields, which in turn could drive curricula. The Framework was identified as one of several guiding resources in a grant program for MD-granting medical schools to develop innovative approaches to incorporating public health into the standard medical curriculum. The grantees are expected to share their work with other institutions to further spread these innovations. For the oral health community, the Framework provided a reference through which dentists and dental hygienists could have a shared understanding of prevention and population health curricula.

The Framework also provided a structure through which the data needs for Healthy People 2010 could be met. For Healthy People 2020, the health professions groups propose to follow a variety of topics within the scope of Clinical Prevention and Population Health that reflect different levels of adoption in their curricula. These data are useful in tracking progress over time (i.e., all health professions that participated in Healthy People 2010 showed improvement at the end of the decade) and through the tracking can encourage curricular change, consistent with the adage, "What gets measured gets done."

## Next Steps

Curricular change can take time and can require multiple strategies. The Framework provided an organized and relevant listing of clinical prevention and population health topics that could be used across the health professions to encourage changes in curricula. Because it did not identify specific learning objectives, the depth and breadth of instruction within each topic was left for each profession to explore. Clarifying those details, securing curricular time, and identifying qualified faculty[23] and other resources to support public health education remain challenges in health professions education. The Framework was and remains a timely tool to encourage the fostering of a new generation of health professionals who will contribute to a health system that embraces effective public health measures[24] and clinical prevention to improve the health of individuals and populations.

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## Appendix A: Revised Clinical Prevention and Population Health Framework (2009)

(Available online at: www.aptrweb.org/about/pdfs/Revised_CPPH_Framework_2009.pdf.)

**Evidence-Based Practice**

1. Problem Description—Descriptive Epidemiology
   - Burden of disease (e.g., morbidity and mortality)
   - Course of disease (e.g., incidence, prevalence, and case-fatality)
   - Determinants of health and disease (e.g., genetic, behavioral, socioeconomic, environmental, health care [access and quality])
   - Distribution of disease (e.g., person, place, and time)
   - Sources of data (e.g., vital statistics, active and passive public health surveillance)

2. Etiology, Benefits, and Harms—Evaluating Health Research
   - Study designs (e.g., surveys, observational studies, randomized clinical trials)
   - Estimation—magnitude of the association (e.g., relative risk/OR, attributable risk percentage, number-needed-to-treat, and population impact measures)
   - Inference (e.g., statistical significance test and CIs)
   - Confounding and interaction— concepts and basic methods for addressing
   - Quality and presentation of data (e.g., accuracy, precision, and use of graphics)

3. Evidence-Based Recommendations
   - Assessing the quality of the evidence (e.g., types and quality of studies and relevance to target population)
   - Assessing the magnitude of the effect (i.e., incorporating benefits, harms, and values)

- Grading of the recommendations (i.e., combining quality of the evidence and magnitude of the effect)

4. Implementation and Evaluation
   - Types of prevention (e.g., primary, secondary, tertiary)
   - At whom to direct intervention (e.g., individuals, high-risk groups, populations)
   - How to intervene (e.g., education, incentives for behavior change, laws and policies, engineering solutions)
   - Evaluation (e.g., quality improvement and patient safety, outcome assessment, reassessment of remaining problem[s])

**Clinical Preventive Services and Health Promotion**

1. Screening
   - Assessment of health risks (e.g., biopsychosocial environment)
   - Approaches to testing and screening (e.g., range of normal, sensitivity, specificity, predictive value, target population)
   - Criteria for successful screening (e.g., effectiveness, benefits and harms, barriers, cost, acceptance by patient)
   - Clinician–patient communication (e.g., patient participation in decision making, informed consent, risk communication, advocacy, health literacy)
   - Evidence-based recommendations
   - Government requirements (e.g., newborn screening)

2. Counseling for Behavioral Change
   - Approaches to behavior change incorporating diverse patient perspectives (e.g., counseling skills training, motivational interviewing)
   - Clinician–patient communication (e.g., patient participation in decision making, informed consent, risk communication, advocacy, health literacy)
   - Criteria for successful counseling (e.g., effectiveness, benefits and harms, cost, acceptance by patient)
   - Evidence-based recommendations

3. Immunization
   - Approaches to vaccination (e.g., live vs dead vaccine, pre- vs post-exposure, boosters, techniques for administration, target population, population-based immunity)
   - Criteria for successful immunization (e.g., effectiveness, benefits and harms, cost, acceptance by patient)
   - Clinician–patient communication (e.g., patient participation in decision making, informed consent, risk communication, advocacy, health literacy)
   - Evidence-based recommendations
   - Government requirements

4. Preventive Medication
   - Approaches to chemoprevention (e.g., pre- vs post-exposure, time-limited vs long-term)
   - Criteria for successful chemoprevention (e.g., effectiveness, benefits and harms, barriers, cost, acceptance by patient)
   - Clinician–patient communication (e.g., patient participation in decision making, informed consent, risk communication, advocacy, health literacy)
   - Evidence-based recommendations

5. Other Preventive Interventions
   - Approaches to prevention (e.g., diet, exercise, smoking cessation)
   - Criteria for successful preventive interventions (e.g., effectiveness, benefits and harms, barriers, cost, acceptance by patient)
   - Clinician–patient communication (e.g., patient participation in decision making, informed consent, risk communication, advocacy, health literacy)
   - Evidence-based recommendations

**Health Systems and Health Policy**

1. Organization of Clinical and Public Health Systems
   - Clinical health services (e.g., continuum of care—ambulatory, home, hospital, long-term care)
   - Public health responsibilities (e.g., public health functions [IOM]; 10 essential services of public health)
   - Relationships between clinical practice and public health (e.g., individual and population needs)
   - Structure of public health systems

2. Health Services Financing
   - Clinical services coverage and reimbursement (e.g., Medicare, Medicaid, employment-based, the uninsured)
   - Methods for financing healthcare institutions (e.g., hospitals vs long-term care facilities vs community health centers)
   - Methods for financing public health services
   - Other models (e.g., international comparisons)
   - Ethical frameworks for healthcare financing

3. Health Workforce
   - Methods of regulation of health professionals and healthcare institutions (e.g., certification, licensure, institutional accreditation)
   - Discipline-specific history, philosophy, roles, and responsibilities
   - Racial/ethnic workforce composition including underrepresented minorities
   - Interdisciplinary health professional relationships
   - Legal and ethical responsibilities of healthcare professionals (e.g., malpractice, HIPAA, confidentiality)
   - The role of public health professionals
   - Interprofessional activities

4. Health Policy Process
   - Process of health policy making (e.g., local, state, federal government)
   - Methods for participation in the policy process (e.g., advocacy, advisory processes, opportunities, and strategies to affect policy)
   - Impact of policies on health care and health outcomes, including impacts on vulnerable populations and eliminating health disparities
   - Consequences of being uninsured or underinsured
   - Ethical frameworks for public health decision making

**Population Health and Community Aspects of Practice**

1. Communicating and Sharing Health Information with the Public
   - Methods of assessing community needs/strengths and options for intervention (e.g., community-oriented primary care)
   - Media communications (e.g., strategies for using mass media, risk communication)
   - Evaluation of health information (e.g., websites, mass media, patient information [including literacy level and cultural appropriateness])

2. Environmental Health
   - Sources, media, and routes of exposure to environmental contaminants (e.g., air, water, food)
   - Environmental health-risk assessment and risk management (e.g., genetic, prenatal)
   - Environmental disease prevention focusing on susceptible populations

3. Occupational Health
   - Employment-based risks and injuries

- Methods for prevention and control of occupational exposures and injuries
- Exposure and prevention in healthcare settings

4. Global Health Issues
- Roles of international organizations (e.g., WHO, UNAIDS, NGOs, private foundations)
- Disease and population patterns in other countries (e.g., burden of disease, population growth, health and development)
- Effects of globalization on health (e.g., emerging and re-emerging diseases/conditions, food and water supply)
- Socioeconomic impacts on health in developed and developing countries

5. Cultural Dimensions of Practice
- Cultural influences on clinicians' delivery of health services
- Cultural influences on individuals and communities (e.g., health status, health services, health beliefs)
- Culturally appropriate and sensitive health care

6. Community Services
- Methods of facilitating access to and partnerships for physical and mental healthcare services, including a broad network of community-based organizations
- Evidence-based recommendations for community preventive services
- Public health preparedness (e.g., terrorism, natural disasters, injury prevention)
- Strategies for building community capacity

NGO, nongovernmental organization; UNAIDS, Joint United Nations Program on HIV/AIDS.