

A Model Course for Public Health Education in Chiropractic Colleges

A Users Guide

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I. Forward

Health professionals' knowledge and application of public health principles have become the object of increased attention from many different sectors of the health care delivery system. Commentary has been offered by many, including the Medicine and Public Health Initiative, The Pew Health Commission, Healthy People 2010, the Surgeon General and indirectly through the views of health care consumers. Collectively they suggest the need for the health professions to review and prioritize their approaches to teaching public health principles, as well as how such principles may be successfully incorporated into practice characteristics to benefit the stakeholders in the system. Priority areas have been suggested including various aspects of health policy, environmental health sciences, clinical epidemiology and clinical preventive services.

This project, "A Model Course for Public Health Education in Chiropractic Colleges" represents a step in the chiropractic profession's continued efforts to address this important issue. This manual is a collection of the background, educational tools, assessment results and recommendations for educational content generated during the project. It should serve as a useful reference for future chiropractic educators and researchers. These recommendations are a work in progress, not a final product. They represent a phase in the evolution of public health education in chiropractic, and will no doubt be the subject of future evaluation and modification.

The project, including the Association of Chiropractic Colleges Public Health Workshop represent the collaborative efforts of chiropractic and public health professionals from diverse backgrounds in the health professions. Thankfully we were able to build on the prior work and experiences of the American Public Health Association Chiropractic Health Care Section's-Public Health Task Force. Many of the project's participants had been members of the Task Force. We were also fortunate to recruit a number of other chiropractic educators, practitioners and organizational leaders to participate in the Public Health Workshop and working and advisory groups.

As the chiropractic director of this project I was honored to serve with this dedicated group. Many thanks are due to all the participants who freely contributed their ideas and lent their expertise in the development of these materials. I commend and thank them for their efforts.

Many thanks are also due the Health Resources and Services Administration, Division of Public Health and Allied Health of the Bureau of Health Professions as well as the Association of Schools of Public Health for their support, cooperation and guidance on this project.

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Project Summary

III. Project Summary

The health care delivery system has placed emphasis on public health, particularly in the areas of health promotion, clinical preventive services and clinical epidemiology. The chiropractic profession seeks to contribute to the health care delivery system, the health of the patient and health of the population at large. Education in public health is a tool to enable the profession to work toward those ongoing goals and enhance the chiropractic professional's potential to function in a variety of different roles in the diverse health care delivery system.

Historically the amount and content of public health course work conducted at the 16 accredited U.S. chiropractic colleges has received limited attention. Courses have been found to vary widely depending on the interests and expertise of the individual instructor. Hours are considerably lower compared to medical education. Many courses were found to not mention the chiropractor's role in public health or several important prevention topics. The Public Health Task Force of the Chiropractic Health Care Section of American Public Health Association has offered suggestions for content.

The Model Course project was designed to formally address the issue of course content for public health education for chiropractors, including the development of a description of such content.

The project was begun in September 2000. It was initiated with a baseline assessment of the current public health attitudes, beliefs and behaviors of chiropractic students, public health faculty and a sample of field practitioners.

All project members contributed to the consideration and design of overall program goals. Project members were assembled into working teams around the core areas of public health; epidemiology and biostatistics, environmental health sciences, health policy and management, and behavioral studies and health education as well as such areas as occupational health, infectious and non-communicable diseases, and preventive health services. A reference manual for authoring educational objectives was created and distributed to all team members. Each team then developed drafts of subject-specific learning objectives in their respective area. Teams provided suggestions for teaching strategies to accompany learning objectives when applicable. Each group's recommendations were disseminated to the other groups for review and comment and reviewed by a combined public health – chiropractic advisory group. Comment was also sought from chiropractic public health faculty and those with expertise in areas of public health but not directly involved with the project.

The project included the production of a public health workshop in conjunction with the Association of Chiropractic Colleges (ACC) annual meeting, March 12-16, 2001. The workshop, open to all conference attendees, was a combination of presentations and group discussions in key public health areas. The conference also included several public health paper presentation sessions in such areas as ergonomics, tobacco control, wellness, and exercise and nutrition prescriptions. These served to provide a description of recent and ongoing chiropractic college activities in a variety of public health related areas.

The model course project culminated in the early 2002 with the production of this users guide. This guide is intended to provide the reader with an overview of public health education in chiropractic, the objectives of the model course project, relevant project methods and procedures, and the model syllabus for each of the areas addressed by the project. This guide has been disseminated to all chiropractic colleges and other interested parties.

About the Model Course Project

IV. About the Model Course Project

A. Background

The model course project represents an effort to design content for public health education for chiropractic colleges. The materials presented here will assist the reader to put the project into perspective with the trends and forecasts in the health care delivery system and chiropractic education and practice at that time.

Public Health and Health Care Providers

The mission of public health has been described as “fulfilling society’s interest in assuring conditions in which people can be healthy”. This is accomplished by multidisciplinary activities in three functional areas; assessment of population’s health, policy formulation to address population health issues, and assurance of access to health services (1).

Interest in the health professions’ participation with the objectives and functions of public health, and teaching public health to health professionals has received increasing attention from many sectors of the health care delivery system. A number of proactive suggestions have been offered by health organizations, agencies and health educators.

In 1994 the American Public Health Association (APHA) and the American Medical Association (AMA) established The Medicine/Public Health Initiative. Its objective was to unite physician health care providers and public health professionals to respond constructively to challenges to health professionals and the health of the public in the 21st century (2).

In 1998 the Pew Health Professions Commission addressed the challenges facing the health care system in its report, “Recreating Health Professional Practice for a New Century”. The report offered health providers and educators a recommended list of 21 Competencies for the 21st Century including; rigorously practice preventive health care and integrate population based care and services into practice. The Commission commented that “professional schools must lead the effort to realign training and education to be more consistent with the changing needs of the care delivery system” and that these changes are essential for effective practice in the future” (3).

The Surgeon General of US, David Satcher, MD, PhD, suggested that care delivery system changes are also “driving changes in the education of health professionals in the US” and that medical educators have recognized that physicians and other types of health care providers “need to be prepared to provide population based preventive health care, as well as high – quality medical care to their patients” (4). Health educators have echoed these suggestions, calling for providers to adopt and apply population based health principles emphasizing: a community and a clinical epidemiology perspective (5).

Healthy People 2010 also addressed the issue of education of the health professions. Objective 1-7 aims to increase the proportion of medical professional training schools whose basic curriculum for health care providers includes the core competencies in health promotion and disease prevention (6).

Health educators have also begun to respond to these forecasts. The joint Association of Teachers of Preventive Medicine (ATPM) and the Health Resources and Services Administration (HRSA) task force on preventive health services has established a set of core competencies in disease prevention and health promotion for medical students. These competencies span three broad areas; Quantitative Skills, Health Services Organization and Delivery, and Community Dimensions of Medical Practice and encompass much of public health (7). These competencies may in the future be considered for their applicability in the education of other health care professionals (4).

The Missouri Health Professional: Public Health Initiative is another example of public health and health educators' response to national trends. This multidisciplinary group formulated a public health curriculum for all schools that train health professionals in the state of Missouri. Its primary objective was to ensure that health and medical professionals within the state were exposed to public health concepts, during their professional education. The curriculum was circulated to most Missouri schools that teach health professionals (8).

The evolution of the health care delivery system and these proactive responses clearly signaled a movement towards increasing health professionals education and activities in the population based sciences of public health, emphasizing but not limited to health promotion and disease prevention.

Chiropractic and Public Health

Historically the chiropractic profession has been involved with the field of public health for a number of years, largely through its activities with the APHA. A number of chiropractors originally became involved with the APHA Radiological Health Section due to their interests in radiological health issues. The profession was granted official recognition as the Chiropractic Forum, a special interest group or SPIG, in 1984. With increasing activities and membership the Chiropractic Forum became the 26th Section of APHA in 1995. The mission of the Chiropractic HealthCare Section (CHC) is to enhance public health through the application of chiropractic knowledge to the community by conservative care, disease prevention, and health promotion. Among its many objectives, the CHC seeks to promote interdisciplinary communication and cooperation between chiropractic and other health care professions regarding public health and to include chiropractic in public health institutions and programs (9,10).

One of the earliest references to public health education in chiropractic can be found in a 1990 memo on the subject by H. Vear, DC, then chair of the Chiropractic Forum. He, along with other officers and members from Radiological Health and the Chiropractic Forum prepared a logical and detailed model syllabus and course outline for teaching public health in chiropractic colleges. The syllabus was designed to be 90 hrs of education, over 6 credit hours. The course had a number of explicit purposes generally aimed at exposing the chiropractic student to the philosophy and multifaceted nature of public health, understanding public health objectives and developing basic public health skills. A suggested list of texts and supportive materials was also provided. Unfortunately there is no indication that this outline once prepared went beyond the discussion phase (11).

Qualitative and quantitative analyses of public health education in chiropractic have been offered. Coulter et al (12) provided a descriptive study comparing the curriculum of three

chiropractic and three medical colleges in North America. They found that public health was classified as a basic science and comprised about 5% (reportedly 70 hrs.) of the chiropractic curriculum, compared to 24% (289 hrs.) in the medical system. This indicates a 4 to 1 difference in hours. The study did not seek to compare the content of the courses offered.

Krishnan, Victory and Flora conducted a content analysis study of public health courses at chiropractic colleges (13). Content was compared using a classification system consisting of 6 categories (public health, epidemiology, hazards, risk factors, health care financial concerns, and prevention) and 17 topics. Each syllabus was analyzed by two researchers ($r = .95$). All six categories were listed by many schools, (58-100%), but specific topic analysis showed some deficiencies: 33% did not mention the chiropractors' role in public health, 50% did not mention such relevant prevention topics as sexually transmitted diseases (STDs), human immunodeficiency virus (HIV), Tuberculosis (TB), 75% did not discuss the role of exercise and diet in health.

The authors discussed several limitations to the study. One, the extent and quality of each topic presented in the course could not be evaluated based on syllabus description. Two, since there is no "standard syllabus format", true comparison was difficult, and that topics not included in the public health syllabus may have been included as part of other courses. The authors cited concern with the limited emphasis in some prevention categories and omission of the chiropractor's role in public health by 33% of the college's and suggested "students need to learn how to apply their public health knowledge to provide relevant health care to patients."

In 1998, the CHC of APHA established a task force to begin consideration of a model syllabus in public health education for chiropractic colleges. Chiropractic public health faculty was surveyed to assess personal characteristics, characteristics of their courses, and interest in a model syllabus program (14,15). All respondents indicated it would be very to moderately important to develop a "model curriculum" for teaching public health for health professions students, 80% offered to participate in such a project, and 90% indicated they would be willing to meet with other faculty members to discuss curricular changes. All but two respondents indicated that there were no other courses at their college that dealt with public health. Interestingly, a commonly cited challenge was making the course materials relevant to the students and addressing their biases/misconceptions about the nature of public health.

With this information the task force began an organized effort to develop a 'model course' in public health that would meld the concepts of public health and those of the chiropractic profession. The course would expose students to the various essential attributes, functions, and mechanisms of public health services, and provide chiropractic students with the tools to be active participants in public health practice, thus contributing to the objective of public health (16). The group, with input from public health faculty at many chiropractic colleges identified a number of broad topic areas where competency and skills were considered necessary for the chiropractic health care provider. These topics included public health infrastructure, fundamental concepts in epidemiology and biostatistics, screening, health promotion and disease prevention and preventive health services, major causes of morbidity and mortality, communicable and vaccine preventable diseases, environmental health and occupational health.

The national trends and forecasts discussed earlier also prompted suggestions from a

number of chiropractic health care researchers and educators, particularly in the areas of policy and education. Several have offered specific comments on the need for chiropractic training in public health.

Dillard, in discussing the professions needs for integration into the mainstream of health care suggested that;

“to maintain and increase a mainstream position, chiropractors will need to practice in a more integrated fashion with other professionals..... and to deliver up to date advice and referral on major public health issues” (17).

Hansen and Bougie suggested that;

“utilizing evidence based and population based (epidemiologic) decision making process is now an essential learning and practice based objective”, and stressed the need for “an emphasis on outcomes and wellness and prevention.” (18, 19)

Similar then to the national trends, these comments also suggest the need to consider some re-prioritizing of chiropractic education and practice in the area of public health.

The Model Course Project, begun in September 2000 considered the template syllabus of the CHC Public Health Task Force (Appendix A) as a platform for further development of public health education for chiropractic colleges. Further discussion of the methods used and materials produced by the project are the subject of the remainder of this workbook.

Enhancing Public Health Training: Content and Use

The over riding purpose of this project was to produce content for chiropractic education in the area of public health. This material should be applicable on two levels, provider – patient and provider – population. Thus it will have the potential to serve the mission of provider and public health. Much of this is un-charted territory for the chiropractic profession. Indeed the chiropractors’ role in public health is very much in a state of evolution.

There are several factors that may directly and/or indirectly affect the value of the project materials to the profession and its patients, as well as the development of the professions future public health role. One pertains to the content of the educational material itself, the other to its actual use in the field. The paucity of chiropractic specific literature in this area makes a quantitative analysis of the role premature and unreliable. However, available information does allow for discussion of several important issues and the construction of a general approach to education and use of this material.

Content and Presentation

Ideally knowledge imparted and skills developed during a health professionals’ education would be readily applicable by the clinician and would have measurable impact on the individual patient, and indirectly the population.

We have developed materials which should allow for a complete presentation of public health to chiropractic students and interested providers. The learning objectives developed

cover a wide array of public health topics of varied applicability. Some may be useful only as background. Many relate directly to understanding population based services and health assessment. Others relate to the health of the environment itself, and some generically to characteristics and functions of health care delivery system.

However, learning objectives and associated knowledge and skills in such areas as fundamentals of screening and prevention, occupational health, clinical epidemiology and some sections of health policy and environmental health sciences should have direct practice implications. Incorporation of this material into practice characteristics should benefit the individual patient and the population at large. This should be subject to future educational and health services research evaluations.

This type of learning objective variability can also be seen in the ATPM/HRSA Task Force Competencies (7). For instance, one learning objective requires the student to: describe the common methods of health care financing in the US for preventive, curative and rehabilitative services and the implications these payments systems have for health. This represents important knowledge for the provider which will likely have only indirect impact on the patient. Comparatively, another objective requires the student to: identify recommended clinical preventive services based on patient's age, sex, and risk factor status using appropriate guidelines (such as the USPSTF, etc..) This is more directly applicable to patient services.

It should be noted that the ATPM/HRSA competencies, as in those developed by this project also include many different areas of public health knowledge and skills which are to be employed by the provider as tools in their professional and patient care activities. We approached the content on a subject - by - subject basis. This was considered the best method and the one most applicable in the teaching environment. The ATPM/HRSA approach created categories which may contain many different subject areas. This approach, which may be likened to a problem based approach, may in fact prove to be more user-friendly in the long run.

There are several presentation options available for the incorporation of this content into chiropractic education. Here again, though background material is limited, some key issues do emerge. Content may be presented to chiropractic students in a strict, didactic – class room format. It may also be incorporated into the students' clinical education, or a combination of methods. Additionally, consideration should be given to web based course work which may be feasible for the student and or the practicing chiropractor.

Inertia of prior practice experience has been cited as one of the reasons why providers may not take advantage of a patient encounter to make appropriate clinical preventive service recommendations (20). Generically, the integration of public health knowledge and skills throughout the curriculum should help to make these concepts become a part of the basic “chiropractic paradigm” thus reducing this type of problem.

Numerous authors and educators have called for public health and clinical preventive services education to be incorporated into already existing class work, stressing the importance that it be a combination of class room and real time – hands on practiced based work (18,21). Chiropractic students have expressed positive views about studying and performing a wide range of health promotion and clinical preventive services, but also

expressed the firm view that these materials should be presented in the context of clinical education, not just a class room exercise (22). A positive relationship between materials present in medical training programs and examinations, examination scores and subsequent practice characteristics has been described (23).

This information emphasizes the need for a combined approach to integration of this material into the chiropractic educational process so as to increase the likelihood of incorporation into clinical practice. This approach would also include increased priority of this material in college and various state and National Board Examinations.

Field use of Public Health Skills

Field use of enhanced training in public health, likely a function of various provider, patient and system factors, is a relevant matter to examine in the context of project. As noted, a comprehensive description may be premature. However, there is a small but enlarging body of literature that will help to shed light on this important question.

Chiropractic is the third largest health profession in the U.S., with over 60,000 direct access providers licensed in all 50 states, the District of Columbia, Puerto Rico and the Virgin Islands. Utilization in the U.S. ranges from 7-16%.(24). Chiropractic is also the largest provider group included in the category of Complementary and Alternative Medicine (CAM), and under the rubric of non physician clinicians (NPC). Categorization notwithstanding, chiropractors are “authorized to assume the principal responsibility for patient care under at least some circumstances” and to “provide primary care services, although not through the entire range of primary care or provide services of the complexity that are provided by primary care physicians” (25). In some states chiropractors have equal status as “physicians” and may offer a more broad array of services, though this is not frequent. Also, though many chiropractors consider the profession as a “modality”, a tool in patient care, one recent survey reported that 82% of respondents considered chiropractic a complete health system (26).

Approximately 12 million people made an estimated 629 million visits to CAM providers in the U.S., in 1997, most for chronic (non-life threatening) conditions. About 30% of these visits were to chiropractors. 78% of users reported more than one principle medical condition (27). Studies have found CAM users to be of better self reported health status than non users, though one large population based study found the reverse (28). It has also been suggested that due to the influence of manage care, chiropractic patient populations may change to include “patients who are substantially more sick, and who have more medical complications than patients they would have seen in a free choice environment” (29).

58% of CAM users reported that use was to “prevent future illness from occurring or to maintain health and vitality”(27). Others have indicated that use was associated with the thought that it “promotes health rather than focused on illness” (28). Thus many of those who consulted with chiropractors were oriented toward health promotion, prevention and wellness.

Use of alternative therapies “only” has been reported to vary from 1.8-4.4% (27,28,30). Based on these large population based samples it seems clear that at least in the 1990s,

millions of American used “unconventional therapies”, their focus was on health promotion and prevention, and their intent was to complement, not supplement their care.

Numerous studies have reported on physician use of such public health skills as clinical preventive services. This is reasonable given that this is the area of public health with which field provider may impact the patient and the population health in a measurable way.

Studies have revealed that providers often may not take advantage of the clinical encounter to advise or follow through with patients on such Healthy People 2010 health indicators as weight loss, (31,32,) exercise (33), immunization (34) and smoking cessation (35). This may be due to lack of familiarity with published practice guidelines, uncertainty as to which recommendations to make, or suspicion as to the efficacy of the intervention (20,36). Changing trends in medical education, including the ATPM/HRSA prevention competencies should help to improve this.

A handful of studies have reported on chiropractic performance of these types of services.

Several have evaluated the self-reported use of various health counseling and health services associated with Healthy People 2000 objectives. Respondents indicated that they had discussed with patients such topics as weight loss programs (56%), smoking (53%), fitness exercise (68%), and hypertension control (52%) (37). These are areas where provider reminders and counseling have been shown to help patients work towards improved health behaviors. This can be seen in the results of a practice based research project on smoking cessation. This provider group was able to achieve a 20% quit and 38% decrease in smoking with a limited (occasional mentioning) type intervention, and 36% quit and 67% decrease with a more aggressive continuous and multi faceted approach. Of note, this was a practice based research group of spine surgeons (38)!

Another study found that chiropractors had sought out additional training in preventive health services, suggesting a need for increases in such training on the undergraduate and possibly the post graduate level (39). Recent studies into the components of chiropractic wellness and (health) maintenance care reported such topics as exercise (96%), proper eating (92%) and patient education (83%) had been included in treatment to adult and patients over 65 populations. Information on the specific content of care not directly associated with musculoskeletal conditions was limited, as was the nature of specific recommendations or levels of provider training (40,41).

This information gives an indication that some Chiropractors already do perform many of the recommended screening and counseling clinical preventive services congruent with HP 2000 and HP 2010 objectives. However there is room for improvement, and further description and attention to content is warranted. Wellness models incorporating the goals of Healthy People 2010 and other prevention functions into chiropractic practice, including the American Chiropractic Association Wellness Model, have been offered (42,43). Enhanced training in public health can assist the profession in adopting these and other elements of health promotion and wellness into practice, thus melding patients expressed health promotion and wellness care needs with sound preventive health and wellness services. Further, the population impact of these services should be the focus of future studies.

A national patient population based survey of users of unconventional medicine offers some interesting insight into NPCs contribution towards the nation's health objectives. The study reported that those patients who used both conventional and unconventional forms of care had a higher likelihood of receiving some preventive services than users of conventional medicine only. Focusing on services more likely to be performed by unconventional providers, cholesterol check was 44% for medical only , 58% for combined, physical exam was 46% for medical only, 55% combined, and BP was 75% for medical only, 92% combined (30). Assessment and counseling for physical activity, diet, smoking or alcohol use were not reported.

These findings suggests several things. One, from 9-17% additional patients received recommended clinical preventive services they may not have otherwise received. Two, since only 20-40% of CAM use comes to the attention of the patient's primary provider, care is not integrated or coordinated (27,31). It seems reasonable to conclude that the additional services were the result of CAM activities, not the reverse, although this was not measured.

This suggests that CAM providers, chiropractic being the largest, may represent a large pool of providers who can complement, and in some limited cases supplement traditional physician providers in the provision of health promotion and clinical preventive services.

A view of the future

Interest in public health education for health care providers is not unique to chiropractic. In fact, our activities in this area are timely and very much in step with a national health professions and delivery system movement to increases providers' education and participation with public health.

The ATPM/HRSA competencies mentioned above, which form the benchmark for the HP 2010 objective 1-7 represent the product of over a decade or work in a dynamic process. Similarly, the products of our chiropractic – public health project, sponsored through the Association of Schools of Public Health (ASPH) and the Health Services and Resources Administration (HRSA) represent the beginning in the process of modification and standardization of teaching public health in chiropractic colleges. This too is an ongoing process.

The materials discussed above suggest several trends in the chiropractic profession in the areas of public health. Important trends include the following:

1. Chiropractors already do utilize some public health skills in practice, particularly in the area of clinical preventive services.
2. There is room for improvement. Enhanced public health training should represent an important tool for the chiropractic health professional to meet 21st Century Challenges
3. There is an indication of a small population impact, primarily as complementary to conventional medical care. Impact may be a function of practice functions as well as geographic location (44). Further assessment of this impact is warranted.
4. There appears to be a need and desire for more training in this area on the part of students and field chiropractors.
5. To help achieve inclusion as a practice characteristic, public health knowledge

and skills in chiropractic education should emphasis clinical over class room, and be included in various examinations, including the National Board Exam.

6. Public health training may have direct implications for the profession's wellness model.

These comments are offered as suggestions for the profession as it continues its consideration of education and use of public health skills. They are not intended to be conclusions. Rather, many of these comments warrant further consideration and inquiry. Once incorporated into chiropractic college curricula, the learning objectives developed in this project will no doubt be the subject of continued examination. Some will be modified. Some will be revised and some will be discarded entirely. New concepts and approaches not considered by this project will also be added. Furthermore, future assessments of chiropractic practice characteristics will provide invaluable knowledge and guidance for this ongoing development.

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B. Project Objectives

The overall goal of the Model Course project was to develop the content for course work in public health training for chiropractic students. The goal then was to develop content, not “a course”. This content would expose chiropractic students to the knowledge and skills needed to effectively participate in the objectives of public health on a population and individual patient basis in the context of their role as chiropractic health care providers. The project addressed five objectives in achieving its goal:

Objective #1. To establish a collaborative working arrangement between chiropractic and public health experts to complete the project’s activities.

We formed a collaborative working group that included experienced faculty at schools of public health and chiropractic public health faculty and representation from chiropractic educational organizations. These included Elaine Anderson MPH and David Katz, MD, MPH, from the School of Public Health at Yale, Michael Perillo, DC, MPH, from the University of Bridge Port College of Chiropractic, as well as members from seven other chiropractic colleges. Also included were R. Baird, DC, MPH, (private practice and public health faculty), Frank Zolli DC, MeD (Dean of UB CC) representing the Association of Chiropractic Colleges (ACC), and Vernon Temple, DC, DABCO, representing the National Board of Chiropractic Examiners (NBCE), who constituted the Project Advisory Committee. This group functioned to review and approve all materials developed during the project for technical merit and appropriateness to the targeted population.

Objective #2. To assess baseline knowledge, attitudes and behavior related to public health of a sample of chiropractic college faculty, chiropractic students and chiropractic practitioners.

The assessment team of Cheryl Hawk, DC, Ph.D., and Jack Barnette, Ph.D performed this objective. This is briefly described in Part VI.

Objective #3. To conduct a workshop for chiropractic public health faculty with topics emphasizing the knowledge, materials and skills that are relevant to the objectives of public health and chiropractic practice.

Project participants conducted a two day workshop in conjunction with the March 12-16, 2001 Association of Chiropractic Colleges conference in San Diego. Project meetings and presentations are described in Part VII.

Objective #4. To produce a workbook containing the materials needed to conduct course work in public health training for chiropractic students.

The project workbook, dubbed “the users guide” is designed to provide chiropractic public health teaching faculty and other interested parties with a summary of the project, as well as an organized and comprehensive array of project materials. The Methods Section (Part I B) describes how the project participants actually produced the recommended content.

Objective #5. To implement a dissemination plan for the materials developed in this project.

The workbook and related materials have been disseminated to faculty teaching public health at the chiropractic colleges, and other interested parties. Additionally, these materials have been indirectly disseminated through presentations at professional conferences and publications in chiropractic and public health media (newsletters, magazines, websites) and professional journals.

C. Methods

The Project Working Group

The project -working group represents the core personnel of the project. Broadly they were responsible to:

Develop the overall program goals

- Develop overall program goals
- Identify and develop subject specific goals and appropriate supportive materials
- Serve as speakers/facilitators at the public health workshop
- Review and comment on the draft of the faculty work book

Members of the working group were chosen based on public health training, teaching experience, clinical experience, previous educational and clinical sciences research efforts and knowledge in particular subject areas. Collectively, the group had extensive expertise in the areas of; assessment and evaluation, microbiology and infectious diseases and immunology, non-communicable diseases, preventive health services, occupational health, epidemiology, environmental health sciences, health policy and management and content development. Project members are described in Section II.

Each participant was provided:

- A copy of the APHA – CHC Template Syllabus specific to their area of expertise
- Background about the project
- A project Time Line
- A guide to writing clear and measurable learning objectives
- A list of team assignments in the following specific areas:
 - Environmental health sciences
 - Epidemiology
 - Health Promotion and Clinical Preventive Services
 - Health policy & management
 - Infectious diseases and immunology
 - Non communicable diseases
 - Occupational health

The first function of the working group was the formulation of the overall program goals. Once developed in draft, consensus on the objectives was achieved prior to the development of subject specific learning objectives. After many rounds and modifications, the group members agreed to a final draft. (See Section IV).

As described earlier, the APHA – CHC Model Syllabus Task Force had developed a template syllabus describing public health content for chiropractic education. This document, and the experiences gained in its production by a diverse group of chiropractic educators was used as the starting point of the current project. Additionally, several of the original task force members were also participants in this project.

General directions were discussed with each team leader and participant to help guide the process of developing subject specific learning objectives.

It was stressed that the teams not in any way constrain their development of program materials based on the template syllabus. It was to serve as a conceptual guide. Teams were encouraged to include any material considered relevant and useful to future and current practice chiropractors to address population based and public health issues, serve the health care needs of their patients and the population at large, particularly in the areas of clinical preventive services and support the goals of the overall program goals.

Further, it was stressed that location of the particular materials in any total college curriculum was also not a constraint. It was expected that each individual college would blend the suggested materials into their existing curriculum (basic science, clinical science, clinical training) as best fit the order and missions of that school and program.

It was agreed that where and as possible subject specific objectives should be clear and constructed in such a way as to render them measurable. To aid the working group members, the content group produced a brief guide to writing clear and measurable learning objectives. This was supplied to each member and is discussed in Section V.

The teams were also asked to make recommendations as to specific presentation approaches, e.g., papers, class discussions, home assignments, group assignments, etc as well as to identify and discuss items which are considered to be of particular relevance to practice. Teams could use any resources of information, providing these referenced and commonly available. These and other sources have been incorporated into the course resource list (Appendix D).

In addition to phone and e-mail, project procedures, overall program goals and initial drafts of several areas were discussed at two meetings, one held during the 2000 American Public Health Association Meeting, the second at the 2001 ACC Public Health Work Shop.

Each team developed subject specific objectives with input from the project co-director. Drafts continued in development until the team agreed to a final format, which was then referred on to the Project Advisory Committee for comment.

Writing Clear and Measurable Learning Objectives

V. Writing Clear and Measurable Learning Objectives

A major objective of the project was to develop subject specific learning objectives that were clear, in behavioral terms and measurable by some method determined appropriate by the individual instructor. Specific and measurable learning objectives are recommended for public health education by the Council on Education in Public Health (CEPH). To aid in the development of these objectives, the Content Group, Elaine Anderson, Bart Green and Claire Johnson, produced a guide to this process “ **A Primer on Writing Course Objectives: “Constructing Specific and Measurable Learning Objectives”**”.

The Primer addressed the relationship of course objectives to an overall program, components of a course objectives including levels of knowledge and provided a “Nuts and Bolts” section on how to write course objectives.

The Primer proved to be a valuable tool for the participants and should also provide a helpful reference for faculty. The full document is presented as Appendix B.

Overall Program Goals

VI. Overall Program Goals

Overall program goals describe the knowledge and skills that a student is expected to demonstrate upon completion of the course.

To teach public health to chiropractic students emphasizing relevance to clinical chiropractic practice.

To train chiropractic students to understand and appreciate the basic public health systems that exist in the United States.

To familiarize students with traditional public health methods, philosophy and vocabulary as described in commonly accepted definitions of public health and public health initiatives.

To provide introductory training in the scope of public health, including the following specific subject areas:

- Environmental sciences
- Epidemiology
- Health policy and management
- Health Promotion and Clinical preventive health services
- Infectious Diseases and Immunology
- Non communicable diseases
- Occupational health

To familiarize students with methods to access and evaluate reliable, relevant sources of public health information

To enable students to formulate an impression of their own role and the chiropractic profession's role in public health.

To provide the public health information necessary for students to pass licensure examinations and meet accrediting bodies' requirements.

Subject Specific Learning Objectives

VII. Subject Specific Learning Objectives

The following are the subject specific learning objectives developed by each group. There may be overlap between units. For instance, several objectives in Environmental Health Sciences, particularly food and water safety overlap with sections of Infectious Diseases and immunology. This overlap allows for variation in approach to the material while it ensures complete coverage of the subject. There may also be progression from one unit to another. Several of the objectives in such areas as Epidemiology and Non communicable diseases represent fundamental knowledge and skills that are needed to successfully achieve the objectives of the Health Promotion and Preventive Health Services and Occupational Health sections. The overlap and progression should allow the instructor to tailor the content in each area to the location of the course work in the overall school curricula, whether in the basic or clinical sciences. For instance, fundamentals of screening and prevention may be presented in a typical class room environment, while much of Health Promotion and Clinical Preventive Services and Occupational Health would fit well into clinical internships.

- A. Environmental Sciences
- B. Epidemiology
- C. Health Policy and Management
- D. Health Promotion and Clinical Preventive Services
- E. Infectious Diseases and Immunology
- F. Non communicable Diseases
- G. Occupational Health

A. Environmental Health Sciences

Contributors; Dave Aberant, MS, Fred Colley MPH, Ph.D.

Upon completion of this unit, the successful student should be able to demonstrate command in the following areas:

I. The Public Health Importance of Air Quality

- A. Describe the public health significance of the movement of atmospheric particles including how particle movement in atmosphere and water is assessed.
- B. The significance of the food chain in concentrating air borne environmental chemicals, including
 1. Radioactive isotopes
 2. Pesticides such as DDT
 3. Chemicals such as PCBs and PBBs

II. Air Pollution

- A. Describe and differentiate ambient air and air pollution
- B. Compare and contrast sources of air pollution including:
 1. Natural air pollution
 - a. Volcanic activity
 - b. Forest Fires
 - c. Dust
 - d. Pollen granules
 - e. Mold spores
 2. Man made air pollution
 - a. Vehicular emissions
 - b. Power generating plants
 - c. Industry
- C. Describe the health significance of air quality and emission standards established by the Clean Air Act
- D. Describe the Health Significance of Air Pollutants, including:
 1. The most important air pollutants
 - a. Carbon monoxide
 - b. Sulfur oxides
 - c. Hydrocarbons
 - d. Particulate matter
 - e. Nitrogen oxides
 - f. radon
 2. The health and environmental significance of acid rain
- E. Describe the factors that produce global warming including:

1. CO₂ and other greenhouse gases
 2. Stratospheric Ozone depletion
- F. Describe the direct and indirect effects on health and quality of life attributed to the green house effect
- G. Describe how environmental factors related to global warming contribute to increasing incidence of pre-malignant and malignant skin tumors

III. Industrial Hygiene and Food Safety

- A. Identify the health and safety standards for milk and dairy products including:
1. The role of pasteurization in food and milk safety
 2. The role of the phosphatase test in assessment of milk pasteurization
- B. Describe the health and safety standards for meats and meat products including:
1. The microorganisms responsible for meat spoilage
 2. Methods for preserving meats
- C. Describe the principles and uses of pressure cooking in the preservation of food
- D. Describe other methods of preservation including:
1. Refrigeration
 2. Freeze drying
 3. Ionizing and ultraviolet radiation
- E. Compare the regulation and health significance of food additives and incidental chemicals
- F. Describe the characteristics of typical food borne disease in the US including:
1. Detection of etiological agents
 2. Most common microorganisms causing food borne disease
 3. Health consequences of food borne disease
 4. Most common food handling errors leading to disease
- G. Describe the functions of Food and Drug Administration and the US Department of Agriculture with respect to maintaining the safety of the US food supply including:
1. Types of foods and products inspected and inspected and regulated
 2. Frequency of inspection
- H. Describe the functions of the Food and Drug Administration with respect to:
1. Prescription and over the counter drugs
 2. Herbs and food supplements

IV. The Public Health Importance of Water & Wastewater treatment and Quality

- A. Describe the hydrologic cycle and its environmental significance
- B. Compare the main features of the Clean Water Act and the Safe Drinking Water act including:
 - 1. Treatment of municipal (point source) discharges
 - 2. Treatment criteria for potable water
 - 3. Acceptable contamination levels
- C. Describe the typical treatment steps necessary to produce potable water Including:
 - 1. Sedimentation
 - 2. Flocculation/coagulation
 - 3. Filtration
 - 4. Disinfection
- D. Describe the steps necessary to treat waste water including:
 - 1. Primary Treatment
 - 2. Secondary Treatment
 - 3. Tertiary Treatment
- E. Describe tests used for water quality testing including;
 - 1. Microbial tests including coliform counts and biochemical oxygen demand
 - 2. Chemical tests including chemical oxygen demand
- F. Describe diseases known to be commonly transmitted by water including:
 - 1. Bacteria
 - a. Salmonella
 - b. Escherichia coli
 - c. Vibrio cholera
 - 2. Viruses
 - a. Hepatitis A
 - b. Polio
 - 3. Parasites
 - a. Giardia
 - b. Cryptosporidium
- G. Discuss the risks and benefits associated with chlorine disinfection of water including:
 - 1. Control of microorganisms
 - 2. Adverse health effects of chlorine reaction products such as trihalomethanes
- H. Describe the operating principles of a septic tank system

B. Epidemiology

Contributors: Jerrilyn A. Cambron DC, MPH, David Katz MD, MPH, Mike Perillo DC, MPH

Upon completion of this unit, the successful student should be able to demonstrate command in the following areas:

I. Fundamental Principles

A. Define epidemiology

B. List the applications of epidemiology including:

1. Identify etiology
2. Determine extent of disease
3. Study natural history and prognosis
4. Evaluate new preventive and therapeutic measures and new models of health care delivery
5. Provide the foundation for developing public policy and regulatory decisions

C. Describe the steps in the epidemiological approach to solve a problem

1. Disease surveillance
 - a. Patterns of disease: person, place, and time
 - b. Rates of disease
2. Investigation
 - a. Orient the data by person, place and time
 - b. Determine who is at risk of having the health problem
 - c. Develop an explanatory hypotheses
 - d. Compare the hypothesis with the established facts
 - e. Plan a more systematic study
3. Analysis
 - a. Testing hypotheses
 - b. Making scientific inferences
 - c. Conduction of experimental studies
4. Evaluation
 - a. Effectiveness
 - b. Efficacy
 - c. Efficiency

D. Identify the criteria for causation

1. Strength of association
2. Presence of a dose response relationship
3. Correct temporal sequence
4. Consistency of association across studies
5. Biologic plausibility
6. Experimental evidence

E. Identify potential determinants of health

1. Involuntary risk factors:

- a. Age
 - b. Gender
 - c. Race/ethnicity
 - 2. Modifiable risk factors
 - a. Physical
 - b. Biological
 - c. Behavioral
 - d. Social
 - e. Cultural
- F. Define surveillance and understand it's purpose
- 1. Active vs. Passive
 - 2. Major sources of data
 - a. Vital certificates: birth and death
 - b. Health surveys and registries (ie: NHIS, NHANES, BRFSS)
 - c. US Census
 - 3. Notifiable diseases

II. Measures and Description of Morbidity and Mortality

- A. Distinguish between different ways to measure disease
- 1. Ratios vs. rates
 - 2. Incidence
 - 3. Prevalence
 - 4. Epidemic vs. endemic
 - 5. Natural history of disease
 - 6. Life tables
- B. Describe the uses of adjustment in epidemiological measures
- 1. Crude rates
 - 2. Specific rates
 - 3. Standardized rates
- C. List the leading causes of morbidity and mortality
- 1. In the US
 - 2. In the world
 - 3. Trends
 - 4. Comparative tables

III. Methods of Investigation - Study Designs, Bias and the Literature

- A. Differentiate between study designs and their advantages and disadvantages
- 1. Descriptive
 - a. Case report and case series
 - b. Cross sectional
 - 2. Analytic- Observational
 - a. Case control
 - b. Cohort
 - 3. Analytic- Experimental

- a. Clinical trials
 - b. Community trials
- B. Interpret the measures of association between exposure and disease
- 1. Relative risk
 - 2. Odds ratio
 - 3. Attributable risk
 - 4. Statistical significance: Confidence intervals and hypothesis testing
- C. Define and give examples of bias
- 1. Selection bias
 - a. Volunteer bias
 - b. Healthy worker effect
 - c. Referral bias
 - 2. Information bias
 - a. Systematic measurement bias
 - b. Differential and non-differential misclassification bias
- D. Describe critical appraisal of the literature
- 1. Identify and describe the study design
 - 2. Identify the exposure and outcome variables
 - 3. Determine appropriateness of measures
 - 4. Describe the results of outcomes
 - 5. Identify sources of bias

IV. Prevention and Screening

- A. Describe the natural history of disease
- 1. Stage of susceptibility
 - 2. Pre – clinical stage
 - 3. Clinical stage
 - 4. Disability stage
- B. Describe the levels of prevention
- 1. Primary
 - 2. Secondary
 - 3. Tertiary
- C. List the criteria for screening
- 1. Disease requirements
 - a. The disease is serious
 - b. Effective treatment exists
 - c. The natural history of the disease is understood
 - d. The disease occurs frequently
 - e. Other diseases or conditions may be detected
 - 2. Screening test requirements
 - a. The test is quick to perform
 - b. The test is easy to administer
 - c. The test is inexpensive

- d. The test is safe
 - e. The test is acceptable to participants
 - f. The sensitivity, specificity and other operating characteristics of the test are acceptable
 - 3. Health care system requirements
 - a. The method meets the requirements for screening in a community setting
 - b. The method meets the requirements for case finding in a medical care setting.
- D. Describe the purposes and uses of screening
- 1. Define screening, including the premises for screening
 - 2. Interpret Screening measures
 - a. True and false positives, true and false negative
 - b. Sensitivity
 - c. Specificity
 - d. Predictive Value
 - 3. Describe the cut point of a screening
 - 4. Describe screening biases
 - a. Lead time bias
 - b. Length bias
 - c. Volunteer bias

V. Clinical Epidemiology - Evidenced Based Practice

- A. Define the steps of an evidenced-based medicine practice model
- 1. Form the clinical question so that it can be answered
 - 2. Search out the best external evidence
 - 3. Critically appraise the evidence for validity and importance
 - 4. Actually apply the evidence in clinical practice
 - 5. Evaluate your performance in practicing evidenced based medicine
- B. Describe the three principle decisions that determine the rational treatment of any patient
- 1. Identify the ultimate objective of treatment, such as cure, palliation, or symptomatic relief
 - 2. Determine if treatment is needed, if so what treatment, what are the sources of evidence
 - 3. Specify the treatment target or outcome of treatment, such as; stop treatment, change treatment
- C. Define types of clinical decision making processes
- 1. Pattern Recognition
 - 2. Expert Algorithms
 - 3. Hypothetico-Deductive
 - a. Hypothesis generating
 - b. Information gathering
 - c. Information integration
 - d. Hypothesis re-evaluation

- D. List the considerations of decision analysis
 - 1. Data for clinical decision making
 - 2. The sequence in which decisions have to be made
 - 3. Personal values of the patient

- E. List the steps of a post history Bayesian approach for the individual patient
 - 1. Estimate practice prevalence, meaning the expected prevalence of the condition based on the prevalence in the population from which the patient comes
 - 2. Estimate prior probability, meaning the probability that patient has disease in question estimated prior to examination or diagnostic testing
 - 3. Determine exclusion threshold, meaning the threshold of probability to enable clinician to eliminate a diagnosis
 - 4. Determine action threshold, meaning the threshold of probability to enable clinician establish enough certainty to treat
 - 5. Perform examinations including physical, orthopedic, neurological and diagnostic testing
 - 6. Determine posterior (revised) probability, meaning the probability that patient has the disease in question after examination and/or diagnostic testing

C. Health Policy and Management

Contributors: Linda Bowers DC, Bonnie Hillsberg, M.Ed, M.H.A., DC

I. Public Health and Policy

A. Define Health Policy

1. Goals
2. Process
3. Participants

B. Describe the core functions of public health including:

1. Assessment
2. Formation of Policy
3. Assurance

A. Contrast and compare public health function with that of medical care including:

1. Population orientation
2. Focus on prevention
3. Focus on individual patient
4. Curative rather than preventive

B. Describe the Institute of Medicine's Continuum of Care model

1. Equal weights for each component of the health care delivery system
 - a. Prevention
 - b. Treatment
 - c. Maintenance
2. Significance to chiropractors

C. Describe the issues that may be responsible for the controversial nature of public health including:

1. Moral
2. Financial
3. Freedom of choice

II. Public Health Infrastructure

A. Describe how the Federal Government changed public health in the early 1960's to address populations including:

1. Compartmentalization to address entire populations
2. Creation of new and separate agencies

B. Describe the Hill Burton Hospital Survey and Construction Act of 1946 including:

1. Purposes of the Act
 - a. Federal grants to modernize hospitals,
 - b. Free or reduced charge medical services to persons unable to pay.
2. Modifications of the Act

- a. Guaranteed of free services under Title XVI of the Public Health Service Act.
 - b. Nursing homes permitted to increase income eligibility limits to three times the Federal poverty guidelines.
- C. Differentiate Federal from State powers in regards to public health
 - 1. The police power of the states
 - 2. Federal ability to tax and spend, and regulate interstate commerce
- D. Describe the formation and authority of a public health agency such as a state department of health
 - 1. Civil Law to establish an agency
 - 2. Agency function based on internal experts and opinion
- E. Describe the major functions of national and international health organizations including:
 - 1. The World Health Organization
 - 2. Department of Health and Human Services (DHHS)
 - a. Administration for Children and Families (ACF)
 - b. Administration on Aging (AOA)
 - c. Agency for Healthcare Research and Quality (AHRQ)
 - d. Agency for Toxic Substances and Disease Registry (ATSDR)
 - e. Centers for Disease Control (CDC)
 - f. Food and Drug Administration (FDA)
 - g. Health Care Financing Administration (HFCA)
 - h. Health Resources and Services Administration (HRSA)
 - i. Indian Health Service (IHS)
 - j. National Institutes of Health (NIH)
 - k. Program Support Center (PSC)
 - l. Substance Abuse and Mental Health Services Administration (SAMSA)
 - 3. The Public Health Service
- F. Voluntary Organizations
 - 1. American Cancer Society
 - 2. The American Heart Association
- G. The American Public Health Association
 - 1. Function and Importance
 - 2. The Chiropractic Health Care Section (CHC)
 - 3. The value of membership
 - 4. Incorporate the available resources into clinical care

III. Health Policy Initiatives - Healthy People 2010

- A. Describe the following about the Healthy People initiative
 - 1. When it started
 - 2. Who/what watches over it

3. Progress made to date
 4. Current areas of focus
 5. Chiropractic organizations involved in it
 6. How to get involved
- B. Describe the principles, trends evolving in the implementation, and health impact and affected population for each of the 10 leading health indicators outlined in Healthy People 2010:
1. Physical activity
 2. Overweight and obesity
 3. Tobacco use
 4. Substance abuse
 5. Responsible sexual behavior
 6. Mental health
 7. Injury and violence
 8. Environmental quality
 9. Immunization
 10. Access to health care
- C. Describe the goal, issues, trends, and disparities in the following selected focus areas from Healthy People 2010:
1. Access to quality health services
 2. Arthritis, osteoporosis, and chronic back conditions
 3. Cancer
 4. Diabetes
 5. Disability and secondary conditions
 6. Heart disease and stroke
 7. Maternal, infant and child health
 8. Nutrition and overweight
 9. Occupational safety and health
 10. Physical activity and fitness
 11. Substance abuse
 12. Tobacco use

NOTE: These areas were selected because of their apparent relevance to chiropractic and also data from pilot surveys used in the creation of this project. There are several focus areas not listed that may also be selected by the educator.

IV. Health Care Delivery Organizations

- A. Describe the significance of the Employee Retirement Income Security Act (ERISA) for the employer
1. Governs health Benefits and pension plans
 2. Established and maintained by employers and labor organizations engaged in commerce
 3. Allow s large employers to convert to self –insured health benefits
- B. Describe the Fee for Service payment system in health care prior to 1969

- C. Describe the mission and functions of the Joint Commission of Accreditation of HealthCare Organizations, including why its accreditation is sought.
1. Provides a report care for the public
 2. Offers an objective evaluation of the organizations performance
 3. Stimulates the organizations quality improvement efforts
 4. Aids in professional staff recruitment
 5. Provides a staff educational tool
 6. May be used to meet certain Medicare certification requirements
 7. Expedites third party payments
 8. Fulfills license requirements
 9. Assures the American public of quality health care
 10. Favorably influences managed care contract decisions
- D. Describe the factors that lead to the growth of Health Maintenance Organizations (HMO).
1. Change in population
 2. Oversupply of physicians
 3. Increasing cost of medicine
 4. Shift from generalist to medical specialties
- E. Describe the origin of the name “HMO”, and the first HMO
- F. Contrast and compare the method, source of payment, variations and potential for cost containment of a Fee for Service and a Capitation payment system
- G. Describe Quality Assurance.
1. Formal set of activities to assure quality of services provided
 2. Includes quality assessment and corrective actions
 3. Includes mechanisms to assure the quality of direct patient services, administrative and support services
- H. Describe the general structure of The International Classification of Diseases ICD9 system
- I. Describe each of the following types of managed care organizations including providers’ relation to the plan, location of service provision, method of payment to provider, payment options for member, service options for member
1. Point of Service Plan
 2. Preferred Provider Plan
 3. A Staff Model HMO
 4. An Indemnity Plan
 5. An Independent Practice Association
- J. Describe the utilization review of health services, procedures and facilities including the evaluation of :
1. Necessity
 2. Appropriateness
 3. Efficiency

- K. Describe the functions of a primary care gate keeper system including:
1. Access to care
 2. Covered services
- L. Contrast and compare coinsurance and co payment including:
1. Relation to policy
 2. Source of payment
 3. Amount of payment relative to services
 4. Potential for cost containment
- M. Describe a fee schedule including
1. Contains a list of accepted or established permitted services and maximum fees
 2. Originally intended to limit patient financial liability for services
 3. Currently set of guidelines for provider reimbursement
- N. Differentiate between a Member, a Network and a Subscriber
1. Member: A person eligible to receive health benefits under an insurance contract
 2. Member months: membership X the number of months enrolled in a year
 3. Network : A group of providers who contract with a medical management organization to provide care to members
 4. Subscriber: The actual service contract (HMO) or insurance policy holder

V. Hospital Privileges

- A. Describe hospital privileging
- B. Differentiate between active, provisional and courtesy privileges with respect to the following:
1. Admitting
 2. Continuity of care
 3. Level of training and experience
 4. Level of care (primary, specialty)
- C. Describe the reasons behind physician and staff privileging procedures in the hospital setting including:
1. Competency at basic and common skills
 2. Scope of practice within the hospital
 - a. Qualification
 - b. Equipment
- D. Describe the purpose of hospital By-laws including in the credentialing process including:
1. Communication
 - a. Policy
 - b. Inter staff
 - c. Administrative
 - d. Information
 2. Role of staff
 3. Professionalism

D. Health Promotion and Clinical Preventive Services

Contributors: Bart Green, DC, MsED, Linda Bowers, DC, Mike Perillo DC, MPH, David Katz MD, MPH , Fred Colley MPH, Ph.D., Jerrilyn Cambron, DC, MPH

I. Healthy People 2010

Prior to practicing health promotion and clinical preventive services, it is important to understand the fundamentals of these topic areas. Objectives A-C from the Healthy People Initiative, are intended to give the learner an overview of this topic area.

Upon completion of this unit, the successful student should be able to:

A. Compare and contrast health promotion with clinical preventive services.

NOTE: No specific points are suggested in this comparison in order to allow educators leeway in selecting their own teaching strategies for this objective.

A. Describe opportunities for chiropractors' involvement in the focus areas listed in Healthy People 2010.

B. Debate the necessity and practicality of chiropractors understanding the Healthy People initiative from an advocate's and opponent's viewpoint

II. U.S. Preventive Services Task Force

Objectives A - focus on the clinically-oriented learning of health promotion and clinical preventive services and are authored in reference to the Guide to Clinical Preventive Services, 2nd edition: Report of the US Preventive Services Task Force.

Upon completion of this unit, the successful student should be able to:

A. Define the following terms related to health promotion:

1. Health promotion
2. Health protection
3. Preventive services
4. Primary prevention
5. Secondary prevention
6. Tertiary prevention

NOTE: Primary through tertiary prevention are terms common to this unit and the epidemiology unit.

B. List the five principle findings of the Task Force.

C. Apply the Periodic Health Examination age-specific tables to a given health care situation.

D. Apply one or more appropriate patient education and counseling strategies from the 12

listed in the introduction of the Task Force, given a specific clinical situation.

- E. Apply the principles of sensitivity, specificity, positive predictive value, negative predictive value, lead time bias, and length time bias in the administration of prevention or health promotion programs.
- F. Discuss why knowing the quality of scientific ratings (I-III) and grading (A-E), used by the Task Force, is important in health care.
- G. Critically appraise prevention methods published in the literature and describe how to incorporate such a prevention method into chiropractic practice.
- H. Incorporate screening, counseling, and immunizations/prophylaxis recommendations from the USPSTF into clinical chiropractic practice.

NOTE: This objective can best be measured by direct observation of student practice behaviors in the clinical environment using performance reviews, such as rating scales.

III. General Clinical Objectives

Objectives A - are clinically-oriented learning objectives not related to any specific publication, although the following texts are recommended by the authors of these objectives:

- Clinician's Handbook of Preventive Services. 2nd ed. Agency for Healthcare Research and Quality; 1998.
- Woolf SH, Jonas S, Lawrence RS. Health Promotion and Disease Prevention in Clinical Practice. Baltimore: Williams and Wilkins, 1996.

Upon completion of this unit, the successful student should be able to:

- A. Provide a written example of how a chiropractor in a private practice setting could participate in health promotion by using behavior modification counseling in the following areas:
 1. Physical activity and fitness
 2. Nutrition
 3. Tobacco use
 4. Alcohol and drug use
 5. Family planning
- B. Describe what a chiropractor should do if he/she suspects that a child or vulnerable adult is being subjected to violent behavior in the home.
- C. Present an educational program about one aspect of health promotion, health protection, or clinical preventive services as he/she would like this topic to relate to his/her future chiropractic practice. This program should be delivered to a school or group in the community.

- D. Create a plan for how to regularly screen patients for extremely common conditions (e.g., high blood pressure, obesity, osteoporosis, osteoarthritis, etc.) in a chiropractic practice without disrupting normal office flow.
- E. Draw an office flow diagram illustrating how his/her future office may be set up to provide preventive services for one of the following areas:
 - 1. Maternal and infant health
 - 2. Cancer
 - 3. Diabetes
 - 4. Osteoarthritis
 - 5. Other
- E. List 5 sexually transmitted diseases that commonly have a musculoskeletal component and may be seen in a chiropractic office.
- F. Create a responsible and ethical promotional item (advertisement, flyer, poster, etc.) for a practice that offers health promotion or disease prevention as well as symptomatic care.
- G. List available reimbursement mechanisms for doctors implementing health promotion and preventive services in practice.

E. Infectious Disease and Immunology

Contributors: Fred Colley MPH, Ph.D., Dave Aberant, MS

Upon completion of this unit the student should be able to demonstrate command of the following areas.

I. Principles of Transmission of Infectious Disease

A. Describe the importance of infectious disease in public health

B. Identify and describe the factors that contribute to the spread of infectious disease, including:

1. Environmental factors
2. Nosocomial infection
3. Zoonoses
4. Significance of arthropod vectors \

C. Describe the public health importance, epidemiology and pathogenesis of important food- borne illness, including the following microorganisms and diseases:

1. Escherichia coli 0157:H7 and hemolytic-uremic syndrome
2. The role of enterotoxin producing strains of Staphylococcus aureus in food poisoning
3. Differentiation of Salmonella species that cause typhoid fever and other forms of gastroenteritis
4. Shigella infection as a cause of dysentery and bloody diarrhea
5. Diseases associated with enteric virus infection
6. Gastrointestinal parasites, including protozoa and helminthes (round and flat worms)

D. Describe the public health importance, epidemiology and pathogenesis and prevention of important sexually transmitted diseases (STDs), including:

1. Human immunodeficiency virus (HIV)
2. Gonorrhea
3. Chlamydia
4. Syphilis
5. Genital Herpes
6. Genital Warts
7. Other

E. Describe the public health importance, epidemiology and pathogenesis of important notifiable infectious diseases, including

1. Hepatitis A, B and C
2. Measles
3. Rubella
4. Polio
5. Anthrax

6. Pertussis (whooping cough)
7. Tuberculosis

F. Describe the principles and importance of procedures for controlling infectious diseases in public health, including:

1. Sterilization procedures
2. Disinfection procedures
3. Antiseptic procedures
4. Microbiostasis
5. Significance of the phenol coefficient in evaluation of disinfectants

Note: The principles of disinfection described in this section are also applicable to infection control in hospitals. See subject specific learning objective C, Health Policy and Management, section V, Hospital Privileges.

II. Principles of Immunology and Immunization

- A. Describe the origins and history of the practice of immunization.
- B. Describe the organization of the immune system, including:
 - 1. Non-specific immunity
 - 2. Innate immunity (embryological development of immunity)
 - 3. Cell-Mediated immunity
 - 4. Humoral immunity
 - 5. Role of complement
 - 6. Recognition of antigen
 - 7. Memory response
 - 8. Immune injury
- C. Differentiate immunizing agents, including:
 - 1. Heat killed cells
 - 2. Inactivated virus
 - 3. Attenuated vaccines
 - 4. Subunit vaccine
 - 5. Passive immunization
- D. Describe the role of epidemiology in evaluation of immunization, including:
 - 1. The world-wide effect of immunization on rates infectious disease in the 20th Century
 - 2. The effect of immunization on rates of childhood diseases
- E. Describe the significance of epidemiological data in evaluation of the efficacy of vaccine preventable diseases, including:
 - 1. Smallpox
 - 2. Measles, Mumps, Rubella (MMR)
 - 3. Polio
 - 4. Diphtheria, Tetanus, Pertussis (DTP)
 - 5. Hemophilus influenzae type b (Hib)
 - 6. Hepatitis A and B
 - 7. Influenza
 - 8. Varicella
- F. Identify the role of epidemiology in evaluation of vaccine safety, including Risk-benefit assessment.
- G. Demonstrate awareness and understanding of the validity of common arguments for and against vaccination and how to respond in a responsible and professional manner
- H. Demonstrate the ability to discriminate between reliable and unreliable sources of information regarding immunity and vaccination.

F. Non Communicable Diseases

Contributors: Mike Perillo DC, MPH, Fred Colley MPH, Ph.D.

On completion of this unit, the successful student should be able to describe the characteristics and public health significance of each of the non-communicable diseases and conditions listed below.

I. Fundamentals

A. Describe how the following procedures are used for the prevention of non communicable diseases.

1. Early detection
2. Early treatment
3. Home and work ergonomics
4. Protective measures

II. Describe risk reduction procedures for the following non- communicable diseases

A. Cancers, including:

1. Breast
2. Colon and rectum
3. Lung and bronchus
4. Uterine
5. Prostate

B. Cardiovascular Disease, including:

1. Coronary Heart Disease (CHD)
2. Hypertension

C. Diabetes, including:

1. Insulin dependent diabetes mellitus (IDDM)
2. Non-insulin dependent diabetes mellitus (NIDDM)

D. Respiratory Diseases, including:

1. Asthma and other atopic disorders
2. Inhalation of toxic chemicals

E. Musculoskeletal Diseases, including:

1. Arthritis
2. Neck Pain
3. Low back pain
4. Fibromyalgia
5. Osteoporosis

F. Neurological Diseases, including:

1. Chronic headache

2. Multiple Sclerosis
3. Stroke

G. Unintentional Injuries and accidents, including:

1. Falls
2. Infections
3. Burns
4. Chemical exposures
5. Motor vehicle accidents

G. Occupational Health

Contributors: Mike Perillo, DC, MPH, Fred Colley MPH, Ph.D.

This section concentrates on occupational health issues of public health and general practice relevance. The goal of the section is to enable the student to address common work site and clinical practice issues in occupational health.

After completion of this section, the successful student should be able to demonstrate command of the following areas.

I. The Organization of Occupational Health Resources

- A. Describe how the Occupational Safety and Health Administration (OSHA) sets and enforces health standards for workplace conditions
- B. Describe the role of National Institute for Occupational Safety and Health (NIOSH) in supporting education and research in public health
- C. Describe the roles of State and Local Health Departments in surveillance and monitoring of occupational health

II. Occupational Health History

- A. Describe how to take a occupational health history, including:
 - 1. Work and exposure history
 - 2. Employment history
 - 3. Frequent work postures
 - 4. Use of protective equipment
 - 5. General health History
- B. Describe how the occupational health history is used in patient assessment, including
 - 1. Impairment
 - 2. Disability
 - 3. Work-relatedness
- C. Describe follow-through after diagnosis, including:
 - 1. Recommendations for rehabilitation
 - 2. Recommendations for changes in the workplace to prevent further illness

III. The Role of Ergonomics in Occupational Health

- A. Describe the field of Ergonomics, including:
 - 1. The scientific relationship between man and the working environment
 - 2. The use of physiological and physical engineering principles to make motion, function and work safe and efficient
- B. Describe how ergonomics can be used in patient rehabilitation.

IV. Toxicology and Occupational Health

- A. Define the following terms and explain their importance in occupational exposure to toxic chemicals.
 - 1. Absorption
 - 2. Distribution
 - 3. Elimination

- B. List guidelines for advising working women who are pregnant or planning pregnancy on how to avoid toxic substances in the workplace.

- C. Describe the significance of occupational exposure to organic solvents

- D. Describe the significance of occupational exposure to mineral oils, tar, coolants and cutting fluids

- E. Describe the significance of occupational exposure to organic compounds in rubbers, plastics and synthetic textiles.

- F. Describe the significance of occupational exposure to mineral dusts, including:
 - 1. Asbestos
 - 2. Coal
 - 3. Fibrous glass
 - 4. Silica
 - 5. Talc

- G. Describe the significance of occupational exposure to inorganic gases, including:
 - 1. Chemical asphyxiants such as carbon monoxide, cyanide and hydrogen sulfide
 - 2. Irritant gases such as ammonia, chlorine, and nitrogen oxides

- H. Describe the significance of occupational exposure to metals including:
 - 1. Arsenic
 - 2. Lead
 - 3. Mercury
 - 4. Other metals

V. Occupational Diseases

- A. Define and describe occupational disorders of the respiratory tract, including:
 - 1. Byssinosis due to exposure to cotton dust
 - 2. Metal fume fever
 - 3. Pneumonitis associated with irritant gases
 - 4. Pneumoconiosis in coal workers
 - 5. Asbestosis
 - 6. Silicosis
 - 7. Occupational asthma

- B. Define and describe causes of occupational musculoskeletal disease, including:
1. Raynaud's phenomenon
 2. Carpal tunnel syndrome
 3. Degenerative arthritis
 4. Low back pain
 5. Define and describe occupational skin diseases, including:
 6. Contact dermatitis
 7. Occupational acne
 8. Disorders of pigmentation
 9. Neoplastic disorders

VI. Hazards in the Workplace

- A. Describe the significance of common physical and biological hazards in the workplace, including:
1. Noise-induced hearing loss
 2. Heat or cold stress
 3. Trauma and repetitive movement
 4. Vibration
 5. Psychosocial stressors
 6. Ionizing radiation
 7. Slips and falls
 8. Awkward and extreme positions
 9. Infectious agents such as viruses, bacteria and molds
 10. Wood and cotton dust

Assessment

VIII. Assessment

Cheryl Hawk DC, Ph.D., Jack Barnette Ph.D.

Assessment of baseline knowledge, attitudes and behavior related to public health of a sample of chiropractic college faculty, chiropractic students and chiropractic practitioners was an objective of this project. The following is a summary of the instrument development, pilot-test, administration and major findings of the baseline surveys. The results of assessment have where applicable served as a guide to content development, and will serve as a point of comparison in the future.

Instrument Development

The assessment team employed a modified Delphi approach. This was used rather than focus groups in order to include individuals representing all stakeholders and ensure that material representing standard knowledge of public health was included in the decision-making process through provision of seed documents.

Thirty-two individuals were invited to participate in the initial round, representing the following stakeholders:

1. Members of the Public Health Curriculum Task Force (individuals involved in the 1999-2000 development of curriculum objectives and resources)
2. Instructors of the public health course at all 17 U.S. chiropractic colleges
3. Project personnel
4. Officers of the Chiropractic Health Care Section of the American Public Health Association
5. Selected chiropractors involved actively in public health.

Through subsequent rounds, the number of participants was refined to 18 individuals representing the stakeholder groups above. The purpose of the instrument was modified somewhat to focus on attitudes and behavior of respondents toward the role of chiropractic in population health, prevention and health promotion, as the areas of public health most relevant to chiropractic practice. The participants had concluded that it was not feasible to survey the target groups on knowledge, except in a very broad manner, but that their reported attitudes and behavior would provide valuable information on knowledge areas to be included in the course. An additional seed document, *Core Competencies in Disease Prevention and Health Promotion for Undergraduate Medical Education* by the Association of Teachers of Preventive Medicine Health Resources and Services Administration Task Force, October 1997, was added to assist in developing questions.

Pilot-Testing of the Instrument

Students in the public health class at three chiropractic colleges participated in the pilot test: 71 students at National University of Health Sciences (NUHS), 7 students at Parker College and 66 Palmer College. Faculty at NUHS (2), Parker (2), and Palmer (3) pilot-tested the instrument and 10 practitioners in Iowa and Illinois were also included.

Revisions were made as per the comments and results of the pilot-test, and re-circulated to the work group involved in developing the instrument. Three versions of the instrument, one

for faculty, one for students, and one for practitioners, were eventually developed to facilitate administration.

Pilot test results were disseminated to students participating in the pilot test as part of their public health course.

Administration of Instrument

The assessment instrument was administered to students and faculty at 10 chiropractic colleges of the total 17, rather than to the 5-8 originally planned, due to enthusiasm on the part of faculty at the colleges who wanted to be involved.

A total of 582 students, 45 faculty and 107 practitioners were surveyed. Preliminary results were presented at the Association of Chiropractic Colleges conference in March 2001, as per the project timeline. The complete results of the survey are shown in Tables 1-3.

Survey Results

Table 1. Characteristics of survey respondents.

	Faculty (n=45)	Students (n=582)	Practitioners (n=107)
Female	38%	34%	17%
Age	64% 35-54	56% 25-34	68% 35-54
Race—white	96%	77%	92%
Degrees	51% DC; 27% PhD; 9% MPH	68% BS/BA	51% BS/BA
Other	22%APHA members	63% tri. 1-4	6% APHA; 20% ICA

Table 2. Percentage of respondents who agree with survey statements.

Chiropractors should obtain information on these to identify at-risk patients:	% Agree			
	Faculty n=45	Students n=582	Practitioners n=107 should	do*
Physical activity	93	97	97	96
Stress	93	94	97	96
Overweight/obesity	93	94	93	93
Occ. hazards (inj./ergonomic stress)	91	91	94	91
Dietary habits	91	95	93	91
Depression/anxiety	82	76	90	89
Medication use	87	83	88	89
Tobacco use	87	81	87	85
Alcohol abuse/dependence	87	74	77	67
Substance abuse	76	77	73	64
Exposure to environmental toxins	73	77	83	63
Seat belt use	64	52	61	62
Immunization status	69	74	55	63
Helmet use (motorcycles/bicycles)	53	54	64	49
Domestic violence	76	53	65	44
Sexual behavior (AIDS/STD risk)	67	64	49	35
Driving under the influence	44	40	37	30

DCs should recommend/provide referral for all patients related to:	% Agree			
	Faculty n=45	Students n=582	Practitioners n=107 should	do*
Blood sugar	93	88	75	71
CBC/screening panels	89	81	71	68
Blood cholesterol	96	88	66	65
Prostate exam/PSA (men 50+)	91	78	71	59
Breast exam (women)	87	82	73	56
Colon cancer screening (age 50+)	89	81	65	49
Testicular exam (men)	91	78	65	46
Pap test (women)	89	74	62	43
HIV	91	75	64	31
Blood lead	80	80	65	30

DCs should provide information to all patients related to:	Agree (%)			
	Faculty n= 45	Students n= 582	Practitioners n= 107 should	do*
Exercise for fitness/disease prevention	93	96	97	99
Musculoskeletal risk reduction	96	97	98	97
Dietary mod. to enhance health	91	95	94	96
Stress reduction techniques	89	92	96	93
Injury prevention	82	93	94	90
Tobacco risks & cessation	89	78	79	81
Breastfeeding and dietary in pregnancy	80	82	79	78
Immunizations – pro AND con	91	80	69	71
Skin cancer prevention	78	75	62	58
Substance abuse (including alc)	84	70	68	53
STD prevention	69	66	47	34
Immunizations –con only	9	18	24	32
Immunizations - pro only	9	17	8	15

Chiropractors should perform the following for all patients:	Agree (%)			
	Faculty n= 45	Students n= 582	Practitioners n= 107 should	do*
Blood pressure testing	100	87	86	95
Scoliosis screening (< age 18)	89	92	92	94
Subluxation screening	80	96	91	94
Physical activity assessment	82	78	88	88
Physical activity counseling	84	77	87	88
Dietary counseling	73	65	74	79
Diet assessment	69	67	76	78
Body Mass Index (BMI) calculation	62	53	45	56

DCs should be able to:	Faculty n= 45	Students n= 582	Practitioners n= 107
Keep current on the published scientific literature	93	94	91
Fulfill responsibilities to public health agencies	96	89	89
Refer pts to public health agency for prevention, health promotion, other health needs	93	92	84
Interpret conclusions of articles in scientific journals	76	79	79
Use accepted standards of evidence to make clinical decisions	89	87	77
Apply knowledge of how pt char. affect dr-pt interactions	91	78	70
Recognize role of govt in public policy for prev/health promotion (<i>HP 2010</i>).	87	80	60

* with any patients

Table 3. Health habits of survey respondents.

Health habits	Always (%)			Never (%)		
	Faculty	Students	DCs	Faculty	Students	DCs
Exercise 20 min 3/week?	29	40	47	1	5	3
Wear seat belt	87	79	79	0	2	1
Get appropriate screening exams	44	30	27	0	6	8
Do not smoke	Faculty 91%	Students 94%	practitioners 96%			

The Public Health Workshop

IX. The Public Health Workshop

The public health workshop was conducted in conjunction with the Association of Chiropractic Colleges (ACC) annual meeting in San Diego. The workshop was a first time event. It afforded us the opportunity to expose college administration and field attendees to a number of core public health concepts and functions as well for the colleges to report on their respective public health activities. As many of the project members were workshop participants, we also held a project working/planning meeting.

To advertise the public health workshop, public health as a topic was incorporated in the call for abstracts for contributed papers at the conference. This resulted in two sessions (eight presentations) of contributed papers on public health by chiropractic college faculty, in addition to the scheduled invited sessions. The workshop agenda was also publicized on the ACC website and special notices were sent to public health instructors and college presidents and chief academic officers. Further, in conjunction with a concurrent APHA grant, materials about the project and public health were distributed to all attendees, estimate at 230. 40-50 attended the workshop presentations, which generated largely positive reactions:

- Attendance surpassed everyone's expectations
- This was the largest and most successful presentation related to public health that has ever been made within the profession
- The topics covered were relevant to the audience, who were often surprised at how relevant public health actually is to them as chiropractors
- Including contributed papers and the luncheon speech on public health topics greatly enhanced the workshop's impact

The workshop agenda is presented in Appendix C.

Appendices

X. Appendices

Appendix A: CHC Task Force Template Syllabus Materials

1. Suggested Specific course objectives based on the CHC template syllabus:

- Define public health and describe its relevance to chiropractic
- Identify the fundamentals of epidemiology including definitions, uses, measurements, rates, statistics, and study methods
- Compare major trends in health care in the U.S. and apply this knowledge to clinical care.
- Evaluate communicable diseases important to the practicing chiropractor, methods of control and notifiable diseases.
- Appraise proven prevention methods and how to incorporate prevention into chiropractic practice.
- Rank and incorporate screening, counseling, and immunization/prophylaxis recommendations into clinical chiropractic practice.
- Identify governmental agencies important in public health and the relationship between chiropractors and these agencies.
- Evaluate environmental public health issues relevant to chiropractic clinical practice.
- Explain major health services delivery, health planning and health policy issues relevant to chiropractic.

2. Initial subject area work descriptions based on the CHC template syllabus

A. Micro/infectious diseases, vaccine preventable diseases

- Control of communicable disease
- Epidemiology of communicable disease
- Current status of communicable disease – US and international
- Immunization issues
 - Overview of immunology/theory of immunization
 - Types of immunity- active, passive, herd, natural, acquired
 - Immunization – benefits and risks – US and international
 - VPD- discussion and include current schedules
 - Notifiable diseases (including HIV/AIDS, STDs)
- Suggest topics for expansion
 - Anti inoculationist/anti vaccinationist theories,
 - contemporary views of chiropractors
 - Current policy statement re immunization,
 - Current literature on efficacy/safety

B. Preventive health services

- Principles of non-communicable and chronic disabling disease prevention and health promotion
- Principles of Prevention

- Levels of prevention – primary, secondary, tertiary
- Types of Prevention (active, passive)
- Principles of health promotion and wellness
 - US Preventive services Task Force: Screening, Counseling, Immunization and chemoprophylaxis
 - Healthy People 2000, 2010 recommendations
 - Health promotion, Health protection, Preventive services
- Specific prevention topics for wellness and counseling
- Methods for locating community resources related to each area
 - Tobacco
 - Alcohol and other drugs
 - Violent and abusive behavior
 - Mental health and mental disorders
 - Unintentional injuries – include epidemiology by age, gender (like the periodic health exam)
 - Occupational safety and health
 - Physical activity – CDC 1996 report
 - Family Planning
 - Oral Health
 - Stress related and stress reduction

C. Cultural competence with populations with special needs

- Communication of recommendations with culturally diverse populations
- Maternal and infant care (nutrition and injury prevention)
- Older adults (including nutrition and injury prevention)
- People with low incomes
- People in minority groups
- People with disabilities

D. Occupational health:

- Introduction to occupational illness
- Epidemiology of selected occupational diseases
- Strategies for prevention – what is a public health approach to preventing occupational disease and injuries
- Ergonomics and work related musculoskeletal disorders
- Surveillance, monitoring, screening in occupational health
- Special populations
- Occupational health standards–policy and agencies concerned with occupational health – NIOSH, OSHA

E. Epidemiology

- Principles and application of epidemiology
- Determinants of health
- Epidemiologic measures: risk, incidence, prevalence, demographic measures
- Surveillance
 - Source of surveillance information – NHIS, NHANES, BRFSS etc
- Patterns of occurrence – descriptive epidemiology - person, place, time

- US health statistics (health status/leading causes of morbidity and mortality by age, gender, ethnicity etc)
- Trends in morbidity and mortality
- Causal relationship (criteria for causation)
- Relationship of epidemiology to disease prevention/health promotion
- Suggest study types and related measures
 - Prospective, Retrospective, Cross Sectional
 - OR, RR, attributable risk, confidence intervals
 - Sources of bias,
- Clinical decision making – probability, qualities of a test applied to the practice setting, use of epidemiological information in the practice setting.
- Suggest input from practicing chiropractor with teaching experience, emphasize practice relevance.

F. Environmental sciences

- Environmental factors in public health
 - Water quality, including waste water treatment
 - Air Quality
 - Food safety including milk, food borne illness, pesticides
 - Ionizing radiation including sun exposure

G. Health policy and management

- Introduction/overview/background
 - Definition of public health/relevance to the chiropractic profession/definitions of health promotion and prevention in public health
 - Specific definitions of health and public health (WHO, APHA)
 - Relationship and relevance of health promotion and prevention to chiropractic profession
- History of public health – national and international
 - Brief history of public health
 - Formation of APHA and evolution of the CHC
- Public health infrastructure/organization and activities of public health agencies
 - Government public health programs – international, Federal, State, Local health
 - departments
- Characteristics of the health care delivery system – cost, access, quality
 - Quality of care – structure, process, outcome, satisfaction
 - Financing of health care- what the money buys, who pays
 - Managed care overview
 - Health policy and planning – present and future issues
- Consider roles of federal, state and local agencies in shaping public health, provision of public health services, awareness of such services

Appendix B: A Primer for Writing Course Objectives

Compiled by: Elaine Anderson, MPH, Bart Green, DC, MsEd, Claire Johnson, DC, M Ed

Context: “Writing Clear and Measurable Learning Objectives” – describes the context of the larger view of program evaluation and how course objectives relate to an entire program. For example, in our public health project the entire project could be viewed as a ‘program’ and the topic area of prevention could be considered a ‘course’. Also begins to describe how to write course objectives.

Levels of Knowledge: Every teacher endeavors to impart knowledge to learners. However, there are different levels of cognition, different levels to teach toward, and we present these as per Bloom’s Taxonomy of the Cognitive Domain.

Nuts and Bolts: Step by step instructions for how to write good course objectives.

Writing Clear and Measurable Learning Objectives*

The articulation of learning objectives, sometimes referred to as instructional objectives or competencies, is central to the educational process. Instructional objectives are statements that describe learning that a student should demonstrate at the end of instruction, whether it is an entire degree program or a single course. Stating intended learning outcomes provides direction for instruction, sets the necessary foundation for assessment of learning, conveys instructional intent to others, and serves as an implicit contract between teacher and student. Because learning objectives establish expectations for students, they serve an accountability function. Beyond their usefulness to students, learning objectives should drive curriculum planning, the development of new courses, and the revision of existing ones. Finally, objectives should provide a framework for evaluating the overall success of an educational program.

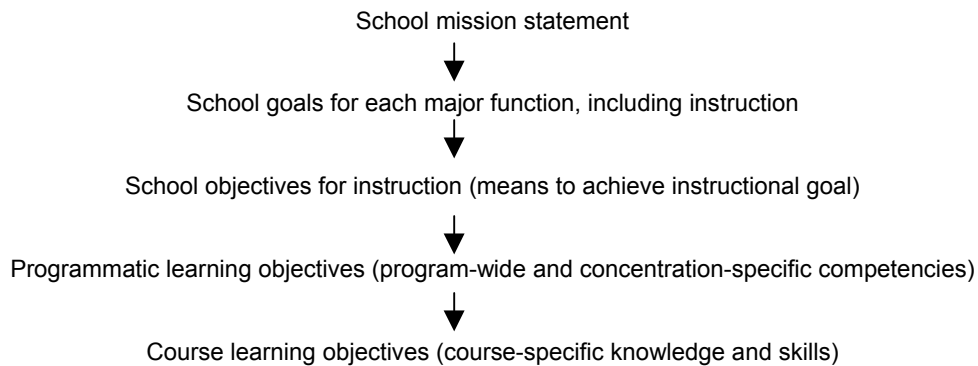
Learning objectives also are central to the accreditation process used by the Council on Education for Public Health (CEPH). Accreditation has moved away from judgments solely about resources and inputs and toward evaluation of outcomes. In making this transition, learning objectives have assumed a pivotal position in the evaluation of schools of public health and graduate public health programs. The success of a school or program in assuring that students attain the learning objectives provides evidence of the overall effectiveness of the school or program.

Stating specific and measurable learning objectives is a challenging task, but one that is required for accreditation review by CEPH. This technical assistance paper is intended to a) clarify and describe the types of objectives that CEPH requires; b) provide guidance about

* This is a technical assistance document, intended to be helpful to institutions seeking accreditation and to site visit teams in evaluating schools and programs. It is not a policy paper and does not supplant formally adopted criteria that guide the decision-making process of the Council on Education for Public Health. Interested parties should refer to *Accreditation Criteria for Graduate Schools of Public Health, October 1999*, *Accreditation Criteria for Community Health/Preventive Medicine Graduate Programs, October 1999*, or *Accreditation Criteria for Community Health Education Graduate Programs, October 1999*, for the accreditation criteria.

writing learning specific and measurable objectives; c) provide a framework by which schools and programs can assess the comprehensiveness of their learning objectives; and d) offer commentary about important considerations when developing and using learning objectives. Although this paper refers to schools, the advice herein is equally applicable to programs.

Figure 1
Hierarchy and Interrelationships of Objective
Statements



A Framework for Developing Learning Objectives

Learning objectives may be framed in terms of types of learning outcomes, reflecting progressively higher-level functioning. There are many taxonomies for describing educational outcomes,^{1 2 3 4} any one of which may be useful to schools in the development of learning objectives. As illustrated in Figure 6, one useful framework⁵ for assessing graduate-level professional functions uses five domains: knowledge, understanding, higher-level thinking skills, affective outcomes and performance outcomes. They provide a useful framework for thinking about learning outcomes so that a balanced set of objectives can be developed. By viewing objectives against this conceptual framework, a school can assure that important objectives are not overlooked. For example, a set of learning objectives that relies primarily on cognitive terms such as “list,” “define,” “identify,” and “describe” reflects a fairly elementary level of attainment. A public health professional needs to be proficient in critical thinking and problem-solving and this level of functioning should be reflected in the learning objectives. Terms more likely to capture higher-level functioning include, for example, “analyze,” “evaluate,” and “design.”

¹ Bloom, B.S. (Ed.). Englehart, M.D., Furst, E.J., Hill, W.H. & Krathwohl, D.R. (1956). *Taxonomy of Educational Objectives: Handbook I, Cognitive Domain*. New York: David McKay.

² Gagne, R.M. (1985). *The Conditions of Learning and Theory of Instruction* (4th ed.). New York: Holt, Rinehart, & Winston.

³ Krathwohl, D.R., Bloom, B.S., & Masia, B.B. (1964). *Taxonomy of Educational Objectives: Handbook II, Affective Domain*. New York: David McKay.

⁴ Quellmalz, E.S. (1985). Developing Reasoning Skills. In J.R. Baron & R.J. Sternberg (Eds.), *Teaching Thinking Skills: Theory and Practice* (86-105). New York: Freeman.

⁵ Gronlund, N.E. (1995). *How to Write and Use Instructional Objectives*. Englewood Cliffs, New Jersey: Merrill.

Figure 2

Framework for Assessing Professional Functions

Knowledge requires students to remember material in a similar form to that of the original and is demonstrated by recall or recognition.

Understanding is concerned with comprehension and application (i.e., grasping the meaning of information and using it in some new way).

Higher-level thinking, often called critical thinking, emphasizes analysis and evaluation.

Affective outcomes are concerned with attitudes, preferences and values that are internalized as part of the individual's pattern of behavior.

Performance outcomes are concerned with the learner's ability to execute a complex task.

Based on Gronlund Domains

Learning Objectives Defined

1. School Objectives

CEPH asks a school to present three types of objectives, all interrelated and deriving from the mission and goals of the school. The hierarchy and relationships among mission, goals and objectives are depicted in Figure 1 on the previous page. The first major type of objective is the school's statement of how it intends to achieve its goals. The school must state goals and objectives for at least three major functions, including instruction, research and service. These objectives capture the means by which a school will implement its stated mission, as specified in Criterion I of CEPH's accreditation criteria. Schoolwide instructional objectives are defined at the broadest level and should describe in measurable terms the way in which the school intends to provide instruction. The goal in Figure 3 describes the general intent of the school to produce graduates who are able to use public health core knowledge. The related objective clearly states one way in which the school intends to achieve this goal. This objective is measurable, in that it specifies the degree to which the action is demonstrated. The school will be able to measure in any given cohort of students whether *all* (100 percent) students took *at least one* course in *each of the five* defined areas. Measurable objectives specify the minimum acceptable performance in terms of quality, quantity or time. These objectives are used by the school to evaluate progress in meeting its basic educational mission and may be

Figure 3

School goal (related to instruction):

To prepare public health professionals who are competent in the public health core content and methodological approaches to problem-solving.

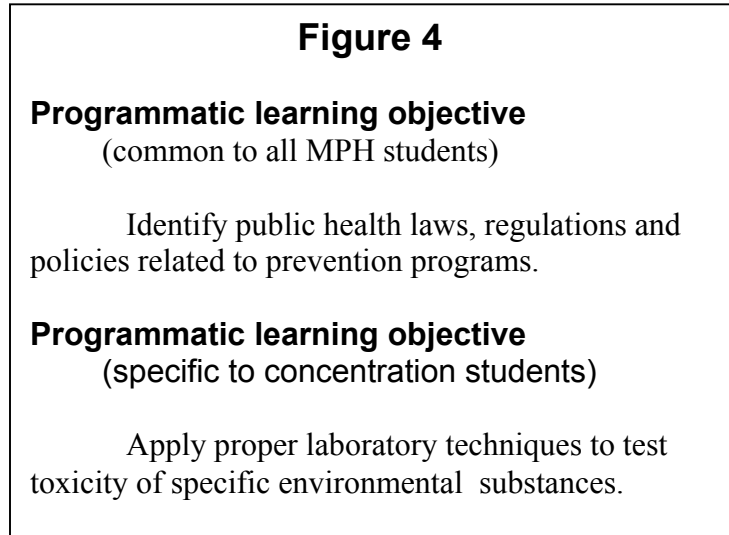
School objective (related to instructional goal):

To require all students to successfully complete at least one course in each of the five basic areas of public health knowledge.

expanded as appropriate to encompass the complex nature or special focus of each institution.

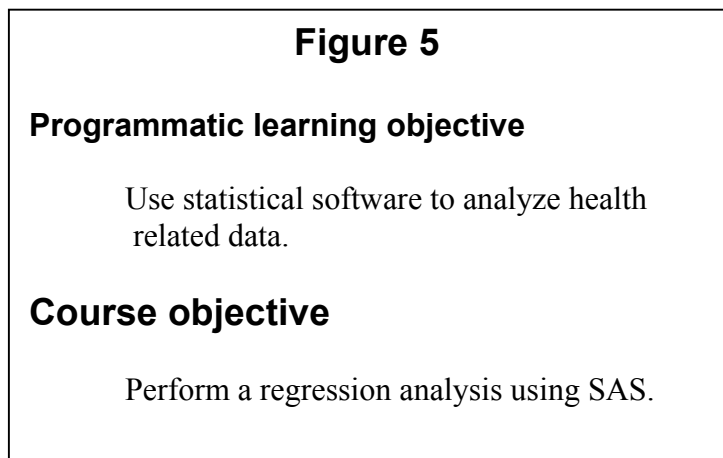
2. Programmatic Objectives

The second level of objectives, and the primary focus of this paper, is the programmatic learning objective. Criterion V.C. requires that schools present clear learning objectives for each degree program and each area of specialization. This includes all professional degree programs (e.g., MPH, MHA, DrPH), academic degree programs (e.g., MS, PhD, ScD) and dual degree programs (e.g., MD/MPH, MBA/MHA). This also includes tracks, concentrations or specializations within the degree programs. Thus, there will be learning objectives that are common across the degree program (e.g., MPH) and a complementary set that is specific to the track, concentration or specialization, as depicted in Figure 4. For example, if a school offers the MPH with seven distinct tracks, each of these would have a set of expectations common for all MPH students and its own set of track-specific learning objectives. Before a degree is awarded, students should demonstrate the attainment of overall school MPH learning objectives, as well as the objectives specified for the student's particular area of concentration. Learning objectives at this level should describe what every graduate who completes that track of study should know and be able to do. In other terminology, these are the desired outcomes, the professional competencies.



3. Course Objectives

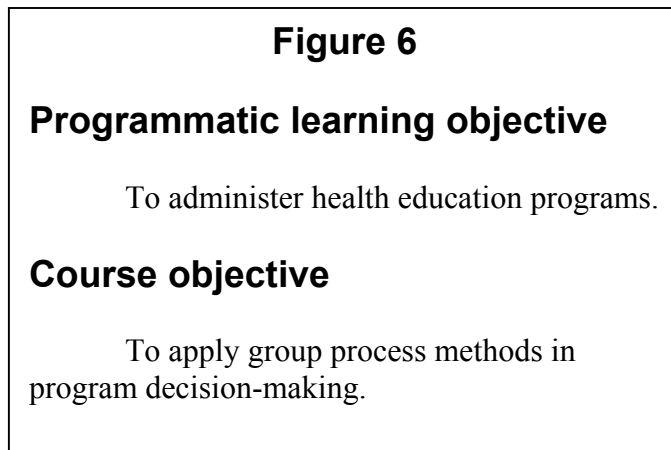
The third and most specific type of learning objective is the course objective, depicted in Figure 5. These objectives, generally found on course syllabi, describe the knowledge and skills that a student is expected to demonstrate upon completion of the course. Ideally, each of these objectives relates, in some discernable way, to the learning objectives for the overall program of study. A combination of course-specific objectives is usually necessary to achieve the broader programmatic objective, but the link between the two should be evident.



Constructing Specific and Measurable Learning Objectives

A major difference between a school objective for instruction and a programmatic learning objective is that the school objective specifies what the *school* intends to do to implement its instructional goals. Programmatic learning objectives, on the other hand, are competency-based and clearly define what the *student* will do to demonstrate learning. The latter should always be stated in terms of student outcomes. For example, an objective “to increase students’ understanding of risk assessment” describes what the school intends to do, not what the student must do. A more appropriate way to state this objective in terms of the expected outcome would be to require the student to “develop a basic risk assessment for an environmental health hazard.”

All learning objectives, regardless of the level for which they are intended, should be specific, measurable and written in behavioral terms. Each objective should specify an observable learning outcome. All learning objectives have two parts -- an action verb and a content area. In Figure 6, the action verb in this programmatic learning objective for a health educator is “to administer” and the content area is “health education programs.” Obviously, many incremental actions are required to “administer” a program, and it is not



necessary to specifically name each one when stating overall programmatic objectives. Conversely, course objectives should be much more specific and should clarify and provide examples of the behavioral responses students are expected to make when they have achieved the objective. In selecting action verbs, avoid terms like “appreciates,” “realizes,” or “understands” since these terms refer to an internal state that cannot be observed by an outside evaluator.

Instead, describe what the student will *do* when he or she understands or grasps a concept. For example, the learner may “describe,” “explain,” or “defend” a concept, all of which are observable by another person.

While school instructional objectives lend themselves to specific measurement (i.e., how much, of what, by when), programmatic learning objectives are measurable to the extent that the expected performance may be observed by another person (e.g., a faculty member). The observer makes two judgments. First, did or did not the student perform the task. For example, an objective “to construct a financial feasibility study for a proposed long-term care unit in a community hospital,” can be measured by determining whether or not a financial feasibility study was produced by the student, as evidenced by the written product. The second part of the measurement relies on the experience and expertise of the observer to make a qualitative judgment: does the feasibility study address all required components adequately and come to an appropriate conclusion.

Important Considerations

Beyond the mechanics of writing effective learning objectives⁶, there are several other important considerations relating to the development and use of objectives. CEPH site visit teams, when evaluating instructional objectives at all levels, tend to seek qualitative evidence about the manner in which schools and programs satisfy these considerations:

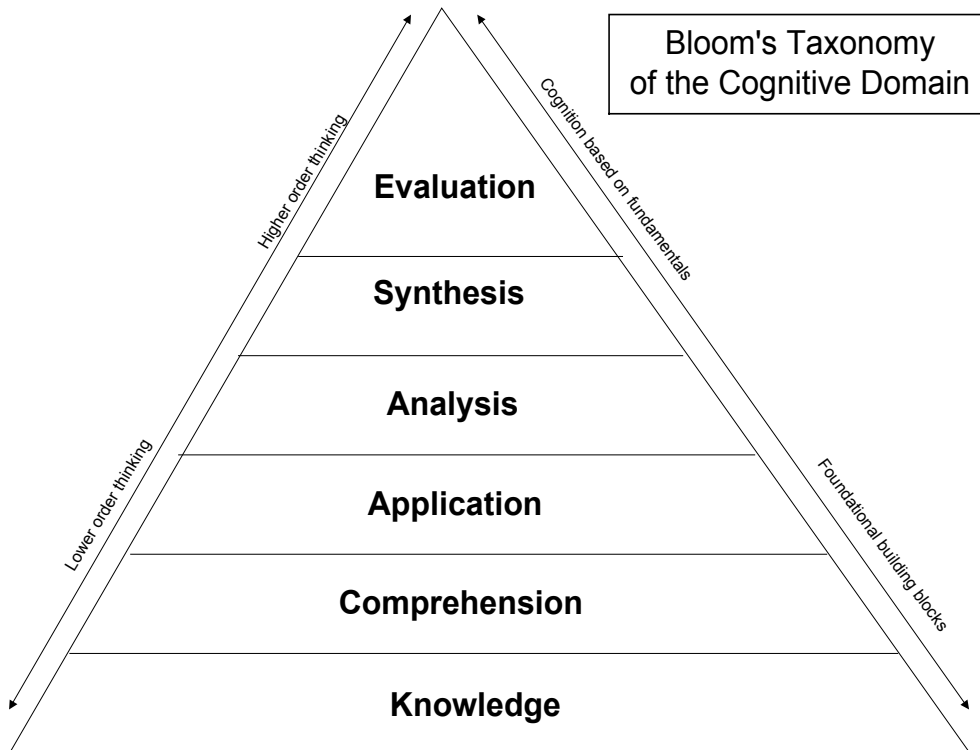
1. One key element, also specified in Criterion V.C., is that each set of objectives should be made available to school or program constituents, especially students. The site visit team will expect to see school, programmatic, and course learning objectives in the self-study document and in an on-site resource file, but also in more public venues such as the website, student handbook, recruitment materials and course syllabi. Learning objectives are equivalent to a “contract” between the student and school. They state specifically what the student can expect to learn and be able to do upon completion of the program of study. This allows students to monitor their own progress and identify any gaps in skill attainment. Additionally, if a school intends to assess student achievement and learning based on the identified competencies, it is imperative that they are shared with students.
2. Learning objectives should be reviewed regularly and redefined to reflect the changing needs of public health practice. Expected documentation for Criterion V.C. includes “a description of the manner in which the school periodically assesses the changing needs of public health practice and uses this information to establish the learning objectives for its educational programs.” A site visit team will expect to see evidence that this has occurred on an ongoing basis. Schools, for example, may obtain information through periodic surveys of employers or focus group discussions about the need for professionals with certain skill sets. They also may involve the practice community in advisory groups or in regular curriculum planning processes.
3. Finally, while course objectives are most appropriately developed by the course instructor, school and programmatic learning objectives should be developed through a process of consensus-building. Ideally, all affected parties should be involved in their development, faculty in particular, but also students and representatives from the public health practice community. The process of obtaining consensus will inevitably take longer than it would if the chair of the curriculum committee or the program director simply writes the objectives, but in the end will produce a sense of ownership among constituents and provide an assurance that school constituents are committed to their achievement.

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⁶ Applicants for accreditation may find it useful to review several self-study documents from other schools and programs to determine how those institutions stated learning objectives. Self-study documents are available for review in the CEPH offices.

Categories in the Cognitive Domain (with Outcome-Illustrating Verbs)

At what level of thinking would you like to teach and assess your students? In order to answer this question, consider the taxonomy below. The categories are supplemented with examples of verbs that demonstrate the difference in cognitive abilities expected for each level. These verbs may be used when writing clear, performance or behavior oriented course objectives.



Evaluation: Judging the value of material based on personal values/opinions, resulting in an end product, with a given purpose, without real right or wrong answers. **Verbs for writing course objectives** - appraises; compares & contrasts; concludes; criticizes; critiques; decides; defends; interprets; judges; justifies; reframes; supports.

Synthesis: Creatively or divergently applying prior knowledge and skills to produce a new or original whole. **Verbs for writing course objectives** - adapts; anticipates; categorizes; collaborates; combines; communicates; compares; compiles; composes; contrasts; creates; designs; devises; expresses; facilitates; formulates; generates; incorporates; individualizes; initiates; integrates; intervenes; models; modifies; negotiates; plans; progresses; rearranges; reconstructs; reinforces; reorganizes; revises; structures; substitutes; validates.

Analysis: The breaking down of informational materials into their component parts, examining (and trying to understand the organizational structure of) such information to develop divergent conclusions by identifying motives or causes, making inferences, and/or finding evidence to support generalizations. **Verbs for writing course objectives** - breaks down; correlates; diagrams; differentiates; discriminates; distinguishes; focuses; illustrates; infers; limits; outlines; points out; prioritizes; recognizes; separates; subdivides.

Application: The use of previously learned information in new and concrete situations to solve problems that have single or best answers. **Verbs for writing course objectives** - acts; administers; articulates; assesses; charts; collects; computes; constructs; contributes; controls; determines; develops; discovers; establishes; extends; implements; includes; informs; instructs; operationalizes; participates; predicts; prepares; preserves; produces; projects; provides; relates; reports; shows; solves; teaches; transfers; uses; utilizes.

Comprehension: Grasping (understanding) the meaning of informational materials. **Verbs for writing course objectives** - classifies; cites; converts; describes; discusses; estimates; explains; generalizes; gives examples; makes sense out of; paraphrases; restates (in own words); summarizes; traces; understands.

Knowledge of terminology; specific facts; ways and means of dealing with specifics (conventions, trends and sequences, classifications and categories, criteria, methodology); universals and abstractions in a field (principles and generalizations, theories and structures):

Knowledge is (here) defined as the remembering (recalling) of appropriate, previously learned information. **Verbs for writing course objectives** - defines; describes; enumerates; identifies; labels; lists; matches; names; reads; records; reproduces; selects; states; views.

How to Write Course Objectives

Characteristics of Good Behavioral or Performance Objectives:

1. **Relevant** – The skill or knowledge in an objective should be important and based upon the needs of the learner.
2. **Realistic** – Considering the skill level of the learners, time available and available resources, the performance or behavior must be attainable.
3. **Observable** – In order to determine if the objective has been met, it must somehow be observable. Avoid objectives that refer to emotions, such as feel, believe, know, etc.
4. **Measurable** – If the objective is not measurable, then it will be impossible to establish a means to successfully evaluate the performance or behavior and impossible to evaluate if a performance is acceptable or not.
5. **Clearly stated** – Objectives should be clear and succinct. Avoid extra wording and ambiguous terms.

Constructing Objectives:

1. Decide what is relevant to your school's goals and your program.
2. Decide what you think might be feasible or realistic in your environment.
3. Select verbs from the lists above in the Bloom's Taxonomy, or use your own, that describe a situation where learning can be observed in some fashion (e.g. performance, exam, clinical practice).
4. Find a valid way to measure the behavior or performance (e.g. rating scale of performance, multiple choice tests, product review, etc.).
5. Write the objective in as clear a manner as possible with as few words as necessary.

Relatively Good Examples

By the end of the course, the learner should be able to do the following:

1. list the 22 focus areas of the Healthy People 2000 project.
2. plan a measurable health promotion program for practice.
3. instruct a patient on performing a routine breast self-examination.

Relatively Bad Examples

By the end of the course, the learner should be able to do the following:

1. believe that it is possible to implement a reimbursement plan for a quality of life health promotion program. (How do you measure belief? What is quality of life?)
 - Better = plan a reimbursement plan for a chiropractic health promotion plan and have it reviewed by a third party payer.
2. discuss his/her opinion on why conducting a health promotion program is or is not relevant to the practice and/or philosophy/principles of chiropractic. (How can this be measured and is it clear?)
 - Better = clearly articulate an opinion about why conducting a health promotion program is relevant to the practice and philosophy of chiropractic.
3. provide good family counseling. (What constitutes good? Family counseling?)
 - Better = describe the 3 most acceptable birth control methods for a teenage female patient.

Better yet = compare and contrast the relative strengths and weaknesses of the 3 most acceptable birth control

Appendix C: Public Health Workshop Agenda

Special Sessions on Public Health Open to All ACC Attendees

Thursday March 15, 2001		
2:00-2:20	Opening Address: Public Health in Chiropractic – What’s the Use?	Mike Perillo, DC, MPH
2:20-3:30	Health Promotion and Preventive Services <u>Can</u> Enhance Chiropractic Practice! Presentation and Group Discussion	Linda Bowers DC Bart Green DC, MsEd
3:30-4:00	What do they really think? Surveys on Student, Faculty and Practitioner Attitudes on Public Health	Cheryl Hawk, DC, Ph.D.
4:00-4:15	Break	
4:15-5:30	Epidemiology and Immunization in Chiropractic Education – an Oxymoron?	Jerrilyn Cambron, DC, MPH, Fred Colley MPH, PhD
5:30-6:30	Model Course Project Group Meeting	
Friday March 16, 2001		
8:00-8:30	Chiropractic Integration in Public Health – Stories from the Real World:	Karen Konarski-Hart DC
8:30-9:30	Challenges to Integration – Success won’t happen by accident! Small group discussions	<i>Facilitators:</i> Mike Perillo DC, MPH, Bart Green DC, MsEd Vernon Temple DC, DABCO, Karen Konarski-Hart DC
9:30-9:45	Break	
9:45- 10:45	Field Doctors and the Department of Health: What should our relationship be?	Ellen Alkon, MD, MPH
10:45- 11:30	CHC-APHA membership recruitment strategies	Rand Baird DC, MPH

Appendix D: Public Health Resources

Texts and Publications

1. Public Health and Preventive Medicine, 14th Ed. R. Wallace ed. Appleton Lange Stamford CT 1998
2. Sackett DL, Haynes RB, Guyatt G, Tugwell P. Clinical Epidemiology A Basic Science for Clinical Medicine 2nd Ed. Little Brown Boston, 1991
3. Katz DL Clinical Epidemiology and Evidenced Based Medicine Sage Publications London 2001
4. Kovner A. Jonas S. Health Care Delivery in the US 6th Ed. Springer Publications New York 1999
5. Essentials of Managed Care 4th Ed. P. Kongstvedt ed. Aspen Publications Gaithersberg Md 2001
6. Friis R, Sellers T. Epidemiology for Public Health Practice 2nd ed. Aspen Publications, Gaithersberg MD 1999
7. The Guide to Clinical Preventive Services, 2nd edition: Report of the US Preventive Services Task Force. US Department of Health and Human Services Office of Public Health and Science
8. Clinician's Handbook of Preventive Services. 2nd ed. Agency for Healthcare Research and Quality; 1998.
9. Woolf SH, Jonas S, Lawrence RS. Health Promotion and Disease Prevention in Clinical Practice. Baltimore: Williams and Wilkins, 1996.
10. Bowler R, Cone J. Occupational Medicine Secrets Hanley & Belfus Philadelphia 1999
11. Academic Medicine 2000; 75:S1-S98

Web sites

Department of Health and Human Services – www.dhhs.gov
The US Public Health Service- www.usphs.gov
National Institutes of Health – www.nih.gov
Agency for Healthcare Research Quality – www.ahrq.gov
Substance Abuse and Mental Health Services Administration – www.samhsa.gov
American Public Health Association – www.apha.org
Association of Schools of Public Health – www.asph.org
Centers for Disease Control – www.cdc.gov
Council of State and Territorial Epidemiologist – www.cste.org
Health Resources and Services Administration – www.hrsa.gov
The World Health Organization – www.who.org
World Federation of Chiropractic- www.wfc.org
HP 2010 – www.health.gov/healthypeople
VAERS- www.fda.gov/cber/vaers/vares.htm
VAERS - 1-800-822-7967
NVICP - 1-800-338-2382