

STATE OF COLORADO



Colorado Department
of Public Health
and Environment

The Colorado Public and Environmental Health Professional Education Plan: Lifelong Learning System

Office of Local Liaison
Colorado Department of Public Health and Environment
September, 2001

EXECUTIVE SUMMARY

Background

In September 1999, the Colorado Department of Public Health and Environment presented its strategic plan, “Challenges and Opportunities for a New Century.” In the plan, the department identified public health workforce development as one of six critical issues challenging Colorado in the future. According to the plan, “an aging public health workforce will produce significant numbers of retirements in the coming decade. This could result in the loss of subject matter expertise and institutional knowledge.” Major issues confronting Colorado in the near future include recruitment and retention of qualified and competent public and environmental health professionals.

This plan provides strategies to bring together public health and academic communities to coordinate existing and future resources for efficient and effective development of the public health workforce. The Office of Local Liaison has identified workforce development as an important component of increasing local and state public health capacity, a critical investment area, also identified in the strategic plan. A commitment was made by the office to assess public health workforce issues and initiatives. In September of 2000, a workforce steering committee, comprised of public health leaders from local health agencies across Colorado, academic partners, and Colorado Department of Public Health and Environment, was convened to develop The Colorado Public and Environmental Health Professional Education Plan: Lifelong Learning System.

The Lifelong Learning System

The Lifelong Learning System is devised to meet the “ever-changing” educational needs of Colorado’s public and environmental health workforce. This workforce represents many disciplines, performs in geographically diverse settings, and has distinct educational needs, which continue and change. The Lifelong Learning System will incorporate innovative Web based, Internet, and distance learning opportunities as well as traditional education programs to strategically link our public and environmental health workforce with the educational resources needed to protect and enhance the health of Coloradans through the delivery of the “Ten Essential Public Health Services” (US Institute of Medicine, 1988).

Vision and Mission

The Workforce Steering Committee established the following vision and mission as a guide to the development and implementation of Lifelong Learning System.

- Vision* Colorado is a state with a dynamic public and environmental health workforce that continuously develops and enhances its competencies to effectively carry out the work of public health.
- Mission* The mission of the Lifelong Learning System is to link the Colorado public and environmental health workforce strategically with the educational resources needed to deliver the 10 Essential Public Health Services to Colorado citizens.

Goals

The Colorado Public and Environmental Health Professional Education Plan: Lifelong Learning System has three goals and related objectives to increase Colorado's state and local public and environmental health capacity:

- Goal 1* To build an infrastructure with mechanisms that link the Colorado public and environmental health workforce with education and training opportunities through the establishment of Web-based education sites, computer links, and distance learning capabilities.
- Goal 2* To meet the needs of adult learners through innovative education and training approaches such as Web-based education, Internet training programs, and mentorship support.
- Goal 3* To establish mechanisms to sustain infrastructures for lifelong learning and education innovations through the involvement of state and local stakeholders as well as public health and academic leaders.

The Role of CDPHE

In the spirit of the department's strategic plan, the Office of Local Liaison will strive to embody the following characteristics in accepting the challenges of workforce development: leader, facilitator, communicator, and innovator. The OLL will assume the core public health function of assuring the implementation of the Lifelong Learning System. The OLL will attempt to act as facilitator for stakeholders with existing resources of the office.

Conclusion

The Lifelong Learning Plan aims to: establish mechanisms to link education and training resources with Colorado's public and environmental health workforce; establish innovative teaching modalities; and develop a means of sustaining this lifelong learning infrastructure.

With the recruitment of new professionals to the field of public and environmental health, along with the retention of established professionals, promotion of a lifelong learning education system can help assure a competent public and environmental health workforce to protect and enhance the health of Colorado residents.

The Next Steps

- Data related to public and environmental health workers, by occupational titles, has been collected from local public health agencies and the Colorado Department of Public Health and Environment. A summary of both data sets will provide accurate information about who makes up the Colorado public and environmental health professional workforce.
- The Office of Local Liaison will conduct an educational needs assessment of the Colorado public and environmental health professional workforce, based on the Public Health Competencies published in April 2001 by the Council on Linkages, between academia and public health practice. This assessment will also include information about desired teaching strategies.
- Convene stakeholder groups including state and local public and environmental health staff, public health leaders, academic partners, and other interested stakeholders to plan and implement the Lifelong Learning System.

How to Get Involved

For further information, or if you are interested in participating in workforce stakeholders groups, please contact *Cathy White in the Office of Local Liaison at the Colorado Department of Public Health and Environment, (303)-692-2355 or Email cathy.white@state.co.us*.

Acknowledgements

Office of Local Liaison

The Colorado Public and Environmental Health Professional Education Plan: Lifelong Learning System was prepared by the Office of Local Liaison at Colorado Department of Public Health and Environment.

Jeff Stoll, MPH, Director, Office of Local Liaison
Karen O'Brien, MN, Director, Public Health Nursing
Cathy White, MSN, Public Health Nurse Consultant

Workforce Steering Committee

The authors wish to thank the members of the workforce steering committee for their enthusiastic support in the development of The Colorado Public and Environmental Health Professional Education Plan: Lifelong Learning System.

Lynn Bryant, PhD, Public Health Nurse Consultant, Colorado Department of Public Health and Environment, Office of Local Liaison
Jim Dale, DVM, Director of Environmental Health, Jefferson County Health & Environment
Mary Davis, PhD, Director of Prevention and Intervention Services for Children and Youth, Colorado Department of Public Health and Environment,; formerly Program Director, Boulder County Health Department
Kathy Kennedy, PhD, Director, Regional Institute for Health and Environmental Leadership, University of Denver; Associate Clinical Professor of Preventive Medicine, University of Colorado Health Sciences Center
Marie E. Miller, PhD, Executive Director, Colorado AHEC System
Ellen Jean Morris, Training and Staff Development Manager, Colorado Department of Public Health and Environment
Lynn Westberg, RN, Director, San Juan Basin Health Department

**Colorado Public and Environmental Health Professional Education Plan:
Lifelong Learning System**

Table of Contents

EXECUTIVE SUMMARY2

Table of Contents.....6

I. Introduction and Background.....7

 A. Who are the practicing public and environmental health professionals working in Colorado?7

 B. What are the major priorities in workforce development?8

 C. How should the workforce education and training be delivered?.....9

 D. What are the educational needs of the workforce?9

II. Vision/Mission/Values/Goals10

 A. Vision10

 B. Mission.....10

 C. Values and Philosophy.....10

 D. Goals and Objectives10

III. Strategies, Actions and Evaluation of the Lifelong Learning System.....11

 GOAL 1: To build an infrastructure that links the Colorado public and environmental health workforce with the education and training it needs.13

 GOAL 2: To meet the needs of adult learners through innovative education and training approaches.....16

 GOAL 3: To establish mechanisms to sustain infrastructures for lifelong learning and education innovations.18

IV. Conclusion.....19

Bibliography.....20

Appendix A: Target Audience.....22

Appendix B: Learning Models23

Appendix C: Educational Needs Assessment25

Appendix D: Statutory Authority29

Colorado Public and Environmental Health Professional Education Plan: Lifelong Learning System

The focus of this document is to introduce a plan that provides strategies to bring together public health and academic communities. It also endeavors to lay a foundation for the coordination of existing and future resources which will contribute to an efficient and effective public health workforce. This plan involves building an infrastructure of Web-based sites and coordinating resources that link the public and environmental health workforce with educational opportunities. It will utilize innovative educational approaches, and establish mechanisms to sustain lifelong learning.

In September 1999, the Colorado Department of Public Health and Environment presented its strategic plan, "Challenges and Opportunities for a New Century." In the plan, the department identified public health workforce development as one of six critical issues challenging Colorado in the future. According to the plan, "an aging public health workforce will produce significant numbers of retirements in the coming decade. This could result in the loss of subject matter expertise and institutional knowledge." Major issues confronting Colorado in the near future include recruitment and retention of qualified public health professionals. This plan provides strategies to bring together public health and academic communities to coordinate existing and future resources for efficient and effective development of the public health workforce.

This plan provides strategies to bring together public health and academic communities to coordinate existing and future resources for efficient and effective development of the public health workforce. The Office of Local Liaison has identified workforce development as an important component of increasing local and state public health capacity, a critical investment area, also identified in the strategic plan. A commitment was made by the office to assess public health workforce issues and initiatives. In September of 2000, a workforce steering committee, comprised of public health leaders from local health agencies across Colorado, academic partners, and Colorado Department of Public Health and Environment, was convened to develop The Colorado Public and Environmental Health Professional Education Plan: Lifelong Learning System.

I. Introduction and Background

A. Who are the practicing public and environmental health professionals working in Colorado?

The public and environmental health workforce has been defined as "those individuals whose major work focus is the delivery of one or more of the essential services of public health, whether or not those individuals are on the payroll of an official, voluntary, or not-for-profit public health agency" (The Public Health Workforce: An Agenda for the 21st Century, 2000, *See Appendix A for a list of public and environmental health professions*). National organizations such as the Public Health Leadership Society, The Center for Health Leadership and Practice, The Center of Health Policy (at Columbia University, School of Nursing) and the National

Center for Health Workforce Information and Analysis (Bureau of Health Professions, HRSA), continue to struggle with the enumeration of the public health workforce. The data that we have today are only estimates. In the *Enumeration of Public Health Worker Pool* (Gebbie, 2000), the author estimates that the current government public health national workforce includes at least 448,254 individuals. The actual size of the Colorado public health workforce is estimated to be 2,946.

Colorado public and environmental health professionals represent multiple disciplines working in geographically diverse settings including urban, suburban, rural, frontier and resort areas. Each area of Colorado presents public and environmental health professionals with a unique set of public health challenges among the resident population. Colorado currently has 53 local health agencies, (54 in November 2001) organized by state statute, each operating under a local board of health authority. There are 14 organized public health departments serving 80 percent of the state's population and 39 public health nursing services serving the remaining 20 percent of the state's population. Both local and state professionals provide environmental health services. The Colorado Department of Public Health and Environment provides over site and serves as a support infrastructure for the various local public health agencies and professionals.

B. What are the major priorities in workforce development?

Recruitment, retention, and education of the workforce is a major area of emphases in workforce planning. Workforce education is a major priority in the field of public health. One of the 10 Essential Services is to “assure a competent public health and personal health care workforce” (The Public Health Workforce, 1997, p. 39). An objective of the Health and Human Services Recommendations of *Healthy People 2010*, section 23-15, is to “increase the proportion of federal, tribal, state, and local public health agencies that provide continuing education to develop competency in essential public health services for their employees.” Current emphasis on workforce education is related to a number of current conditions:

- There has been a paradigm shift in public health over the past decade from direct care services to population-based services.
- There is a diversity of educational preparation among the workforce. Many workers lack basic education in the field of public health.
- There is insufficient access to educational resources in both rural and urban areas for public health professionals.
- There is an increasing need for public health professionals to acquire new skills for meeting the current financial, political, and cultural public health challenges.

C. How should the workforce education and training be delivered?

The Lifelong Learning System approach for Colorado will:

- Apply principles of adult learning
- Incorporate opportunities for divergent thinking
- Utilize practical team approaches to problem-solving
- Involve participants in planning their educational experiences
- Emphasize the value of multi-disciplinary sharing of experience and expertise

(See Appendix B for more information regarding learning principles and concepts.)

By applying these principles and concepts, the Lifelong Learning System will provide the professional with self-directed, self-paced learning opportunities. Group or team contexts and mentoring approaches will be used whenever appropriate.

D. What are the educational needs of the workforce?

Other States: Various education needs assessments have been completed in a number of states. Educational needs assessments in the states of Washington (Reder, Gale & Taylor, 1999) California (Berman & Novotny, 1999), and nationwide (Shalauta, Burke, Gorden, Stern & Tran, 1999 and Gerzoff, Brown & Baker, 1999) have identified the following education needs in common (*see Appendix C for a summary of these studies*):

- Population-based processes
- Core public health functions
- Communication
- Cultural competence
- Technology and computer competence
- Leadership and management skills
- Collaboration skills

National Movements: At the national level the Centers for Disease Control and Prevention (CDC) and the Health Resources and Services Administration have combined their efforts to identify public health competencies and educational needs for the public health workforce. The CDC Public Health Practice Program Office has established the Office for Workforce Development.

II. Vision/Mission/Values/Goals

The Workforce Steering Committee and the Office of Local Liaison has characterized the Lifelong Learning System by the following vision, mission, values and goals:

A. Vision

Colorado is a state with a dynamic public and environmental health workforce that continuously develops and enhances its competencies to effectively carry out the work of public health.

B. Mission

The mission of the Lifelong Learning System is to link the Colorado public and environmental health workforce strategically with the educational resources needed to deliver the 10 Essential Public Health Services.

C. Values and Philosophy

The *Colorado Public Health Professional Education Plan: Lifelong Learning System* is based on the following core tenets:

- Professional learning is a lifelong process
- Practicing professionals learn best when the content and skills being learned are practical and applicable to their work.
- Meaningful work motivates professionals to learn
- Professionals learn at different rates and in different ways
- Educational programs must take into account the issues faced in the local public health setting.
- Professionals have the right, and the responsibility for continuing professional development.
- Competency is enhanced most when people build on their existing skills

D. Goals and Objectives

The Lifelong Learning System has three goals and related objectives to increase public and environmental health capacity:

- Goal 1* Build an infrastructure that links the Colorado public and environmental health workforce with the education and training it needs.
- Create a mechanism to link the Colorado public and environmental health workforce with existing and future education and training resources.
 - Assess the capacity of the Colorado public and environmental health workforce to deliver the 10 Essential Public Health services.

Goal 2 Meet the needs of adult learners through innovative education and training approaches.

- Promote and facilitate access to education via a variety of teaching modalities.
- Facilitate and enhance personal knowledge management.

Goal 3 Establish mechanisms to sustain infrastructures for lifelong learning and education innovations.

- Initiate and sustain dialogue with policy and decision makers for ongoing support of the Lifelong Learning System for public and environmental health.
- Create a resource plan to support the Lifelong Learning System.

III.Strategies, Actions and Evaluation of the Lifelong Learning System

The following table describes the strategies, actions and recommended evaluation that correspond to the goals and objectives described above.

THE COLORADO PUBLIC AND ENVIRONMENTAL HEALTH PROFESSIONAL EDUCATION PLAN
LIFELONG LEARNING SYSTEM

Vision: *Colorado is a state with a dynamic public and environmental health workforce that continuously develops and enhances its competencies to carry out the work of public and environmental health effectively.*

Mission: *To link the Colorado public and environmental health workforce strategically with the educational resources needed to deliver the 10 Essential Public Health Services.*

GOAL 1: To build an infrastructure that links the Colorado public and environmental health workforce with the education and training it needs.

| Objectives | Strategies | Actions | Evaluation |
|---|---|--|---|
| A.1. Create a mechanism to link the Colorado public and environmental health workforce with existing and future education and training resources. | A.1.a. Identify lead entity to be responsible for bringing groups together to build the infrastructure of the Lifelong Learning System (LLP). | A.1.a.1 The Colorado Department of Public Health and Environment will bring together stakeholders, including representatives of the Workforce Steering Committee, to plan, implement and evaluate strategies related to the infrastructure of the LLP. | A.1.a.1.a. Identify and interview other stakeholders (e.g., local health department directors and managers) to answer the following question: Is the mechanism to link the workforce with educational resources effective? |
| | | A.1.a.2. Stakeholders will define the specific responsibilities for the lead entity. | |
| | A.1.b. Create a comprehensive communication and implementation system to link the Colorado public and environmental health workforce with education and training resources. | A.1.b.1. The lead entity will collaborate with education stakeholders to link Colorado public and environmental health workforce with education and training opportunities. | A.1.b.1.a. Identify and interview other stakeholders to answer the following question: Is the mechanism to link the workforce with educational resources effective? |
| | | A.1.b.2. Identify stakeholders' internal liaisons and define responsibilities. | |

| | | | |
|--|--|---|--|
| | | A.1.b.3. Collaborate with resources to develop systems that match/link existing and future programs with public and environmental health professionals. | |
| | A.1.c. Map existing education resources for training. | A.1.c.1. Identify existing curricula, programs and practice-based expertise. | A.1.c.1.a. Identify and interview other stakeholders to respond to the following questions: <ul style="list-style-type: none"> • What education and training gaps need to be filled? • Is there a plan for addressing these gaps? |
| | | A.1.c.2. Identify and pursue opportunities for collaboration between academic and practice-based settings. | |
| | | A.1.c.3. Assure the development of appropriate curriculum to address unmet education and training needs. | |
| | A.1.d. Integrate distance-learning opportunities into the LLP. | A.1.d.1. Collaborate with resources to develop, implement and maintain access to distance learning opportunities. | A.1.d.1.a. Identify and interview other stakeholders to respond to the following questions: <ul style="list-style-type: none"> • Is the available educational format (e.g. seminars, Web-based training) appropriate? • Is there sufficient access to distance learning opportunities? |

| | | | |
|---|--|--|---|
| <p>B.1. Assess the capacity of the Colorado public and environmental health workforce to deliver the 10 essential services.</p> | <p>B.1.a. Assess the current and future education needs.</p> | <p>B.1.a.1. Survey the education needs, priorities and preferred learning modalities of public health professionals.</p> | <p>B.1.a.1.a. Identify and interview other stakeholders to answer the following question: 1) Is the outcome of the needs assessment valid?</p> |
| | <p>B.1.b Conduct baseline and periodic review of local public health capacity and performance.</p> | <p>B.1.b. Utilize the National Public Health Performance Standards Program (PHPPO Division of Public Health Systems) surveillance instrument to review local public health capacity and performance to determine baseline needs.</p> | |

GOAL 2: To meet the needs of adult learners through innovative education and training approaches

| Objectives | Strategies | Actions | Evaluation |
|---|---|--|--|
| <p>A.2 Promote and facilitate access to education via a variety of teaching modalities.</p> | <p>A.2.a.. Assess preferences for learning methodologies.</p> | <p>A.2.a.1. Survey the education needs, priorities and preferred learning modalities of local public and environmental health professionals.</p> | <p>A.2.a.1.a. Identify and interview stakeholders to respond to the following questions:</p> <ul style="list-style-type: none"> • How do you prefer to learn skills and information you need for your job (e.g., in a classroom with a teacher or trainer, on your own time through the Internet, by reading books, etc.)? • What do you think is the most effective way for you to use electronic technology? |
| | <p>A.2.b. Provide opportunities for learning that are practical and applicable.</p> | <p>A.2.b.1. Establish multi-disciplinary public and environmental health preceptor/mentor programs through which public health professionals will integrate competencies at the local/state level.</p> | <p>A.2.b.1.a. Identify and interview stakeholders to respond to the following questions:</p> <ul style="list-style-type: none"> • Were you able to find your preferred method for training? • What did you learn that was practical and applicable to your current work in public health? |

| | | | |
|---|---|---|--|
| <p>B.2. Facilitate and enhance personal knowledge management.</p> | <p>B.2.a. Public health professionals will self-select the learning method and level of expertise from available opportunities, based on their learning needs and professional goals.</p> | <p>B.2.a.1. Provide opportunities for personal self-assessment.</p> | <p>B.2.a.1.a. Quantify utilization of a personal self-assessment tool, ideally by counting hits on a Web-based instrument.</p> |
| | | | <p>B.2.a.1.b. Identify and interview stakeholders to respond to the following questions:</p> <ul style="list-style-type: none"> • Have you used the personal self-assessment tools available through the Colorado Department of Public Health and Environment to determine the areas of educational development on which you should focus? • Given the definition of “personal knowledge management,” how responsible do you feel for your own career development? |

GOAL 3: To establish mechanisms to sustain infrastructures for lifelong learning and education innovations.

| Objectives | Strategies | Actions | Evaluation |
|--|---|--|--|
| A.3. Sustain dialogue with policy- and decision-makers for ongoing support for the LLP in public and environmental health. | A.3.a. The facilitator advocates for the LLP. | A.3.a.1. Convene periodic meetings through the facilitator of the stakeholders to plan for sustainability. | A.3.a.1.a. Which policy- and decision-makers have been informed about the need for workforce development and for resources for the same? When and by whom? |
| | | A.3.a.2. Facilitator conducts an ongoing interactive process for sustaining the infrastructure. | |
| | B.3.a. Establish priorities for education and training funds. | B.3.a.1. Facilitator conducts periodic meetings with stakeholders to determine educational priorities and cost issues. | B.3.a.1.a. Identify and interview stakeholders to respond to the following questions: <ul style="list-style-type: none"> • Have priorities been made for the use of education and training funds? • If so, what are the priorities and how were they made? |

The Role of CDPHE

In the spirit of the department's strategic plan, the Office of Local Liaison will strive to embody the following characteristics in accepting the challenges of workforce development: leader, facilitator, communicator, and innovator. The OLL will assume the core public health function of assuring the implementation of the Lifelong Learning System. The OLL will attempt to act as facilitator for stakeholders with existing resources of the office.

IV. Conclusion

The Lifelong Learning Plan aims to: establish mechanisms to link education and training resources with Colorado's public and environmental health workforce; establish innovative teaching modalities; and develop a means of sustaining this lifelong learning infrastructure. With the recruitment of new professionals to the field of public and environmental health, along with the retention of established professionals, promotion of a lifelong learning education system can help assure a competent public and environmental health workforce to protect and enhance the health of Colorado residents.

The Next Steps

- Data related to public and environmental health workers, by occupational titles, has been collected from local public health agencies and the Colorado Department of Public Health and Environment. A summary of both data sets will provide accurate information about who makes up the Colorado public and environmental health professional workforce.
- The office will conduct an educational needs assessment of the Colorado public and environmental health professional workforce, based on the Public Health Competencies published in April 2001 by the Council on Linkages, between academia and public health practice. This assessment will also include information about desired teaching strategies.
- Convene stakeholder groups including state and local public and environmental health staff, public health leaders, academic partners, and other interested stakeholders to plan and implement the Lifelong Learning System.

How to Get Involved

For further information, or if you are interested in participating in workforce stakeholders groups, please contact *Cathy White in the Office of Local Liaison at the Colorado Department of Public Health and Environment, (303)-692-2355 or Email cathy.white@state.co.us*.

Bibliography

- A profile and training needs assessment of community/public health professionals in Washington State. 1997. <http://www.healthlinks.washington.edu>.
- Academic Technologies for Learning. (2000). Continuing professional education in a rural context: does interactive, distance education meet the need? <http://www.atl.ualberta.ca/articles/disted/rural>.
- Anderson, T. (2000). Interaction options for learning in the virtual classroom. Academic Technologies for Learning. <http://www.atl.ualberta.ca/articles/disted/interact>.
- ASTDN Public Health Nursing Practice Model: Essential Public Health Services and Public Health Nursing (1997).
- Berkowitz, B. (2000). Collaboration for health improvement: models for state, community, and academic partnerships. Journal of Public Health Management Practice, 6 (1), pp. 67-72.
- Berman, S. J. & Novotny, T. E. (1999). Extended degree and continuing education preferences of California public health professionals. Journal of Public Health Management Practice, 5 (3), pp. 20-24.
- Brownson, R. C. & Kreuter, M. W. (1997). Future trends affecting public health: challenges and opportunities. Journal of Public Health Management Practice, 3 (2), 49-60.
- Centers for Disease Control and Prevention/ATSDR, Office of Workforce Development-Public Health Practice Program Office. Report from expert external workshop for workforce development, Nov. 2000.
- Gebbie, K. M. (1996). Preparing currently employed public health nurses for changes in the health system. Meeting report and suggested action steps. The Center for Health Policy and Health Services Research, Columbia University School of Nursing.
- Gebbie, K. M. (1999). The public health workforce: key to public health infrastructure. American Journal of Public Health, 89 (5), pp. 660-661.
- Gebbie, K. M. & Rice, R. (1998). Toward a practical curriculum for currently employed public health nurses. Summary, Public Health Nursing Planning Retreat. Atlanta, Georgia.
- Gebbie, K.M. (2000). Enumeration of public health worker pool. New York: University of Columbia School of Nursing, The Center of Health Policy.
- Gerzoff, R. B., Brown, C. K., & Baker, E. L. (1999). Full-time employees of U.S. local health departments, 1992-1993. Journal of Public Health Management Practice, 5 (3), 1-9.
- Gordon, A. K., Chung, K., Handler, A., Turnock, B. J., Schieve, L. A., & Ippoliti, P. (1999). Journal of Public Health Management Practice, 5 (3), pp. 25-34.
- Healthy People 2010*, Volumes I and II. (2000). U.S. Department of Health and Human Services.
- Kennedy, V. C., Spears, W. D., Loe, H. D., & Moore, F. I. (1999). Public health workforce information: a state-level study. Journal of Public Health Management Practice, 5 (3), pp. 10-19.

- Margolis, L. H., Parker, E. A., & Eng, E. (1999). Who speaks for public health agencies: assessing the core functions in local health departments. Journal of Public Health Management Practice, 5 (3), pp. 47-53.
- Milne, T. L. (2000). Strengthening local public health practice: a view to the millennium. Journal of Public Health Management Practice, 6 (1), pp. 61-66.
- Quill, B. E. & Aday, L. A. (2000). Toward a new paradigm for public health practice and academic partnerships. Journal of Public Health Management Practice, 6 (1), pp.1-3.
- Rambo, N. (2000). Information needs and uses of the public health workforce – Washington, 1997-1998. Morbidity and Mortality Weekly Report, 49 (6), 118-120.
- Reder, S., Gale, J. L. & Taylor, J. (1999). Using a dual method needs assessment to evaluate the training needs of public health professionals. Journal of Public Health Management Practice, 5 (6), 62-69.
- Rohrer, J. E. & Loh, S. C. (1999). Improvements in the performance of local public health agencies. Journal of Public Health Management Practice, 5 (6), pp. 55-61.
- Rowitz, L. (1999). Barriers to academic and practice linkages. Journal of Public Health Management Practice, 5 (6), pp. 99-101.
- Rowitz, L. (1999). The mystery of public health workforce development. Journal of Public Health Management Practice, 5 (3), pp. 101-104.
- Shalauta, N. M., Burke, T. A., Gordon, L. J., Stern, B. S., & Tran, N. L. (1999). An examination of the educational needs for environmental health and protection. Journal of Public Health Management Practice, 5 (6), 1-12.
- The public health workforce: an agenda for the 21st century. (1997). Full report of the public health functions project. U.S. Department of Health and Human Services, Public Health Service.
- Turnock, B. J. & Handler, A. S. (1997). From measuring to improving public health practice. Annual Review of Public Health, 18, pp. 261-282.
- US Institute of Medicine, (1988).- Revised , US Department of Health and Human Services: Public Health Functions steering Committee, 1997.
- WestEd Distance Learning Resource Network. (2000). <http://www.wested.org>.

Appendix A: Target Audience

The target audience for the Colorado Public and Environmental Health Professional Education Plan: Lifelong Learning System is large and diverse. The Colorado Department of Public Health and Environment has 56 job categories, including 1050 employees. Another approximately 1,500 public and environmental health professionals are practicing in organized health departments and county nursing services in Colorado. Public and environmental health workers include those who deliver the 10 Essential Services and are not limited to these public servants. A survey of the National Association of County Commissioners and Health Officers determined that public and environmental health professions include:

- Environmental Health (Engineer, Technician and Technologist)
- Health Education
- Health Service Public Manager or Administrator, Health Director
- Public Health Policy Analyst
- Nursing
- Biostatistics
- Epidemiology
- Dentistry/Dental Hygiene
- Medicine
- Nutrition
- Social Work
- Mental Health/Substance Abuse
- Medical Technology
- Accounting/Finance
- Genetics
- Speech and Language
- Research Scientist
- Human Resources
- Health Planning
- Health Information Systems
- Administrative or Clerical
- Other Allied Health Professionals
- Veterinarian

Source: 1999 Local Health Department Infrastructure Survey, National Association of City and County Health Organizations

Appendix B: Learning Models

The Colorado Public Health Professional Education Plan is based on models of adult learning. The following “seven characteristics of highly effective adult learning programs” are excerpted from the work of Dorothy Billington, Ph.D., (1988) and based on the work of Malcom Knowles (1986). (Note: The term “public health professional(s)” has been substituted in the following quotation from Billington (2000, pp1-2) for the term “student.”)

- An environment where **[public health professionals] feel safe and supported**, where individual needs and uniqueness are honored, where abilities and life achievements are acknowledged and respected.
- An environment that **fosters intellectual freedom** and encourages experimentation and creativity.
- An environment where faculty treats [public health professionals] as peers—**accepted and respected as intelligent, experienced adults** whose opinions are listened to, honored, appreciated. Such faculty members often comment that they learn as much from their students as the students learn from them.
- **Self-directed learning**, where [public health professionals] take responsibility for their own learning. They work with faculty to design individual learning programs that address what each person needs and wants to learn in order to function optimally in their profession.
- **Pacing, or intellectual challenge.** Optimal pacing is challenging people just beyond their present level of ability. If challenged too far beyond, people give up. If challenged too little, they become bored and learn little.
- **Active involvement in learning**, as opposed to passively listening to lectures. Where [public health professionals] and instructors interact and dialogue, where [public health professionals] try out new ideas in the workplace, where exercises and experiences are used to bolster facts and theory, adults grow more.
- **Regular feedback mechanisms** for [public health professionals] to tell faculty what works best for them and what they want and need to learn—and faculty who hear and make changes based on the [public health professionals] input.

In addition to the emphasis on the individual adult learner, a model for adult learning that supports the concept of group or team learning is appropriate for the multi-disciplinary nature of public health. A cooperative learning model is included, from the work of Monti and Allen (2000), based on the following elements:

- Provides opportunities for divergent thinking
- Is applied in “real-life” situations in which people work together, not in isolation, to solve problems
- [Public health professionals] control the group dynamics and maintain a voice in setting the agenda for the group to follow
- [Public health professionals] learn to work with people from varying backgrounds and with different experiences, sharpening social skills and developing a sense of confidence in their own abilities

Appendix C: Educational Needs Assessment

A. National Public Health Literature

A review of current literature addressing the learning needs of public health professionals revealed the following:

Reder, Gale, & Taylor, 1999, found:

- “The traditional roles of the public health professions are changing as direct patient care is de-emphasized and assessment and quality assurance roles are highlighted.” (p. 62)
- “Traditional models that cluster training by occupational category may work effectively for clinical skill training but may miss opportunities to provide collaborative training that crosses occupational settings and professional categories.” (p. 62)
- A Washington State survey (p. 65) of the training needs of public health professionals (n = 1316) reported:
 1. Decreased emphasis on direct patient care;
 2. Increased emphasis on core functions (assessment, assurance, policy);
 3. Increased need for collaborative, multi-disciplinary work, thus multi-disciplinary training;
 4. Decreased money available for travel; and
 5. Increase in funding for technology.
- Priority topics generated from the Washington State Survey included:
 1. Interpersonal communication;
 2. Cross-cultural and cross-age communication;
 3. Electronic communication;
 4. Participatory teaching/training skills; and
 5. On-site training and training with an instructor still preferred.

Berman & Novotny, 1999, Survey of California Public Health Professionals (n=262) found:

- County health departments least likely to have access to distance-based technology.
- Eighty Six percent of respondents without a Master of Public Health degree (MPH) (n = 138) were either very interested or interested in a MPH if it were offered through a format that would permit them to continue working at their present job.
- Preferred topics for continuing education were:
 1. Health policy;
 2. Computer applications; and
 3. Community-based interventions.

- Distance and on-site learning formats were equally acceptable (change from 1995 survey in which on-site preferred).

Gerzoff, Brown & Baker, 1999, reports the most recent data on full-time U.S. local health department (LHD) staff positions. They found, “Nurses, environmental specialists, sanitarians, and administrators constitute the core of the public health workforce in small- and mid-sized LHDs. Numerous vacancies in these core occupations signal a weakness in the ‘front lines’ of public health and vulnerability in its ability to respond to urgent health threats. ...To address these weaknesses, a renewed commitment to recruiting, retraining, and retaining LHD public health workers urgently is needed. ...” (p. 8) The authors recommended in 1997’s “The Public Health Workforce” that the following be provided:

- Distance Education
- Technical Training
- Leadership and Management Development

Shalauta, Burke, Gordon, Stern & Tran, 1999, Recommends the following for educating environmental health and protection professionals:

- Redefine approaches to training – move from discipline-specific to multi-disciplinary training.
 - Provide experiential learning – a practical approach.
- Emphasize public health approaches – core functions of public health.
 - Secure resources for education and training programs.
 - Provide a continuum of approaches for education of practitioners.
 - Provide leadership training.
 - Build partnerships for education and training.
 - Establish partnerships for funding.
- Develop cross-program and cross-agency interdisciplinary opportunities.
 - Engage national organizations.
 - Strengthen the academic infrastructure.
 - Strategize for long-term funding and support.
- National laws must assure that an appropriately trained workforce exists for their implementation.
 - Develop and optimize access and use of the Internet.

Morbidity and Mortality Weekly Report, February 2000
Information Needs and Uses of the Public Health Workforce

Seven information needs were identified by all workforce segments, including environmental health directors, public health nursing directors, health assessment coordinators and epidemiologists, local public health officers and agency directors:

- Better tools and resources for contacting experts.
- Updates on pertinent legislative issues and events.
- Structured information (metadata) characterizing the contents of data sets.
- Outcome measures and “best practice” resources.
- Better scheduling software and event calendars.
- Standard templates for frequently used applications.
- Synthesized, knowledge-based information from external databases.

In October/November 2000, the CDC and Association of Territorial and State Directors convened an expert panel Workshop on Public Health Workforce Development. The panel was made up of representatives from federal/state/local agencies, professional organizations and academia. The panel was charged with providing guidance and expertise on issues of science, policy and public health practice in four areas:

- Development of competency based curriculum for public health practice.
- Technology mediated learning and delivery.
- Models for certification and credentialing for public health.
- Applied research and evaluation.

The expert panel workshop was given the charge to:

- Determine key strategic directions and associated priorities for action on workforce development.
- Create strengthened partnerships and collaboration among key constituents.
- Facilitate the development of a major new and highly visible public health workforce development initiative.
- Enhance opportunities for technical and financial support and resources.
- Enhance the science base for decision-making.

By December 31, 2000, a detailed implementation plan will be presented to the director of the Centers for Disease Control and Prevention. This plan will be built on strategic plan recommendations and guidance from the expert panel, as well as other partner efforts in public health workforce development. The implementation plan can focus agency-specific action while also strengthening national momentum.

Local Educational Needs Assessments

The following results were compiled from educational needs assessments conducted in Colorado over the past three years:

- **Boulder County Health Department on Health Promotion, 1999** (n = 50), Identified core health promotion skills as very important to public health professionals' jobs. Boulder County plans to implement a model for increasing skills of department staff in health promotion.
- **Colorado Department of Public Health and Environment's Maternal and Child Health Needs Assessment – Training and Technical Assistance Needs, 1999**, found the top needs included:
 1. Using data in selecting interventions;
 2. Assessment tools;
 3. Interpreting data
 4. Using data in evaluating interventions; and
 5. Identifying relevant MCH indicators.
- **Colorado Department of Public Health and Environment's Learning and Training Needs Assessment for Local Public Health Nurses, 1997**, found the following priority educational needs:
 1. Core public health functions;
 2. Legal issues;
 3. Essential services; and
 4. Community assessment.

Appendix D: Statutory Authority

The Department facilitates The Colorado Public and Environmental Health Professional Education Plan pursuant to the following statutes:

- **Colorado State Statute 25-1-107(1) (dd) (I) (c)**—“To establish programs of community and professional education relevant to the detection, prevention, and control of environmental and chronic diseases.”
- **Colorado State Statute 25-1-107 (dd) (I) (a)**—“To establish and operate programs which the department determines are important in promoting, protecting and maintaining the public’s health by preventing, delaying, or detecting, the onset of environmental and chronic diseases.”